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Can Restitution Save Fragile Spiderless Networks?

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CAN RESTITUTION SAVE FRAGILE SPIDERLESS NETWORKS?

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This Article examines the dramatic increase in business networks in recent decades and considers whether the law can play a useful role in supporting the efficient functioning of these inter-firm relationships for coordination and cooperation. Repeat play, reputational sanctions, and norms of trust and reciprocity are the common explanations for the flourishing of networks in many industries and places. But the evidence also shows that a certain class of networks often fails to survive or function effectively and beneficial cooperation among these network members is impaired. These fragile networks develop organically without a controlling party or hierarchy at the center of the network to facilitate network formation. Lacking a controlling entity, they are "webs without any spider." Clusters of industrial districts are traditional examples of this class of networks. More recently, the information revolution has stimulated a dramatic increase in another type of "spiderless" network: networks of strategic alliances are now a common means of organizing collaborations among firms in high technology and R&D intensive settings. In both types of spiderless networks there are no legal mechanisms to control moral hazard and free riding risks during the period of network formation and operation. We show how in theory the law could support spiderless networks by allowing firms who externalize benefits to other firms in the network to recover for those benefits. Practical considerations may limit the implementation of a full-blown right of restitution. Nevertheless, by recognizing a limited right to recover for uncompensated costs and benefits in appropriate cases, the law can function as a background norm for sharing costs and benefits among network members, motivating them to overcome daunting coordination problems. We consider several implementation issues, show how they might be resolved, and apply our analysis to a set of well-known spiderless networks.

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INTRODUCTION

When business parties want to collaborate they have traditionally pursued either market transactions or integration. Starting in the twentieth century, but continuing at a much greater pace in the past two decades as a product of the "information revolution," business networks have emerged as a third avenue for cooperation. Inter-firm networks are mechanisms for coordination and cooperation between formally independent but functionally interdependent firms. They provide firms with access to essential capabilities and resources that are under the control of other firms in their environment. Firms in networks frequently contract with others in the network to further their network project. These contracts can create benefits for, or impose costs on, other network members who are not contract parties. Addressing the moral hazard, free riding, and distributional issues raised by these externalities in the absence of formal legal ties among participants has challenged economists, sociologists, and organizational theorists. In lieu of legal mechanisms, repeat play, reputational sanctions, and norms of trust and reciprocity are the common explanations for the flourishing of networks in many industries and places.

Until recently, the question of why some networks are durable and others are fragile has been largely ignored by legal scholars.[1] This lack of attention to how networks emerge and stabilize owes, in part, to the fact that legal intervention in networks is relatively rare. In addition, the overly broad focus on a network as a generic mode of cooperation and collaboration is too capacious to permit useful legal analysis. Some networks, for example, can deploy standard contractual mechanisms—whether in the form of a master contract as in the case of a franchise, or a bureaucratic contractual structure as in the case of trade associations—that support network collaboration. These relationships have a "spider in the web"—a controlling party or hierarchy at the center of the network that facilitates network formation and maintains stability.[2] Other networks, however, are fundamentally symmetric or parity-based. Lacking a controlling entity, they are webs without any spider. In the case of these "spiderless networks," there are fewer legal mechanisms to control moral hazard and free riding risks during the period of network formation and operation.[3] As a consequence, the evidence shows

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[1] Some significant exceptions are Alan Schwartz & Robert E. Scott, *Third-Party Beneficiaries and Contractual Networks*, 7 J. OF LEGAL ANALYSIS 325 (2015), and Lisa Bernstein, *Beyond Relational Contracts: Social Capital and Network Governance in Procurement Contracts,* 7 J. Legal Analysis 561 (2016).

[2] We are grateful to Ron Gilson for suggesting the metaphor of the web with and without a spider.

[3] There is not a sharp distinction between spider and spiderless networks. The distinction we draw is primarily instrumental to the goals of this Article. We use the designation of a spiderless network to describe any environment where network members create positive externalities for themselves and others in the network through repeated interactions and where there are no contractual or organizational ties linking network members together.

that many spiderless networks are fragile and fail to survive despite the evident benefits to network members from inter-firm cooperation.

In this Article, we focus on two key types of spiderless networks that form organically to exploit the positive returns from coordination and cooperation but lack any centralized control. Clusters of industrial districts, such as Silicon Valley, are traditional examples of one class of spiderless networks. This network type consists of geographically compact agglomerations of small and medium sized firms in an industry characterized by volatile or rapidly shifting demand, all of which specialize in a particular phase of production or a production process.

In addition, the information revolution, and the consequent rise in uncertainty, has stimulated a dramatic increase in another once-novel spiderless network. Aggregations of strategic alliances, of which the biotech network is the most familiar, are now a common mechanism for organizing collaborations among firms in high-technology and R&D intensive settings.[4] Some of these alliance networks lack the social networking features—personnel mobility and geographical and cultural proximity—that support a number of industrial districts. While there are bilateral contracts between individual firms in these alliance networks, the network itself as a mode of coordination and cooperation is not formalized into a contract or bureaucratic structure. Here the membership in the network is "vague and fluid";[5] the actions of any party can create positive externalities for others, but the same behavior also motivates moral hazard and free riding by others in the network. These risks undermine what we call a "reciprocity equilibrium." A reciprocity equilibrium results when each network member receives from the network a benefit proportionate to the benefits it creates for others and the costs it incurs.[6] If network participants deviate significantly from a reciprocity equilibrium, the network will fail to form successfully, or, even if formed, further efficient participation and operation of the network may be precluded. If, however, moral hazard and free riding problems can be mitigated, the network produces value by generating information flows that advance innovation and reduce the costs of the search for new alliance partners.

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[4] Ranjay Gulati & Martin Gargiulo, *Where Do Interorganizational Networks Come From?*, 104 AM. J. SOC. 1439, 1441, 1445 (1999) (stating that "the number of interorganizational [strategic] alliances has grown at an unprecedented rate in the last 15 years" and that "most organizations are embedded in a variety of interorganizational networks, such as board interlocks, trade associations, and research and development ventures"); Walter W. Powell & Paul Brantley, *Competitive Cooperation in Biotechnology: Learning through Networks?*, *in* NETWORKS AND ORGANIZATION: STRUCTURE FORM AND ACTION 366 (N. Mohria & R. Eccles eds. 1992) ("In the past decade we have seen a pronounced shift away from a strict reliance on internal R&D to a greater emphasis on various forms of externally based collaborative research and development.").

[5] Schwartz & Scott, *supra* note 1, at 356–57.

[6] *See infra* Part I.B.2.

The starting point of our analysis is the formation of clusters and alliance networks with particular focus on those industries where social capital[7] is weak, and data show that externalities threaten network performance and emerging networks frequently fail.[8] We ask, can the law usefully support the formation and efficient operation of these networks that lack a spider in the web? And, if so, under what conditions would legal remedies effectively complement existing relational modes of motivating reciprocity among network members?

To begin to answer these questions, we develop an informal model that shows how the law of restitution and unjust enrichment can in theory encourage efficient network formation and operation by allowing key participants to receive some of the benefits currently captured by other participants. Under the model, any member of a network who creates net benefits for others, and whose costs are greater than private benefits, is entitled to recover the lower of two measures: either the verifiable benefits created for others or the difference between the benefactor's costs and benefits.[9] The model also supports a distributional principle where the members are entitled to share the network surplus according to their costs, the benefits they received, and the benefits they conferred. While our model suggests that restitution remedies can be most useful in supporting networks where social capital is weak, it also has the potential of enhancing the efficiency of even those networks that currently appear to function adequately without any legal support.

After presenting the model, we explain how it could be implemented by a straightforward extension of familiar common law doctrines. We also discuss some possible hurdles, including the costs of evaluation and enforcement as well as the risk that a legal remedy may crowd out, rather than braid with, the relational forces that otherwise support network formation. This analysis argues against high-powered legal enforcement, such as the disgorgement of all gains, and in favor of low-powered remedies, such as the recovery of a portion of the realized benefits from network participation. Even in the face of high evaluation and enforcement costs, however, a narrowly structured right of restitution can still function as a background rule—a focal point for sharing the benefits and costs among network members, motivating these parties to overcome the coordination problems that otherwise deter them from creating a spider to organize the distribution of network value.[10]

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[7] Social capital refers to the creation of relation-specific trust between firms that is created through interpersonal ties among key employees, the emergence of norms of reciprocity, and experience in problem solving though information exchange. *See, e.g.*, Sinéad Roden & Benn Lawson, *Developing Social Capital in Buyer-Supplier Relationships: The Contingent Effect of Relation-Specific Adaptations*, 151 INT. J. PRODUCTION ECON. 89, 90–91 (2014).

[8] *See infra* Part I.B.3.

[9] *See infra* Part II.C.

[10] *See infra* Part III.E. Our premise is that there is a positive, though imperfect, correlation between network value and social welfare. Because the correlation between network value and

This Article proceeds as follows: In Part I, we present a typology of business networks sufficiently rich to capture the breadth of cooperative inter-firm relationships, but also sufficiently parsimonious to serve as the basis for understanding the relationship among the factors that determine how and whether the network will emerge and how it will function. We show how access to social capital distinguishes those spiderless networks that appear quite stable (despite the absence of legal enforcement) from others where high uncertainty and the absence of social capital make them more vulnerable to uncontrolled moral hazard problems.[11] We focus on four exemplars of how network benefits are disproportionately distributed among network members and isolate the conditions under which the introduction of legal remedies to support these fragile relationships might serve as complements to existing relational norms.

In Part II, we develop an informal model under restrictive assumptions to show how restitution remedies have the potential to aid in solving the moral hazard and free riding problems characteristic of spiderless networks. The model suggests clear criteria for implementing a remedial scheme and illustrates how its application can support network formation and operation.

In Part III, we apply the model to the paradigmatic network contexts where moral hazard and free riding problems threaten network survival. We show how a limited right of restitution can overcome common objections to using legal remedies to internalize network externalities. Even in a world of high evaluation and enforcement costs, a narrowly crafted right of restitution can still function as an efficient background norm—a bargain-enabling default[12]—that motivates members of spiderless networks to adopt a governance regime to regulate the cooperative relationship among the network firms.

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social welfare is imperfect, however, our normative views are tentatively held. An additional justification for adopting network value as a criterion is that normative critique, when directed at courts, should take into account the type of goal a court can implement. Courts are not equipped to make global welfare assessments, but should be able to discern whether permitting or denying a legal claim would better advance network goals.

[11] *See infra* Part I.A.2. Social capital ties that form in networks characterized by geographical concentration and personnel relationships are stronger in some networks, such as industrial district clusters and biotech alliances, than they are in emerging alliances among widely separated firms with different cultural patterns and little movement of personnel among the network members. The key characteristic of the dramatic growth of strategic alliances in the last several decades has been the increasing diversity of alliance partners' nationalities. *See* Ranjay Gulati, *Alliances and Networks*, 19 STRATEGIC MGMT. J. 293, 302 (1998).

[12] The concept of a "bargain-forcing default" was first developed in Robert E. Scott & George G. Triantis, *Embedded Options and the Case Against Compensation in Contract Law*, 104 COLUM. L. REV. 1428, 1488–90 (2004). In this context, "bargain-enabling" more accurately describes the coordinating function that a background restitution rule provides for spiderless networks. We choose the term "bargain-enabling" rather than the alternative of "penalty" defaults because the latter has the narrower meaning of inducing disclosure when disclosure would permit more efficient contracting performances. *But see* Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 YALE L. J. 87, 93 (1989) (discussing penalty default rules).

We conclude that extending a carefully limited right of restitution to members of spiderless networks can encourage them to reach contractual solutions to the asymmetric distribution of network benefits. Networks are dynamic forms of organization and the evolutionary process implies a movement toward the development of a centralized regime—a spider—to control distribution of network value.[13] The challenge is how best to stimulate the evolutionary process before externality problems cause the network to fail. A limited right to claim recovery for externalized benefits, even if only available in special cases, can function as a "virtual spider" and thereby reduce the incidence of failure in those networks that form spontaneously.

I. Business Networks and the Externality Problem

A. Factors that Distinguish Networks and their Governance

The starting point of a typology of business networks is the claim that two characteristics of the particular environment—the presence or absence of a controlling regime or agent (the spider) and the uncertainty associated with the market—determine the range of governance mechanisms that networks require to overcome moral hazard and free riding problems.

1. Networks with Spiders

When networks are formed around, or by, a central agent—a regime that exercises some control over the distribution of benefits and costs in the network—the level of uncertainty determines how the parties respond to the challenges of maintaining the network. As we illustrate in Figure 1, when uncertainty is low, networks with controlling agents deploy more conventional forms of contingent contracting to control conflicts among members. Examples include franchises,[14] construction contracting,[15] contemporary

[13] The centralizing regime may be a bureaucratic mechanism to internalize benefits (as in the case of cooperatives and trade associations) or a controlling agent (as in the case of the purchasing firm in supply chains) with responsibility for devising mechanisms such as association rules or master contracts that specify network obligations.

[14] Claims by network members arise frequently in franchise networks. The disputes vary, sometimes involving claims by franchisees (either existing or potential) arising out of contractual obligations assumed by the franchisor in the master-franchisee contract. *See, e.g.*, Chu v. Dunkin' Donuts, Inc., 27 F. Supp. 2d 171, 174 (E.D.N.Y. 1998) (claim by a prospective franchisee suing on the basis of a settlement agreement between the franchisor and former franchisees).

[15] Disputes over defective or failed performance in large construction projects frequently arise in these networks where the litigation centers on disputes between the owner of the project and various sub-contractors whose primary contractual relationship is with the general contractor. *See, e.g.*, Aetna Cas. & Sur. Co. v. Fireguard Corp., 455 S.E.2d 229 (Va. 1995); A.E.I Music Network, Inc. v. Bus. Computs., Inc., 290 F.3d 952 (7th Cir. 2002); Guardsman Elevator Co., Inc. v. United States, 50 Fed. Cl. 577 (2001).

credit card networks,[16] standard setting organizations,[17] and networks formed by hospitals with service providers, insurance companies, and patients.[18] In each case, there is an agent whose economic interests are advanced by the creation of the network and who has incentives to control network size and to internalize network externalities. Sometimes the optimal network size is not sufficiently clear *ex ante* for the spider to write a master contract. But even then, third-party beneficiary law permits parties to signal the intent to cover third parties even though they have not been identified explicitly in the *ex ante* contracting process.[19] Another network form in this environment is the trade association where control is formalized in associational contractual agreements. Here the formal agreement specifies the organizational relationships between allied parties, but the degree of formalization never substitutes for the presence of a social capital network.[20]

FIGURE 1: NETWORK GOVERNANCE AND UNCERTAINTY

	Low Uncertainty	*High Uncertainty*
Spider	Trade associations, franchises, construction Ks, credit cards, SSOs	Collaborative supply chains
No spider	Industrial district clusters	Strategic alliance networks

Even in high uncertainty environments, spiders are capable of developing governance structures that rely on contract. Here the prime example is the evolution of the modern supply chain that relies on collaborative contracting between the suppliers and the buyer to coordinate vertical or transactional interdependencies between and among the firms.[21] The higher level

[16] *See, e.g.*, Sovereign Bank v. BJ's Wholesale Club, Inc., 533 F.3d 162, 164 (3d Cir. 2008) (describing credit card networks).

[17] Standard-Setting Organizations (SSOs) form networks with members who rely on industry standards to "establish technical specifications to ensure that products from different manufacturers are compatible with each other." Microsoft Corp. v. Motorola, Inc., 696 F.3d 872, 875 (9th Cir. 2012).

[18] Networks form between hospitals, hospital service providers, patients, insurers, and HMOs. Third-party beneficiary suits are common in this category of networks. For cases where patients sued as third-party bene?ciaries of contracts between hospitals and service providers, see, for example, Jenkins v. Best, 250 S.W.3d 680 (Ky. Ct. App. 2007); Dorr v. Sacred Heart Hosp., 228 Wis. 2d 425 (Wis. Ct. App. 1999). For discussion, see Schwartz & Scott, *supra* note 1.

[19] *See* Schwartz & Scott, *supra* note 1, at 329–33. Schwartz & Scott offer an improvement on the current third-party beneficiary default of no third-party liability. By taking into account network theory and the state's interest in preserving network functioning, they call for a more precise understanding of when a spider would have the necessary intent to grant contract rights to other network members.

[20] *See* Anna Grandori & Giuseppe Soda, *Inter-firm Networks: Antecedents, Mechanisms and Forms*, 16 ORG. STUD. 183, 201 (1995).

[21] *See* Bernstein, *supra* note 1, at 14–27; Claude Ménard, *The Economics of Hybrid Organizations*, 160 J. INST. & THEORETICAL ECON. 345, 348 (2004). *See generally* J.H. TRIENEKENS

of uncertainty does not preclude contract but does change the nature of contracting. Facing conditions of high uncertainty, modern supply chains have devised radically incomplete bilateral collaborative agreements together with master contracts that commit the parties to collaborate but do not structure the course or outcome of the collaboration.[22] Collaborative contracts braid with the evolving social network that nurtures norms of coordination and cooperation. Even though the contract is radically incomplete, the formal legal mechanisms facilitate the parties' search for reliable partners and the productive use of information generated through the network. As a consequence of the braiding of formal and informal enforcement, trust develops endogenously both within the bilateral collaborations as well as among the members of the network.[23]

In sum, incentive problems in the spider cases are mitigated by a combination of bilateral contracts, third-party beneficiary law, multilateral master contracting, and bureaucratic control. Moreover, all things equal, the presence of a spider means that internalization is also easier to effect through self-enforcement. Since the network size tends to be fixed, and network purpose controlled by the spider, traditional mechanisms for informal or purely relational contracting are more readily accessible. To be sure, moral hazard and in particular free riding problems are common in these multilateral relationships. The formation of these networks often provides positive benefits to third parties that free ride on the efforts of others in the network,[24] and even if they pay for the benefits they receive, their payments do not cover the fixed costs sunk in the formation of the network. Nevertheless, despite these inefficiencies the networks with a spider present fewer problems for legal regulation than the webs that form without any spider.

2. *Spiderless Networks*

Networks that lack a central agent emerge and form organically and, as in the case of networks with spiders, the structure of network governance is determined by the level of uncertainty. As Figure 1 illustrates, lower levels of uncertainty characteristic of the "traditional" economy have produced a spiderless prototype—clusters of industrial districts. Although clusters remain viable today, the dramatic increase in spiderless networks has come

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& P.J.P. ZUURBIER, CHAIN MANAGEMENT IN AGRIBUSINESS AND THE FOOD INDUSTRY: PROCEEDINGS OF THE FOURTH INTERNATIONAL CONFERENCE, WAGENINGEN, 25-26 MAY 2000 (2000); JOSH WHITFORD, THE NEW OLD ECONOMY: NETWORKS, INSTITUTIONS, AND THE ORGANIZATIONAL TRANSFORMATION OF AMERICAN MANUFACTURING (2005).

[22] *See* Ronald J. Gilson, Charles F. Sabel & Robert E. Scott, *Contracting for Innovation: Vertical Disintegration and Interfirm Collaboration,* 109 COLUM. L. REV. 431, 459–63 (2009) (discussing the John Deere supply chain).

[23] *See* Ronald J. Gilson, Charles F. Sabel & Robert E. Scott, *Braiding: The Interaction of Formal and Informal Contracting in Theory, Practice and Doctrine*, 110 COLUM. L. REV. 1377 (2010); Bernstein, *supra* note 1, at 28.

[24] *See, e.g., infra* Part II.C.

from the growth of strategic alliance networks: a network form adapted to higher levels of uncertainty, where commercial practices are disrupted by unforeseeable changes in technical possibilities and market conditions. We briefly describe each network form and then turn to the challenge of devising a governance structure for spiderless networks.

a. Clusters of industrial districts.

Clusters of industrial districts are geographically compact agglomerations of small and medium sized firms in an industry characterized by volatile or rapidly shifting demand, all of which specialize in a particular phase of production or a production process. Finished goods are produced by groups of firms collaborating in rapidly shifting constellations.[25] By recombining and thereby augmenting fragmented, specialized, and mostly tacit knowledge, a multiplicity of cooperative firms in a cluster adapts rapidly to changes in the economic environment. Agglomerations of this kind played an important role in the industrialization of parts of Europe and the United States from the late eighteenth century onwards.[26] Variants are common in more recent industrializers ranging from Japan[27] to Taiwan[28] to Brazil[29] to Italy[30], and in the development of Silicon Valley.[31] Since the turbulence in the markets for mass-produced goods in the mid-1980s made valuable the ease with which clustered firms could recombine as conditions changed, clusters are a microcosm of the "new" economy, able to prosper in much more volatile conditions than the vertically integrated large corporation.

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[25] Up to some limit, the more firms in a cluster, the easier it is for each firm to find the partners it needs, and the lower its costs of production. Up to the size limit, therefore, firms in a cluster constitute positive externalities for each other. The attraction of these positive externalities is part of what draws firms to the cluster in the first place, causing agglomeration. *See* Paul Krugman, *Increasing Returns and Economic Geography*, 99 J. POL. ECON. 483 (1991) (discussing why and when manufacturing becomes concentrated in a specific region); EDGAR M. HOOVER & RAYMOND VERNON, ANATOMY OF A METROPOLIS: THE CHANGING DISTRIBUTION OF PEOPLE AND JOBS WITHIN THE NEW YORK METROPOLITAN REGION 49–55 (1959) (arguing that small firms operate in the more crowded portions of the region in order to share some facilities, such as capital or labor, with others).

[26] *See* WORLD OF POSSIBILITIES: FLEXIBILITY AND MASS PRODUCTION IN WESTERN INDUSTRIALIZATION 463, 499–500 (Charles F. Sabel & Jonathan Zeitlin eds., 1997) (arguing that collaboration between firms makes it easier to survive market fluctuations).

[27] *See generally* DAVID FRIEDMAN, THE MISUNDERSTOOD MIRACLE: INDUSTRIAL DEVELOPMENT AND POLITICAL CHANGE IN JAPAN (1988).

[28] *See generally* ANNALEE SAXENIAN, THE NEW ARGONAUTS: REGIONAL ADVANTAGE IN A GLOBAL ECONOMY (2006).

[29] *See generally* Elisa Giuliani , Carlo Pietrobelli, & Roberta Rabellotti, et al., *Upgrading in Global Value Chains: Lessons from Latin American Clusters*, 33 WORLD DEV. 549, 549–73 (2005).

[30] *See generally* Roberta Rabellotti, Anna Carabelli & Giovanna Hirsch, *Italian Industrial Districts on the Move: Where are They Going?*, 17 EUR. PLAN. STUD. 19, 19–41 (2008).

[31] *See generally* ANNALEE SAXENIAN, REGIONAL ADVANTAGE: CULTURE AND COMPETITION IN SILICON VALLEY AND ROUTE 128 (1994); Ronald J. Gilson, *The Legal Infrastructure of High Technology Industrial Districts: Silicon Valley, Route 128, and Covenants Not to Compete*, 74 N.Y.U. L. REV. 575, 575–628 (1999).

b. Strategic alliance networks.

Strategic alliances are bilateral collaborations between firms that are motivated to resolve uncertainty over the challenges of rapid technological development where research breakthroughs are so broadly distributed that no single firm has all the capabilities necessary for success. Research to produce further technological advances thus requires collective collaboration designed to pool the broadly dispersed information of a large number of firms.[32] Over time, these alliances aggregate to form a cluster—or network—of firms whose membership shifts over time and who lack any centralized control. The network grows during periods of rapid change as members are motivated to reduce the inherent uncertainties associated with novel products or markets through the sharing of private information that benefits each firm in its own pursuits.[33]

Despite the absence of a spider, there is significant information exchange and co-development in alliance networks, leading to long-term commitments between alliance partners in the network. The alliances act as a conduit for the flow of private information about resources and capabilities. The knowledge created by the information exchange within the individual alliances in the network diffuses throughout the network. Thus, the network becomes a reservoir of all the informational value that accumulates within that particular sphere of economic activity.[34]

At one time, these alliance networks were rare but in the current economy they have grown dramatically and are now a common mechanism for organizing cooperative activity, particularly in technology-intensive settings.[35] The prototype of these strategic alliances is the biotech network consisting of a university or research entity (inventor), a number of biotech companies, large pharmaceutical firms, and venture capital firms joined by their common interest in the development of therapeutic compounds to cure disease.[36]

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[32] *See* WALTER W. POWELL, *Networks of Learning in Biotechnology: Opportunities and Constraints Associated with Relational Contracting in a Knowledge-Intensive Field, in* EXPANDING THE BOUNDARIES OF INTELLECTUAL PROPERTY: INNOVATION POLICY FOR THE KNOWLEDGE SOCIETY 251, 252–53 (Rochelle Dreyfuss et al. eds., 2001).

[33] *Id.* at 265–66.

[34] Balaji R. Koka & John E. Prescott, *Designing Alliance Networks: The Influence of Network Position, Environmental Change and Strategy on Firm Performance*, 29 Strategic Mgmt. J. 639, 640 (2008).

[35] *See* MICHAEL HERGERT & DEIGAN MORRIS, *Trends in International Collaborative Agreements, in* COOPERATIVE STRATEGIES IN INTERNATIONAL BUSINESS (F.K. Contractor & S. Leinhardt eds., 1988) (analyzing the increasing use of collaborative agreements between international partners); David T. Robinson & Toby E. Stuart, *Network Effects in the Governance of Strategic Alliances*, 23 J. L. & ECON. ORG. 242, 245 (2006) (showing over 5500 alliances between dedicated biotechnology firms, pharmaceutical firms, and universities have been formed since the mid-1970s).

[36] These networks have been widely studied by organizational sociologists. *See, e.g.*, Walter W. Powell, Kenneth Koput & Laurel Smith-Doerr, *Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology*, 41 ADMIN. SCI. Q. 116

B. Characteristics of Spiderless Networks and the Governance Problem

In this section, we examine the key elements in the formation of spiderless networks with particular focus on the challenge of preserving the value generated by the network itself.

1. Network Formation and Resulting Value

How do spiderless networks emerge in the absence of the coordinating capabilities of a central agent? Organizational sociologists have traditionally looked to exogenous factors, such as the distribution of technological resources, that motivate firms to create the ties necessary to manage uncertainty and satisfy their resource needs.[37] But this focus on exogenous conditions ignores the fundamental question of how a firm comes to choose its alliance partners. Gulati and Gargiulo present a theory with supporting data that suggests that the risk of opportunism motivates firms to select partners with whom they have or can develop trust sufficient to support the iterative exchange of private information.[38] Over time, these "embedded" relationships develop into a network that has unique value as a repository of information about the capability and character of prospective partners. The more that the network internalizes information about potential partners, the more firms look to the network in searching for new partners. Through this iterative process, new entrants gain valuable information and also contribute new knowledge to the network that shapes the formation of future network collaborations.[39]

The aggregation of information about prospective partners creates a value to participation in the network independent of any surplus from the bilateral agreements formed between individual network dyads. Firms develop many ties to others who in turn have ties to others and thus become highly embedded in the network. Embeddedness, in turn, diffuses valuable information throughout the network.[40] In this way, networks foster learning by encouraging novel syntheses of information that is qualitatively distinct

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(1996); Walter W. Powell, *Inter-Organizational Collaboration in the Biotechnology Industry*, 152 J. INST. & THEORETICAL ECON. 197 (1996); *see also* Powell & Brantley, *supra* note 4; Powell, *supra* note 32.

[37] *See, e.g.*, Powell, Koput & Smith-Doerr, *supra* note 36, at 119 ("A network serves as a locus of innovation because it provides timely access to knowledge and resources that are otherwise unavailable . . . ."); Powell, *supra* note 36, at 205 (noting the necessity of pooling capabilities and assets as a key factor in inter-organizational collaboration in the biotechnology industry); RONALD S. BURT, CORPORATE PROFITS AND COOPTATION: NETWORKS OF MARKET CONSTRAINTS AND DIRECTORATE TIES IN THE AMERICAN ECONOMY (1983).

[38] Gulati & Gargiulo, *supra* note 4, at 1440–42.

[39] *See id.* at 1440.

[40] The network generates value that is shared in two ways. There are "internal" benefits that each dyad realizes through its participation in the network. In addition, there are "external" network benefits that are disproportionately distributed throughout the network. For a discussion regarding the various means that firms use to capture network benefits, see *infra* Part I.C.

from the information that resides in the individual dyads.[41] This reservoir of valuable information serves to reduce the cost of searching for new partners and also enables embedded firms to exploit the knowledge acquired in any given strategic alliance or cluster by combining it with complementary knowledge gained from other sources.[42] In short, the network serves as a club good that reduces contracting costs and enhances innovation opportunities for network members. If the network matures to the point where the community norms are entirely self-enforcing, the network is a substitute for the legal enforcement of the radically incomplete contracts that are formed between alliance and cluster members.[43]

2. *Moral Hazard and Free Riding Risks to Achieving a Reciprocity Equilibrium*

The essential conflict in both cluster and alliance networks is the incentive for cooperation and coordination side by side with the incentive for competition. Parties share the motivation to capture as many benefits as possible at the lowest possible cost, and at the same time are motivated to act reciprocally in forming and maintaining the network. Reciprocal actions among network members satisfy what we have called a "reciprocity equilibrium," when every network member receives from the network a benefit proportionate to the benefits it creates for others and the costs it incurs.[44] But a reciprocity equilibrium is a unique condition. Things become more complicated when some members capture more or fewer benefits than what is justified under the reciprocity condition, either because of their different capabilities in externalizing or internalizing benefits or because of moral hazard and free riding problems. Moral hazard is motivated by members' desire to save costs since the benefits they produce are shared by others; free riding is motivated by members' desire to capture benefits produced by other members and avoid the costs of producing those same benefits. These self-interested actions undermine the reciprocity equilibrium and thus threaten the durability of spiderless networks.

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[41] Powell, *supra* note 4, at 371 (arguing that external linkages are means of gaining fast access to knowledge and resources that cannot be secured internally ""by . . . bringing together different operating assumptions and new combinations of information").). For discussion and examples, see discussion *infra* Parts I.C.2–4.

[42] Firms use their network position to capture network externalities in two ways: (1) by developing many ties with others and thus exploiting an information-rich network position, or (2) by bridging a gap in the network (a "structural hole") that enables the firm to exploit resource and informational differentials within the network. *See* Jeffrey H. Dyer, Harbir Singh & Prashant Kale, *Splitting the Pie: Rent Distribution in Alliances and Networks*, 29 MANAGERIAL & DECISION ECON. 137, 137–48 (2008) (discussing how collaborating firms split the surplus of their collaboration); *infra* Part I.C.

[43] Robinson & Stuart, *supra* note 35, at 244 (arguing that the alliance network functions as a social institution that aids in contract enforcement, and, therefore, "plays the same role as the court").

[44] For further discussion on allocating network surplus among members to achieve a reciprocity equilibrium, see *infra* Part II.C.5.

In strategic alliance networks it is often the case that firms with many ties to others become structurally embedded in the network while others that are not as well connected remain on the periphery.[45] To collaborate with centrally embedded firms, peripheral firms offer specific resources, especially private information, to their alliance partners. In this way, some embedded firms are able to extract rents from those firms that are less connected, and, at the same time, these highly embedded firms can use their prior connections to build new ties and so remain deeply embedded in the network.[46] In short, the rich get richer: a firm that has a greater number of alliance relationships or that bridges a "structural hole" in the network frequently can enjoy network benefits that are not available to a peripheral network member. In this way, the highly embedded firm receives more and contributes less than the less embedded firm, and the reciprocity condition is not satisfied.[47]

To illustrate the consequences of these asymmetries, consider a scenario where facilitating the network's formation requires the participation of a firm whose costs of participation are greater than its expected benefits, but lower than the expected benefits for all members once the network forms. For example, assume that an owner of a "magnet" enterprise is contemplating locating in an industrial district; the magnet firm's participation is expected to generate a substantial percentage of the positive externalities from participating in the network. The other network parties are small firms that are expected to aggregate around the magnet firm once the industrial district is stabilized. The magnet enterprise, however, needs to invest in creating the network: it has to relocate its large facilities, and relocation is costly. The firm also bears the risk that the network may fail, and then it would bear irrecoverable losses and gain no corresponding benefits. The network in this example is a club good: once it is formed, participating firms can use the proximity and tacit knowledge of others to their benefit and no one can exclude them. Thus, the resulting risk of free riding may prevent the network's formation.[48]

In other cases, other transaction costs could bar efficient operation of networks. For example, imagine that a firm at the periphery of an alliance network calculates that the firm's costs of revealing private information exceed the expected benefits from a collaborative agreement with another network member even though the information, once disseminated, would create

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[45] *See* Gautam Ahuja, Francisco Polidoro Jr. & Will Mitchell, *Structural Homophily or Social Asymmetry? The Formation of Alliances by Poorly Embedded Firms*, 30 STRATEGIC MGMT. J. 941, 941 (2009).

[46] *See id.* at 944–45. See *infra* Part I.C., where we discuss the asymmetric distribution of private network benefits.

[47] Dyer et al., *supra* note 42, at 143–45; *see also infra* Part I.C.

[48] Unless payments are made to the magnet firm, it will not establish the network. Payments would not be made, however, because, absent coordination, each of the other firms would refuse to share in the costs of establishing the network, hoping to free ride on other members' investments.

net benefits to other network firms in excess of the peripheral firm's costs. Ideally, other members would agree to compensate the peripheral firm and induce it to reveal its private information. But the difficulty of negotiating a sharing rule in a high uncertainty environment could preclude any agreement to share the costs of subsidizing the peripheral firm.[49]

3. Relational Governance of Spiderless Networks

Under current law, enforcement of inter-party understandings in alliance and cluster networks is purely relational. Spiderless networks use a reputation for cooperation and trustworthiness as a guide to future interaction, relying on a combination of reputation, repeated dealings, and tit-for-tat reciprocity to distribute network value.[50] In some instances, these relational norms can produce a durable network environment. Thus, for example, the evidence suggests that, despite the absence of formal rights and obligations, the forces that govern cooperation in mature biotech alliances are quite robust, with trust and cooperation increasing with participation in the network.[51]

The evidence of successful formation of strategic alliance networks is quite mixed, however. Biotech networks are supported by a strong form of social capital ties: social capital is particularly useful in alliances where the contribution of each alliance member to the network is ambiguous and difficult to measure.[52] But in industries that are not characterized by strong forms of social capital, there is substantial evidence that spiderless networks are highly delicate and prone to fail. Here, the individual firms face serious incentive problems and often fail to overcome the transaction costs of forming a network that survives to maintain cooperative norms.[53] In particular, strategic alliances among disparate firms from a wide range of national origins (a very common circumstance in the global economy) face a variety of moral hazard and free riding risks caused by the difficulty of learning about the

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[49] *See* Gilson et al., *supra* note 23, at 1405–09 (explaining the phenomenon of incomplete preliminary agreements that adapt *ex post* to changed circumstances, and that regulate only an agreement to collaborate rather than the outcome of the collaboration).

[50] *See* Powell, *supra* note 36, at 207–08.

[51] In durable networks, there is a kind of mutualism or normative integration at the level of the network community. This community-level mutualism is both self-maintaining and self-enforcing. *See* Ranjay Gulati, *Does Familiarity Breed Trust? The Implications of Repeated Ties for Contractual Choice in Alliances*, 38 ACAD. MGMT. J. 85, 91–93 (1995) (analyzing data concerning industrial alliances and concluding that the existence of trust stemming from prior interactions affects the chosen contractual form).

[52] *See generally* William G. Ouchi & Michelle K. Bolton, *The Logic of Joint Research and Development*, 30 CAL. MGMT. REV. 9 (1988).

[53] *See* Joel M. Podolny & Karen L. Page, *Network Forms of Organization*, 24 ANN. REV. SOC. 57, 71 (1998) ("Journalistic and management sources are essentially unanimous in the conclusion that an extremely large proportion of at least one common type of network organization—strategic alliances—result in failure."). To be sure, even absent moral hazard and other incentive problems, we would not expect all strategic alliance networks to succeed. They are capital investments, which, like others, sometimes will fail and sometimes will succeed.

competencies and character of potential partners.[54] In this setting, a potential partner may either limit its contribution to the network or, in the alternative, behave opportunistically by taking advantage of its network position to exploit resources or information gained from others. Moreover, as noted above, in the case of clusters, the inability of network members to agree on sharing rules impairs the ability to attract founding members or new entrants whose costs of entry may exceed their private benefits.

C. Four Exemplars of Externalities in Spiderless Networks

In this section, we describe four exemplars of how network benefits are disproportionately distributed among spiderless network members. In each case, there is an asymmetry of costs and benefits that can threaten network formation and duration.

1. Magnet Firms and Late Arrivals

As we noted above, the industrial district cluster is an example of a spiderless network that forms organically as a function of the synergies from agglomeration.[55] The industrial cluster is similar to, but not the same as, the alliance network. It is similar in the sense that the network creates benefits from agglomeration that are more than simply the sum of all its participants' actions. An asymmetry of network costs and benefits can result, however, as a byproduct of the relatively greater importance of magnet enterprises. While the magnet firm externalizes substantial benefits on other network members, it receives fewer benefits from them. If the asymmetry is sufficiently large, the magnet would not move to, or act to create, the industrial district even when it would be socially desirable. If the private benefits the firm expects to derive from its relocation are less than private costs, the network won't form even though the total social benefits—including the positive externalities conferred upon others—are greater than the magnet's private costs.

Assuming that magnet enterprises fortuitously are already located in the putative industrial district, the agglomeration process can proceed organically, but further problems arise as relocation costs—such as land values and labor costs—rise over time such that later arrivals face higher participation costs than earlier arrivals. In this case, as we indicate in Part III, the mobility

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[54] The reputation sharing process at the heart of a network deteriorates with distance. *See* AVINASH K. DIXIT, LAWLESSNESS AND ECONOMICS: ALTERNATIVE MODES OF GOVERNANCE (2011); *see also* Yves L. Doz, *The Evolution of Cooperation in Strategic Alliances: Initial Conditions or Learning Processes?*, 17 STRATEGIC MGMT. J. 55, 68 (1996); Bruce Kogut, *A Study of the Life Cycle of Joint Ventures*, 28 MGMT. INT'L REV. 39, 49 (1988).

[55] To be sure, some industrial districts are formed by state subsidies and thus are formed around spiders, but our concern remains those that can form organically.

of skilled labor among network firms is an important value as it increases social capital and indirectly redistributes network benefits.

The most salient American example of a cluster with these properties that nonetheless may be vulnerable to disruption is the Silicon Valley network that emerged in the 1990s around several successful computer technology-related firms and Stanford University in California. These magnet entities motivated startup enterprises to locate in Silicon Valley.[56] In turn, the surge in the number of Silicon Valley startups induced a number of venture capital firms either to relocate to Menlo Park and its environs or to expand their Silicon Valley offices. This, in turn, encouraged more entrepreneurs to locate their startups there. Ultimately, venture capitalists, dot-com startups, and other R&D entities clustered in and around the geographical area. This clustering produced a parallel effect in the labor market as engineers, scientists, and software designers moved to the area in search of better job opportunities. This skilled labor was highly mobile, and, as it moved among firms, social capital increased in the cluster. In turn, this concentration of technically skilled labor increased the incentive for new startup enterprises to locate in a region where there was an ample supply of skilled labor.

But the formation of a cluster network is dynamic and vulnerable to exogenous shock. In the case of Silicon Valley, for example, the increase in the cluster of business and labor has fueled a dramatic increase in residential and commercial real estate costs, as well as deterioration in ancillary services owing to rapid growth.[57] This has led a number of firms to move to alternative locations such as Austin, Texas and Raleigh-Durham, North Carolina.[58] To be sure, these changes don't necessarily doom the Silicon Valley cluster. But they do imply that the cluster will not function as efficiently as it might have if the network had a mechanism to redistribute costs and benefits more efficiently. In short, to sustain cluster performance in the longer term, clusters need to manage network openness to business outside the cluster while facilitating strong inter-organizational relationships within the cluster.[59]

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[56] For a time, the Silicon Valley cluster was in competition with the cluster that was forming around Route 128 in Boston, Massachusetts. The Route 128 cluster withered, in large part, because the mobility of scientific talent was impeded by the enforceability of covenants not to compete in Massachusetts. Non-compete agreements are generally unenforceable in California. Gilson, *supra* note 31, at 578.

[57] *See* Nitin Dahad, *As Technology Booms, U.S. Startups Are Driven Beyond Silicon Valley*, THE NEXT SILICON VALLEY (Nov. 23, 2015), http://www.thenextsiliconvalley.com/2015/11/23/3885-us-startups-are-driven-beyond-silicon-valley/ (discussing the side effect of rapid growth in technological clusters).

[58] *Id.*

[59] *See* Andreas B. *Eisingerich & Leslie Boehm,* Group Analysis: Why Some Regional Clusters Work Better Than Others, WALL ST. J. (Sep. 15, 2007) https://www.wsj.com/articles/SB118841858437012520?mg=prod/accounts-wsj (discussing three factors that are especially powerful in determining a cluster's competitiveness and growth potential).

2. *Free Riding on Indirect Ties*

A firm can also benefit differentially from participation in a strategic alliance network to the extent that it can exploit knowledge gained indirectly from other network members that are not alliance partners. A simple example illustrates the point: Imagine that Firm A has an alliance with Firm B that, in turn, has an alliance with Firm C. In the course of the B-C alliance, C obtains private information attributable to A that C can exploit elsewhere by transferring that knowledge to other business projects within the firm that are not directly related to the alliance with B. The resulting private benefits are those that C can earn unilaterally to the extent that it has the capacity in other projects to realize the benefit. The successful exploitation of Firm A's private information is thus a function of the degree to which Firm C's scope of resources and activities are related to the activities of Firm A.

The alliance between Apple and Sony to assemble Apple's successful PowerBook line of portable computers provides a useful case study of how private benefits are exploited through indirect acquisition of knowledge.[60] The Apple-Sony alliance linked Apple's capability in designing easy-to-use computer products with Sony's miniaturization capabilities. Apple's expertise in producing the laptop computer was developed, in turn, through contractual alliances with other strategic partners, including IBM.[61] Although both Apple and Sony benefitted from the success of the PowerBook, Sony ultimately realized greater private benefits due to synergies between its consumer electronics business and its growing computer business.[62] Sony used the alliance with Apple, including knowledge developed by IBM (and later transferred to Apple), to learn how to design and manufacture laptop computers as well as allied consumer electronics. While Apple earned private benefits from its alliance with Sony, none of those benefits accrued to its other strategic partners, including IBM. In this way, Sony was able to free ride on the *network benefits* that IBM had generated in its alliance with Apple. These indirect and extra-contractual transfers of private information are positive externalities common to strategic alliance networks, but if benefit-

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[60] *See generally* Brenton R. Schlender, *Apple's Japanese Ally: Its New Notebook Computer —Made by Sony—Shows Why Alliances Are Hot in the PC Business*, FORTUNE MAGAZINE (Nov. 4, 1991), http://archive.fortune.com/magazines/fortune/fortune_archive/1991/11/04/75695/index.htm.

[61] *See, e.g.*, BOS. GLOBE, *Important events in the saga of Apple Computer Inc.* (Jun. 8, 1997), http://www.boston.com/globe/business/packages/microsoft_apple/apple_chron.htm (presenting Apple's business history).

[62] Andrew C. Inkpen & Adva Dinur, *Knowledge Management Processes and International Joint Ventures*, *in* 9 ORG. SCI. 454, 455 (Aug. 1998) ("Sony . . . has formed various alliances with computer and telecommunications firms in an effort to forge new technology linkages for its consumer electronics products. The alliances give Sony access to a wealth of new knowledge."). Before its alliance with Apple, Sony had little experience in the computer industry. The firm used knowledge from the Apple-IBM alliance to launch its own popular line of laptop computers. *See* Dyer et al., *supra* note 41, at 142.

ing firms are able to free ride on this knowledge, network value will decline and network performance and durability will be impaired.

3. Exploiting "Structural Holes"

Firms that are strategically embedded in alliance networks can capture a disproportionate share of the network's benefits by exploiting their position in the network. Specifically, some firms are able to bridge gaps, known as "structural holes," in the network by brokering relationships with other parties who are not directly connected to each other. Firms that occupy a positional monopoly in networks with many structural holes can exert control over information flows and thereby extract monopoly rents from alliance partners. These firms not only share in the common benefits generated with their alliance partners but also extract private benefits—access to information or resources—that are a function of their controlling position in the network.

The ability to exploit a positional monopoly in the network is well illustrated by the Tata Group, the largest business group in India.[63] Tata operates in a number of different industries, including steel, automobiles, hotels, and information technology. The Tata Group, as India's largest IT firm, has many alliances with foreign firms wishing to do business in India.[64] There are also many smaller Indian firms with strong capabilities in IT, especially in software development.[65] But these smaller firms, lacking Tata's size and long-term presence in the market, are not able to form alliances directly with foreign entities.[66] Tata's alliances with foreign firms provide privileged access to information about positive value projects, product specifications and pricing, and new developments in relevant technologies. To be sure, some portion of Tata's ability to extract more favorable terms in its alliance contracts with the smaller Indian firms is a return on its investment in reputation. Lending that reputation to the Indian startups justifies a market return. However, the private benefits of control it enjoys by bridging this gap also permits Tata to extract monopoly rents from its smaller Indian partners when together they form alliances to service the needs of large foreign customers. In essence, the monopoly rents take the form of free riding on a portion of the network benefits contributed by the smaller Indian firms.[67] One consequence of this imbalance in the distribution of network benefits may be

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[63] *See generally* WIKIPEDIA, *List of entities associated with Tata Group* (as of Sep. 26, 2015, 9:59 PM), https://en.wikipedia.org/w/index.php?title=list_of_entities_associated_with_Tata_Group&oldid=682908511.

[64] *See, e.g.*, TATA, *Tata Strategic Management Group enters into an alliance with Roland Berger Strategy Consultants*, (Feb. 11, 2009), http://www.tata.com/company/releasesinside/sXzPuLZHI!$$$$!E=/TLYVr3YPkMU=.

[65] *See, e.g.*, WIKIPEDIA, *List of Indian IT companies*, (as of Dec. 5, 2015, 8:46 PM), https://en.wikipedia.org/w/index.php?title=list_of_Indian_IT_companies&oldid=693914671.

[66] Dyer et al., *supra* note 42, at 143–44.

[67] *Id.*

found in the evidence that many of these international strategic alliance networks are fragile and prone to disintegration.[68]

4. Exploiting Informational Synergies

We noted above that networks generate informational value that is independent of the value produced in any individual alliance dyad. Informational synergies develop from the ability of firms to acquire different sources of private information from many different alliance partners. Thus, a firm in an alliance network that occupies a central position with many network partners can use the diverse sources of information gathered from each alliance to make better-informed investment decisions going forward. The capabilities developed by a centrally positioned firm as a result of knowledge gained from the *network of alliances* are private benefits that are only indirectly related to any particular alliance relationship. These private benefits will not be available to alliance partners with only a small number of relationships. Assuming each party in the network expends an equivalent cost in the information revelation that contributes to the network's information-rich environment, some firms are capturing a disproportionate share of the benefits, merely as a function of their position in the network. This asymmetry of costs and benefits is yet another way that network externalities can threaten network durability.

Microsoft is an example of a firm that has a large number of alliance ties with various technology firms and, as a consequence of its size and financial resources, occupies a central position in the computing industry alliance network.[69] Microsoft's central position in its alliance network gives it access to more and better information than its alliance partners. The resulting synergies position Microsoft to better determine what positive- value projects it should pursue in the future. Dyer, Singh, and Kale report that interviews with Microsoft's alliance partners reveal dissatisfaction with the asymmetric distribution of network benefits: Microsoft is viewed as a fairly undesirable alliance partner in terms of generating reciprocal benefits in an alliance.[70] One explanation for the negative reaction of other network members to their association with Microsoft is the realization that Microsoft is able to exploit its central position in the network to accumulate uncompensated benefits in excess of its contribution to the network.

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[68] *See supra* text accompanying notes ????–47.

[69] *See* YVES DOZ & GARY HAMEL, ALLIANCE ADVANTAGE: THE ART OF CREATING VALUE THROUGH PARTNERING 233 (Harv. Bus. Press 1998) (claiming "Microsoft has been able to enroll nearly the entire information technology industry in its alliance network"); *see also* David Kirkpatrick, *These Days Everybody Needs a Microsoft Strategy*, FORTUNE MAGAZINE (Jan. 12, 1998), http://archive.fortune.com/magazines/fortune/fortune_archive/1998/01/12/236432/index.htm (discussing businesses' necessity in forming strategic partnerships with Microsoft).

[70] Dyer et al., *supra* note 42, at 145.

5. *The Effects of Externalities on Network Performance and Longevity*

The preceding exemplars illustrate the differences between clusters and strategic alliance networks, and the differences affect the performance and longevity of the two types of networks in different ways. In clusters, formation and stabilization of the industrial district require mechanisms to motivate magnet firms to locate within the cluster and to ensure that late arrivals that face higher costs can receive compensating benefits. In this way, the common benefits created by the cluster are redistributed with the goal of allocating the network surplus in proportion to members' benefits conferred and costs incurred. In alliance networks, firms form dyads that produce private alliance benefits that are shared contractually while some—few—firms are able to capture a disproportionate share of the network's common value. A given firm's calculus whether to participate in maintaining the network is thus a function of its costs, including opportunity costs, and the combination of network and private or contractual benefits it receives. As a generalization, networks that generate both high network benefits and high private benefits for the firms in the network will produce the most durable alliances and thus increase the efficiency and longevity of the network. Alternatively, networks in which many firms experience low network benefits and low private benefits relative to a few embedded firms would be the least stable.[71]

To the extent that the four exemplars of network externalities described above illustrate a general phenomenon, the question with which we began then becomes salient: Can legal remedies that facilitate internalization be adapted to an environment in which high measurement and litigation costs are likely to impede firms seeking to redistribute network value?

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What should courts do when asked to consider legal claims for exploitation of network value or free riding on network information? We answer that question in two stages. In Part II, we develop a model that shows how restitution can in theory be used to support a reciprocity equilibrium in spiderless networks by authorizing the recovery of uncompensated benefits given to others. We turn, then, in Part III to consider how a narrowly circumscribed right of restitution would apply to the four exemplars described

[71] Intermediate combinations of network and private benefits are more difficult to evaluate. It might be the case that alliance networks characterized by low network benefits and high private benefits for most alliance members could still be reasonably stable. For example, Wal-Mart's alliances with many retailers permit it to exercise its control and central position in the network to extract a larger share of the network value as private benefits. Nevertheless, its partners may be content to accept the high private benefits generated by the alliance even if their network benefits are low. *See* Dyer et al., *supra* note 42, at 146.

above and evaluate objections to extending restitution remedies to these network contexts.

II. Restitution Theory and Spiderless Networks

In this Part, we address the question whether legal enforcement can supplement relational norms and efficiently constrain the self-interested actions that otherwise undermine the formation and operation of spiderless networks. Using the reciprocity equilibrium as a baseline, we develop an informal model that specifies rights of restitution for network members. The model is based on two central tenets of restitution law. The first tenet is that a party who voluntarily confers benefits on others can, under specified conditions, recover the value of those benefits from the beneficiaries. The second tenet is that a party who takes value belonging to others without reciprocating in kind must pay for the benefits she received. Here we extend those two tenets beyond their current application under prevailing law, and show how they could function in spiderless networks. Part III then applies the model to the set of paradigmatic cases described above where moral hazard and free riding risks hinder the formation and operation of efficient networks.

A. Liability for Unrequested Benefits

1. Prevailing Law

When a benefactor voluntarily confers benefits upon recipients, the law generally does not impose a duty of restitution on the recipient. This rule has certain exceptions,[72] however, and the common fund cases are the most relevant to our analysis. "Common funds" are monies obtained through legal proceedings initiated by one party against which others are entitled to assert claims.[73] Under certain conditions, the initiator of the legal proceedings is entitled to collect from the other fund recipients their relative shares in the expenses he incurred in the process, even if they refused to back his efforts at the outset.[74] An illustration is the case of an heir who initiates legal pro-

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[72] *See* Restatement (Third) of Restitution & Unjust Enrichment § 30 cmt. a (Am. Law Inst. 2011) ("[T]he law of restitution for unrequested benefits, intentionally conferred, combines a broadly negative proposition with a series of exceptions.").

[73] For common fund cases, see John P. Dawson, *Lawyers and Involuntary Clients in Public Interest Litigation*, 88 Harv. L. Rev. 849 (1975); John P. Dawson, *Lawyers and Involuntary Clients: Attorney Fees from Funds*, 87 Harv. L. Rev. 1597 (1974); and Saul Levmore, *Explaining Restitution*, 71 Va. L. Rev. 65, 95–99 (1985).

[74] Restatement (Third) of Restitution & Unjust Enrichment § 30(2)(b) allows recovery in cases where "the recipient obtains a benefit in money," thereby substantially broadening the common funds category of cases. *See supra* note 72. Section 29 sets out specific conditions under which "a person who has incurred expenses or rendered services to preserve or create a 'fund' in which others are interested may require the others—in the absence of contract—to contribute ratably to the cost of securing the common benefit." *Id.*

ceedings resulting in an increase in the value of the estate to the benefit of the other heirs.[75] Another relevant category of cases encompasses those instances in which one party protects or preserves an interest he shares with another party, thereby benefiting the latter, without her prior consent to pay for this benefit.[76] A common example is a co-owner of property who incurs expenses to maintain or protect the property, thereby benefiting the other co-owners.[77] Here, the co-owner who bears the costs can recover from the others in the amount of their relative shares.[78]

Several other categories of cases when restitution remedies are granted for conferral of unrequested benefits offer further support for the general principal that actions which preserve another's economic interest can trigger a right to restitution even in the absence of a prior understanding.[79] To be sure, in each of these cases, reaching an agreement prior to the conferral of the benefit was infeasible or impractical, the benefactor was pursuing his own interests while the benefit to the other party was incidental, and the benefactor protected or preserved existing entitlements and did not create new ones.[80]

2. *Private Production of Public Goods*

A principal application of an expanded duty of restitution is the private production of public goods when, absent legal intervention, free riding and other transaction costs bar their production. Assume, for example, a benefac-

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[75] For examples of suits brought by an heir against his or her co-heirs, see *id.* § 29 cmt. g, illus. 23–25; 2 GEORGE E. PALMER, THE LAW OF RESTITUTION § 10.7 (1978).

[76] *See supra* note 72 §§ 26–29; *see also* HANOCH DAGAN, THE LAW AND ETHICS OF RESTITUTION 125–26 (2004) (presenting exceptional cases in which the Second Restatement does allow restitution for unrequested benefits); Levmore, *supra* note 73, at 65–68 (same).

[77] *E.g.*, 2 PALMER, *supra* note 75, § 10.7(c); Daniel Friedmann, *Unjust Enrichment, Pursuance of Self-Interest, and the Limits of Free Riding*, 36 LOY. L.A. L. REV. 831, 855–58 (2003).

[78] *See, e.g.*, United Carolina Bank v. Caroprop, Ltd., 446 S.E.2d 415, 416–17 (S.C. 1994) (holding that when one cotenant stops paying his share of taxes and mortgage payments, other cotenants may pay his share and recover from him).

[79] Rescue cases are another category of cases where recovery for unrequested benefits may be granted. *See supra* note 72, §§ 20–21; 2 PALMER, *supra* note 75, § 10.4. *See generally* Hanoch Dagan, *In Defense of the Good Samaritan*, 97 MICH. L. REV. 1152 (1999) (analyzing rescue cases and supporting a broad duty of restitution). These are instances where the benefactor has acted to protect the recipient's life, health, property, or other economic interest when the latter's consent could not be obtained due to the emergency nature of the circumstances. Under certain conditions, the law allows the benefactor to recover a reasonable charge for his beneficial actions. For other categories, see Ariel Porat, *Private Production of Public Good: Liability for Unrequested Benefits*, 108 MICH. L. REV. 189, 195–98 (2009).

[80] Limiting the restitution duty to those circumstances where high transaction costs render a prior agreement implausible is quite obviously designed to encourage consensual agreements. The rationales for the second and third conditions are less obvious. Requiring the benefactor to be motivated by his own interests and only incidentally intent on conferring benefits to others prevents the emergence of an extensive practice of sellers providing benefits through avenues other than market transactions, while requiring the protection and preservation of existing entitlements reflects the law's preference for maintaining the status quo over a broader principle of maximizing welfare. *See* Porat, *supra* note 79, at 197–98.

tor considers constructing a park on her land that will increase the market value of neighboring homes: the costs to the benefactor in creating the park are higher than her private benefits, but lower than the common benefits shared by her neighbors. The resulting benefits are a public good: no one can prevent the beneficiaries from enjoying the benefits of the park's environment once it is created.[81] But since each beneficiary knows that the creation of the public good does not depend on his decision to share in the costs of production, no one is motivated to share in the costs, and, as a consequence, the economically beneficial park may not be created. A properly designed restitution remedy can ameliorate this inefficiency, however. Here, the goal of reducing enforcement costs, and in particular the risk of overvaluation, argues for the recovery to be limited to the lower of two measures: either the verifiable benefit gained by the beneficiaries or their relative share of the reasonable costs of producing the benefit.[82] By allowing the benefactor to recoup a portion of his costs from the beneficiaries in cases where the costs of evaluation are tractable and market mechanisms or governmental intervention are not available, the law can motivate the benefactor to act unilaterally and create the public good to the benefit of all.[83]

If the duty of restitution were expanded as suggested above, it would also be applicable to spiderless networks. Forming a spiderless network, and providing collective benefits through it, is often the production of a public good. As with other public goods, it is susceptible to free riding that risks the formation and operation of the network. These risks cannot readily be overcome in spiderless networks through conventional contractual solutions. Thus, as we explain in the following sections, high transaction costs in the formation of strategic alliances and other spiderless networks satisfy the main condition for imposing a duty of restitution.

B. Liability for Ill-Gotten Benefits

The most developed part of the law of restitution and unjust enrichment not only obliges wrongdoers to compensate victims for harms they suffered, but also to disgorge to them the gains received at their expense.[84] Tradition-

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[81] Pure public goods are characterized by the inability to exclude people from consuming them ("non-excludability") and by the inability of one person's consumption to detract from or prevent another person's consumption ("non-rivalry"). *See* JOSEPH E. STIGLITZ, ECONOMICS OF THE PUBLIC SECTOR 128–29 (3d ed. 2000). Whether the park is a pure public good or just satisfies the non-excludability criterion is not relevant for our discussion.

[82] There are several ways to reduce enforcement costs, including voting and licensing. In addition, when the benefit is an increase in the market value of the beneficiaries' property, a lien can be imposed on the property on behalf of the benefactor. Third party specialists could purchase the lien for an immediate cash payment to the benefactor. *See* Porat, *supra* note 79, at 212.

[83] For a detailed discussion of the conditions for expanding the duty of restitution to unrequested benefits cases, see *id.* at 194.

[84] *See generally supra* note 72, §§ 40–46 (Restitution for Wrongs); 1 PALMER, *supra* note 75, §§ 2.1–2.20 (discussing acquisition of a benefit through a wrongful act).

ally, disgorgement is granted for intentional wrongs, such as trespass on land.[85] Suits for disgorgement of gains are also common in trademark and copyright infringement cases; infringing trademarks thus risks liability based on the infringer's ill-gotten gains rather than the harm suffered.[86] Disgorgement of gains is commonly awarded when one party makes use of another's property without his consent. If the action were done with the other party's consent, restitution law typically would not apply, since the transaction would be considered consensual and governed by contract law. But under certain circumstances, a party who begins performance of an illegal[87] or other unenforceable agreement[88] is entitled to recover the benefits gained by the counterparty[89] (and in some other cases to recover for her reliance losses[90]). In yet other cases, courts award quantum meruit, based either on an implicit contract or unjust enrichment, when parties fail to agree on the fee

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[85] *See supra* note 72, § 40 ("A person who obtains a benefit by an act of trespass or conversion, by comparable interference with other protected interests in tangible property, or in consequence of such an act by another, is liable in restitution to the victim of the wrong."); Edwards v. Lee's Adm'r, 96 S.W.2d 1028 (Ky. 1936) (awarding disgorgement of profits for commercial use of a cave extending under defendant's property); *see also* Olwell v. Nye & Nissen Co., 173 P.2d 652 (Wash. 1946) (finding the wrongful user of an egg washing machine liable to its owner for benefits derived from said usage). For an argument for disgorging gains in accident cases, see Robert Cooter & Ariel Porat, *Disgorgement Damages for Accidents*, 44 J. LEGAL STUD. 249 (2015).

[86] *See supra* note 72, § 42 ("A person who obtains a benefit by misappropriation or infringement of another's legally protected rights in any idea, expression, information, image, or designation is liable in restitution to the holder of such rights."); *see, e.g.*, Maier Brewing Co. v. Fleischmann Distilling Corp., 390 F.2d 117 (9th Cir. 1968) (ordering the disgorgement of profits accrued from the sale of beer under the plaintiff's trade name).

[87] *See supra* note 72, § 32 ("A person who renders performance under an agreement that is illegal or otherwise unenforceable for reasons of public policy may obtain restitution from the recipient in accordance with the following rules . . . ."); *see, e.g.*, Cohen v. Radio-Electronics Officers Union, 679 A.2d 1188 (N.J. 1996) (awarding an attorney quantum meruit fee for services rendered under a contract unenforceable for reasons of public policy). *See generally* John W. Wade, *Restitution of Benefits Acquired Through Illegal Transactions*, 95 U. PA. L. REV. 261 (1947) (surveying exceptions to the maxim that a plaintiff has no standing in court to seek restitution in connection with an illegal transaction).

[88] *See supra* note 72, § 31 ("A person who renders performance under an agreement that cannot be enforced against the recipient by reason of . . . indefiniteness . . . has a claim in restitution against the recipient as necessary to prevent unjust enrichment."); *see, e.g.*, Montanaro Bros. Builders, Inc. v. Snow, 460 A.2d 1297 (Conn. 1983) (remanding a case for consideration of the extent to which landowners had been enriched by receiving the purchasers' payments for an indefinite option agreement).

[89] *See supra* note 72, § 31 cmt. i ("Restitution by the rule of this section is measured by the value of the claimant's performance to the recipient."); *see, e.g.*, Dursteler v. Dursteler, 697 P.2d 1244, 1248 (Idaho Ct. App. 1985) ("Under the doctrine of unjust enrichment, parties to a contract that fails to materialize may be required to pay restitution for the value of benefits each has conferred and the other has unjustly retained.").

[90] *See, e.g.*, McCrowell v. Burson, 79 Va. 290 (1884) (allowing a plaintiff to recover for expenditures in preparing to perform an oral contract to build a house for the defendant when the defendant later refused to permit the plaintiff to undertake the actual work of construction); Abrams v. Financial Serv. Co., 374 P.2d 309, 311 (Utah Sup.Ct. 1962) ("[U]nder proper circumstances a vendor or lessor may recover for work and material expended on his own property in reliance on a void or unenforceable contract for its sale or rental.").

for specified personal services.[91] Thus, restitution law sometimes applies as well to incomplete consensual transactions and fills in gaps that the parties left unattended.

The potential application of disgorgement doctrine to spiderless networks is straightforward. To see why, imagine that under certain conditions the law recognized members' property rights in a network,[92] so that a new participant could share in network benefits only upon paying a fee based on the expected benefits she receives and confers. Now assume that advance permission for sharing the network's benefits is not feasible because the benefit the new participant will receive or confer is uncertain, or negotiation costs are prohibitively high. Under these circumstances, the best analogy is the restitution cases discussed above where one party has received benefits from another in an unenforceable agreement.[93] By analogy, the network members could be seen as having implicitly agreed that the new member could join the network for a fee proportionate to the expected benefits she receives and confers, but because of high transaction costs, have failed to agree on its amount in a fully binding contract. As in the cases of unenforceable agreements discussed above, here also restitution law could fill the gap and allow network participants to recover from the new member an amount sufficient to prevent unjust enrichment.[94]

C. A Restitution Model

The discussion thus far shows that spiderless networks have three central features relevant to restitution law: first, parties confer benefits on others without their consent; second, parties often "take" benefits from others without their consent; and third, consent cannot be achieved in both cases due to high transaction costs.

We now develop an informal model to show how the principles of restitution law outlined above can be extended and applied to support the formation and operation of strategic alliances and other spiderless networks. To

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[91] *See supra* note 72, § 31 cmt. e ("The measure of recovery in quantum meruit—whether explained in terms of implied contract, unjust enrichment, or both—is the reasonable value of the plaintiff's services."); *see also* Paffhausen v. Balano, 708 A.2d 269, 273 (Me. 1998) (ruling that a carpenter who had received permission to renovate a building from its owner without properly agreeing on a fee is entitled to recover for the reasonable value of labor and materials).

[92] Would the law allow network members any protection from third parties who injure the network? That might also depend on the status of the network as creating IP-like rights, although for such protection, much less than a property right is needed. *Cf.* DAN B. DOBBS, PAUL T. HAYDEN & ELLEN M. BUBLICK, TORTS AND COMPENSATION: PERSONAL ACCOUNTABILITY AND SOCIAL RESPONSIBILITY FOR INJURY 1006–09 (7th ed. 2013) (discussing the liability for an intentional interference with prospective business opportunity).

[93] *See supra* notes 88–91 and accompanying text.

[94] As we explain in Part III, extending a disgorgement action to spiderless networks would require common law courts first to recognize an appropriately limited right of recovery and then to specify the proof conditions needed to overcome implementation concerns.

clarify the analysis, we begin with several strong assumptions: (a) courts can verify the costs and benefits of network participation and operation at reasonable cost, and (b) the introduction of legal remedies to support efficient networks complements the existing set of relational norms that maintain cooperation and coordination among network members. We develop our model by analyzing the most common circumstances when free riding and moral hazard costs prevent efficient formation and operation of networks.

1. Case 1: Unilateral Creation of Benefits with Passive Beneficiaries

Let's start with the case of the industrial district cluster we discussed in Part I.[95] Imagine that when the owner of an enterprise that is a magnet for other firms ("the anchor") moves to the district, there are already a number of smaller firms operating in the region that would expect to derive substantial benefits from the presence of the anchor. Assume as well that there is a substantial asymmetry of benefits conferred on each party in the district: the anchor externalizes large benefits on the other firms, but receives few benefits—or none—from them. Consequently, if the private benefits the anchor expects to derive from relocation are less than its private costs, the anchor may not move to the industrial district even when the total social benefits—including the positive externalities conferred on the other firms—exceed the anchor's private costs.[96] To provide the anchor with efficient incentives to relocate its facilities to the industrial district, it must be able to recoup *at least* the difference between private costs and private benefits. A duty of restitution imposed on the existing firms thus solves the free riding problem that motivates the incumbent firms to decline to share in the costs of relocation.

Network value would be further enhanced if the anchor (who receives private benefits from the move) can recover from the incumbents *all* of its relocation costs, making it better off as compared to its prior location. From an efficiency perspective, the more benefits created by the network that are internalized by the anchor, the more efficient are its incentives. Full internal-

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[95] *See supra* Part I.A.2.

[96] Parchomovsky and Siegelman have similarly noted that anchor stores may refrain from moving to commercial districts due to their inability to internalize positive externalities. However, in contrast to our approach, they propose that cities use pubic law to create planned commercial districts, analogous to suburban malls, which would allow for the capture of positive externalities among commercial establishments. *See* Gideon Parchomovsky & Peter Siegelman, *Cities, Property, and Positive Externalities*, 54 WM. & MARY L. REV. 211 (2012); *see also* Lee Anne Fennell, *Agglomerama*, 2014 B.Y.U.L. REV. 1373 (2015) (criticizing Parchomovsky and Siegelman's suggested use of land use law and offering alternative propositions designed to optimize urban agglomerations). Fennell discusses the possibility raised by Porat, *supra* note 79, of applying restitution law between benefactors and beneficiaries, but deems it largely inapplicable, stating that "a more intricate system of payments for positive and negative externalities could be imagined, although finding a workable way to administer it would be highly challenging." *Agglomerama*, 2014 B.Y.U.L. REV. at 1406.

ization of *all* the benefits created by the anchor provides it with efficient incentives not only to relocate but also to operate within the network for the benefit of all members. Furthermore, with full internalization of the benefits, the benefactor would have efficient activity-level incentives, namely, to create the *potential* for the creation of the benefits in the first place.[97]

To illustrate the advantages of full internalization of benefits in this case, imagine that the anchor has to decide how to construct and operate its enterprise once it moves to the new location. With full internalization of benefits, the firm would take into account all the benefits, including those conferred on others, in making investment decisions.[98] However, if the anchor recovers all the benefits externalized to the incumbents, then they would not have efficient investment incentives. After all, their existence in the industrial district is a "but-for" cause of the creation of the positive externalities conferred upon them, and they also should invest under the assumption that they will recoup the benefits they have generated either actively or passively. Therefore, given the budget constraint that does not allow all parties who "cause" the benefits to fully internalize them, the passive enterprises properly should retain some of the benefits conferred by the anchor.[99]

2. *Case 2: Unilateral Creation of Benefits with Active Beneficiaries*

Let's consider a variation to Case 1 and assume that no firms exist in the geographic area, and that the owner of the anchor enterprise is expected to attract small firms to locate nearby and form an industrial district once the anchor relocates. We still assume that benefits are asymmetrical, namely, that the anchor creates much more benefit for others than they create for it.

The difference between Case 1 and Case 2 is that in Case 2, it is clear that the motivation for the smaller firms to join the network is the presence of the anchor. This difference has several implications. First, assuming there

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[97] A similar argument has been famously made in the context of tort law: a strict liability rule—or full internalization of harms—is a better mechanism than a negligence rule to motivate injurers to take efficient non-verifiable precautions and efficiently reduce their activity level. *See* Steven Shavell, *Strict Liability versus Negligence*, 9 J. LEGAL STUD. 1 (1980).

[98] For a similar argument in the context of shopping mall contracts, see Eric D. Gould et al., *Contracts, Externalities, and Incentives in Shopping Malls*, 87 REV. ECON. & STAT. 411, 419 (2005) (noting that "[e]xternalities are generated not only by the presence of certain stores, but also by the actions that stores take, such as advertising, maintaining cleanliness, courtesy, and product variety. . . . [T]he performance of all stores is affected by the ongoing efforts of the developer, such as maintaining the right mix of stores, renovations, parking, cleanliness, and marketing campaigns", and arguing that each actor should be provided with incentives to undertake the right amount of such activities).

[99] This is how shopping center contracts internalize externalities. The developer gives the anchor a portion of the externality created by the presence of the anchor, and then extracts participation from non-anchor tenants through their lease terms. A contemporary example is Amazon, which is itself a network, where the anchor tenant is paid by those who participate and get the benefit of the participants that Amazon has drawn to a common space. We return to this point in Part II.C.3, *infra*.

is a duty of restitution obliging the smaller firms to compensate the anchor for the benefits it confers, and assuming the amount of compensation is known before the smaller firms relocate, the smaller firms cannot claim that the duty of restitution makes them worse off. By choosing to relocate, they have demonstrated that paying compensation in return for securing the benefits of membership in the industrial district makes them better off in expectation. This argument does not apply in Case 1, where the smaller firms' presence in the area implies nothing as to the amount of benefits they have received from the anchor.

Second, a general objection to imposing liability for unrequested benefits is that it infringes on the beneficiaries' autonomy: they are obliged to pay for benefits that they have not agreed to purchase.[100] Although there are several responses to this objection, they do not apply to Case 2. By participating in the network knowing that they are subject to a duty of restitution, the smaller firms exhibit their willingness to receive the benefits of the network and bear some of its costs.[101] Third, in Case 2, more than in Case 1, network success depends on allocating sufficient benefits to the smaller firms to induce them to join the network. Since participating in the network is costly for the smaller firms, they might decline to relocate unless they can capture at least part of the benefits from participation in the industrial district—at a minimum, they would require an amount sufficient to cover their relocation costs.

3. Case 3: Multilateral Creation of Benefits

In Case 3, all members in a strategic alliance network confer benefits on each other and the question is how to provide all members with efficient incentives to participate in the network and function optimally in interactions with other members. In the self-organizing setting of the strategic alliance network, formation and maintenance often are not important until the network matures.[102] As this process continues, some firms are more successful than others—there are winners and losers—and the winners may then have a perverse incentive to exploit less successful firms and capture a greater part of the externalities. In pursuing their own interests, successful firms may not externalize sufficient benefits to the other members to make it worthwhile for the latter to remain in the network. These self-interested ac-

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[100] *See* Porat, *supra* note 79, at 215–17; Friedmann, *supra* note 77, at 846–47; Scott Hershowitz, *Two Models of Tort (and Takings)*, 92 VA. L. REV. 1147, 1168 (2006).

[101] As noted above in Part II.B, joining an existing network might be considered analogous to using someone's property following his consent but without agreeing on the amount of the fee to be paid. This analogy will apply if the law recognizes a quasi-property right of members in their networks. However, the argument is hardly relevant here where firms merely located their facilities next to a cluster of enterprises on land they purchased or leased.

[102] But in many circumstances even the decision to participate in a network entails costs, as it requires firms to relocate as a precondition for participation. This is particularly true in the case of clusters.

tions will cause the network to fail unless the firms that have survived are also motivated to "build" or "maintain" the network and operate efficiently within it. To be sure, under some circumstances, permitting each member simply to retain the benefits that are externalized by others without being compensated for the benefits it externalizes will create efficient incentives to participate in maintaining the network. For example, if there are six firms in the network, and each confers 5 units of network value[103] on others, receives 5 units of value in return and incurs participation costs of 3 units, each one would have efficient incentives to participate in the network and legal intervention would be unnecessary.[104]

Things become more complicated, however, when (as is more likely) some members' costs of participating in the network, including the opportunity costs of not excluding less successful parties, are greater than the benefits they receive, but less than the sum of the benefits they confer and receive. To illustrate, assume that some firms confer 5 units of value on others, receive benefits of 5 units from others, and bear 7 units of costs to participate in the network. Although these firms create a net benefit of 3 units, they would not be motivated to participate in the network.

In the case just described, each firm's contribution to the network is independent (Case 3.1), but in some cases, the contributions to network functioning are complements: the contribution of all or some parties in participating and maintaining the network is greater than the sum of the individual contributions of each one (Case 3.2). In yet other cases, the contributions of network members are substitutes: only one party needs to expend costs to maintain the network, and once the network functions all parties can freely share the resulting benefits (Case 3.3).

Let's start with Case 3.3 where the contributions are substitutes. Here the typical free riding problem arises: no single firm is motivated to cooperate in ways that help to maintain the network, hoping that others will do so. The problem would be acute if the costs of maintaining the network are greater than any individual firm's private benefit. In such a case, no one has an interest in maintaining the network unless compensated by others. Every potential network member would instead be motivated to free ride, hoping that others would compensate the first mover. A duty of restitution provides a solution here as in Cases 1 and 2: the firm that acts to stabilize the network would be awarded restitution for creating a public good that benefits all participants.[105]

One difference between Case 3.3 and Cases 1 and 2 is that in those latter cases it was clear the magnet firm should be incentivized to form the network. In contrast, in Case 3.3, any firm that actually acts to maintain the

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[103] We assume a "unit" is a universal measure of both network benefits and costs.

[104] We ignore for the moment activity-level effects and incentives to efficiently operate within the network once it is formed. *See supra* Part II.C.1.

[105] *See supra* Parts II.C.1, II.C.2.

network receives compensation. Another difference between the cases is the amount of compensation for the party who acts to maintain the network. Since by assumption any of the potential participants can expend costs to maintain the network in Case 3.3, network benefits are enhanced if compensation is designed to motivate action by the most efficient party. Thus, if efficient network maintenance costs 5 units, the member who maintains the network should receive 5 units in restitution (minus its relative share in the costs as a member of the network) regardless of actual costs.[106] In contrast to Cases 1 and 2, there is no reason in Case 3.3 to award damages greater than reasonable (that is, efficient) costs to the firm that maintains the network (minus its relative share in those costs), since those costs are the best measure of the benefits all participating firms have received, given the alternative ways to maintain the network.[107]

Cases 3.1 and 3.2 are more complicated. Ideally, each firm should internalize all the benefits it creates. With full internalization all firms will make efficient investment decisions whether to participate and how best to operate in the network, and their activity levels also will be efficient.[108] However, absent a state decision to subsidize all parties that create positive externalities, full internalization is impossible.[109] The second best solution is for each firm whose costs are higher than the benefits it receives from the network ("losing firm") to recover from other participants ("winning firms") the lesser of (a) the difference between the losing firm's reasonable costs of participating in the network (C_r) and the benefits it received (B_{in}), or (b) the benefits the losing firm confers on other members (B_{ex}). Thus, in our example, where each losing firm reasonably spent 7 units participating in the network, received a benefit of 5 units and conferred a benefit of 5 units, any losing firm would be entitled to reimbursement of at least 2 units from the winning firms. Encouraging the losing firm to participate in the network, however, also requires a modest premium above C_r-B_{in}: otherwise the firm would be indifferent between participation and non-participation.

Interestingly, in cases where there is an upper limit on network membership, and when C_r-$B_{in} < B_{ex}$ (as in our previous numerical example), C_r-B_{in}, rather than B_{ex}, is the best way to measure the benefit the losing firm conferred upon others. To understand why, assume that there are many po-

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[106] We assume that all networks yield the same benefits once formed and stabilized. Otherwise, compensation would need to be adapted to account also for subsequent deficiencies in the operation of the network.

[107] One could also imagine that with Cases 1 and 2 that there was competition over which magnet enterprise would relocate its business operations to the proposed cluster, and if the firm that actually relocated had not done so, other magnet enterprises would have acted to relocate. In such case, the benefits to other firms might be the costs of relocation rather than the positive externalities they can capture.

[108] *But see* Part II.B.

[109] Full subsidies to all participants would provide them with efficient incentives assuming they do not collude; indeed, with such subsidies firms do have strong incentives to collude and create excessive benefits.

tential losing firms with the same expected participation costs and benefits that compete in maintaining the network and are motivated to participate if awarded slightly more than C_r-B_{in}. Under those circumstances, the minimum payment necessary to induce a losing firm to participate in the network adequately represents the benefit conferred upon members from the losing firm's participation.[110]

Damages in the amount of C_r-B_{in} is consistent with other solutions provided by restitution law for analogous cases. In most cases where the law allows benefactors to receive reimbursement for unrequested benefits, the measure of recovery is the reasonable (net) costs incurred rather than the benefits conferred, as long as the former is lower than the latter.[111] There are several justifications for limiting recovery to reasonable costs incurred, including the goal of avoiding the over-production of benefits due to over-evaluation[112] or analogous moral hazard risks.[113] But another plausible explanation is the one we have proposed here: when more than one person can serve as the benefactor, the benefit conferred by the benefactor is worth no more than the payment necessary to induce the next person in line to confer that same benefit.

4. Case 4: Increasing (or Decreasing) Costs of Joining the Network

Consider again the industrial district example we discussed in Case 1. Imagine that there are six potential firms in the network and each confers 5 units of value on the other firms and receives 5 units of value from the others. Here, however, the costs of joining the network increase as additional firms join the network (although six is the upper limit): the first mover's cost of participation is 2 units, the second firm's cost is 3 units, and so on. Thus, total expected costs are 27 units and total expected benefits are 30 units for a net benefit of 3 units. These increased costs could stem from a variety of sources. Initial infrastructure investments, such as real estate and labor costs, for example, may be less costly at the outset and increase as the cluster grows. Thus, firms joining the cluster later will face higher costs.[114]

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[110] *See supra* note 107 and accompanying text.

[111] *See* RESTATEMENT (SECOND) OF CONTRACTS § 371A (AM. LAW INST. 1981) (measuring restitution by "[t]he reasonable value to the other party of what he received in terms of what it would have cost him to obtain it from a person in the claimant's position"); SEE SUPRA note 72, § 49(2) ("Enrichment from a money payment is measured by the amount of the payment or the resulting increase in the defendant's net assets, whichever is less.").

[112] Levmore, *supra* note 73, at 69–72; Porat, *supra* note 79, at 209–10.

[113] *Cf.* William Landes & Richard Posner, *Salvors, Finders, Good Samaritans, and Other Rescuers: An Economic Study of Law and Altruism*, 7 J. LEGAL STUD. 83, 91–93 (1978) (arguing that prizes for rescue might encourage excessive investments in rescue operations); Saul Levmore, *Waiting for Rescue: An Essay on the Evolution and Incentive Structure of the Law of Affirmative Obligations*, 72 VA. L. REV. 879, 886–89 (1986) (arguing that prizes for rescue motivate potential rescuers to put potential rescuees under peril in order to rescue them and win the prize).

[114] *See, e.g.*, the discussion of the Silicon Valley cluster *infra* Part III.A. To be sure, as noted in the text, the reverse could also arise where costs of participation decrease over time.

Facilitating the formation of a network when costs of joining the network either increase or decrease over time requires that all participating firms receive a share in the network's surplus proportionate to the benefits they create for others and the costs they have incurred. Since, in our example, all member firms receive and confer the same benefits, sharing costs equally would be the optimal solution.[115] Otherwise, the network would fail to mature because later movers would abandon—or be excluded from—the cluster.

Alternatively, if the change in costs were reversed and early parties faced higher costs than later arrivals—for example, because of the greater risk of losing their initial investment if the network fails to function—the cluster might fail to form at all. In this case, even if the first mover's costs were lower than benefits, but still higher than the costs of the next firms to join the network, no firm would volunteer to be the first mover, hoping to free ride and reap more benefits from later participation. Only an equal sharing in costs—or even a bonus for the first firms to join—can solve this particular free riding problem.

5. Allocating the Network's Surplus

In all the cases discussed above, potential network members should be reimbursed by others in order to motivate them to participate in or maintain the network. The legal justification for reimbursement is the value to the network of approximating a reciprocity equilibrium: some members either conferred uncompensated benefits on others and should recover from them,[116] or instead took benefits from others and should pay for them.[117] The question that arises is what happens after each losing party is paid for the difference between her costs and benefits (C_r-B_{in}): How should the network surplus be allocated among the participating firms? Ideally, the law would provide more benefits to those firms that can either affect the level of positive externalities they create more than others or are more susceptible to activity level effects. But this capability or susceptibility is often impossible to identify, especially when creation of benefits is multilateral.

In the alternative, a reciprocity equilibrium can be maintained by allocating the network's surplus according to the net benefits received and benefits conferred. This is justified by fairness considerations (the more benefits you confer, the larger share of the surplus you get), but even more importantly, it functions better as a default rule for network members, encouraging

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For example, perhaps the risk to first movers is higher since there is some likelihood that the network will fail before its formation is stabilized.

[115] Although in our example, each firm receives and confers the same units of benefit, that does not imply that total benefits remain unchanged over time. For the cluster to succeed, total benefits should increase as costs increase.

[116] *See supra* Part II.A.1. (discussing the unrequested benefits cases).

[117] *See supra* Part II.B., at 25–26 (the disgorgement of gains cases).

them to regulate their network relationships through contract.[118] More specifically, when contributions are independent,[119] each member is entitled to half of the sum of the net benefits received and the benefits conferred.[120] This is a Nash bargaining solution, and as such it represents the most plausible division of the surplus the parties would have made if they could have reached an agreement.[121]

To illustrate this solution, assume there are six firms in the network, three firms each receive a net benefit of 1 unit of value and confer benefits of 5 units (A members), while the other three each receive a net benefit of 5 units and confer benefits of 1 unit (B members). The total benefit generated by the network is 18 units. Take the A members first: Each firm is entitled to 3 units (half of the sum of the net benefits received and the benefits conferred). Since A members already receive 1 unit, they should recover 2 units in restitution. Consider now the B members: Each firm is also entitled to 3 units. Since B members have received 5 units, they should pay 2 units to the A members. In this example, all network members will receive the same share of the gains from the network. Of course, this is not always so. Assume, for example, that one firm confers 18 units of benefit and receives nothing, another firm receives 10 units of benefit and confers nothing, and the four other firms receive 2 units of benefit each, and confer nothing. Here, the first firm is entitled to recover 9 units (5 from the firm that received 10 units, and 1 unit from each of the other four that received 2 units).

Note that network members sometimes should be denied any sharing in the surplus. Assume there is an upper bound on the size of the network and there are enough candidates who are willing to participate. In such a case, if existing members had not joined the network, someone else would have joined in their place. Assuming also that the court knows these facts, there is a good reason not to allow existing members to recover more than C_r-B_{in}: although their presence in the network would have created benefits, those

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[118] Contracting in this context includes the full array of controlling mechanisms, from creating master contracts to the bureaucratic structures common in co-ops and trade associations.

[119] *See supra* Part II.C.3., at 31 (Case 3.1).

[120] When contributions are complements, *see supra* Part II.C.3., at 31 (Case 3.2), the allocation would still be according to the net benefits received and benefits conferred but would leave each member less than half of the sum of the net benefits received and the benefits conferred. To see why, imagine a network of three members, creating together a total net benefit of 18 units, equally shared by them (that is, each receives a net benefit of 6 units). Let's assume now that each member's contribution is a "but for" cause of the entire benefits of 18 units (full complements). Obviously, a Nash bargaining solution would yield each member 6 units, as it naturally happens in our example. 6 units, of course, is less than half of the sum of benefits received (6 units) and conferred (12 units).

[121] Assuming similar utility functions, players in a Nash bargaining situation are expected to come to a resolution that splits the surplus evenly among them. Guillermo Owen, *Game Theory*, *in* 9 INT'L ENCYCLOPEDIA OF THE SOC. & BEHAV. SCI. 573, 578–80 (James D. Wright ed., 2d ed. 2015). The Nash bargaining solution is predicated upon four axioms. Assuming similar utility functions, the outcome which satisfies all axioms is one in which the parties divide the surplus evenly. *Id.* at 578.

benefits would have been created without them. Nonetheless, awarding them C_r-B_{in} is essential, since otherwise neither they nor their substitutes will participate in the network. Note, however, that when those members could affect the benefits conferred on others (namely, they are active rather than passive), leaving them with at least part of the network surplus might improve their incentives to maximize the surplus.

6. Negative Externalities

Networks can create negative externalities, side by side with positive externalities. Thus, in the case of a cluster of industrial firms, although many firms would receive benefits from the magnet firm, other firms in the area might suffer harms. One might imagine two types of harms that result from the development of an industrial district: (1) driving out the non-network businesses in the area, and (2) increasing the cost of entry to non-network firms that locate in or near the cluster. To properly motivate all parties, both positive and negative externalities should count. How should they count?

First, some or all network members might be required to compensate victims for harm suffered. Those harms should count as costs and be taken into account in calculating the recovery the firm is entitled to or the payments it should make to other members. Second, even without liability for harms, when accounting for negative externalities, courts applying a restitution regime should tailor the remedies among the network members. For example, if, as in Cases 1 and 2, the magnet firm creates negative externalities together with the positive externalities, its recovery against the other firms is reduced, with the limit of the difference between positive and negative externalities.[122]

7. Summary

The restitution model developed above supports the following propositions:

> *First*, the operation of a spiderless network is efficiently supported where each firm in the network is allowed to capture all of the benefits its participation in the network creates for the firm and others. Full internalization of benefits provides each network member efficient incentives to participate in maintaining the network and to make efficient investment decisions before and after its decision to participate.
>
> *Second*, since restitution law by itself cannot effect full internalization by each network member, the model supports restitution

[122] *See* Lee Anne Fennell, *Property and Half-Torts*, 116 YALE L.J. 1400, 1450–52 (2007) (warning of the risk of allowing actors to recover for their positive externalities and using the recoveries for compensating for negative externalities).

remedies that best approximate a reciprocity equilibrium where the network surplus is divided among firms according to each member's net benefits received and benefits conferred.

Third, where there are impediments to achieving a reciprocity equilibrium, the model supports permitting each firm whose participation in the network is efficient to retain (and, if necessary, to recover) benefits sufficient to ensure its participation.

Fourth, variance in the costs of participating in the network are relevant in decisions allocating costs and benefits, as costs may differ over time such that early (later) participation that is more costly than later (earlier) participation may deter network formation and functioning.

Fifth, the presence of magnet enterprises whose incentives to operate within the network have disproportionately greater influence on efficient network formation justifies a differential allocation of costs and benefits.

* * *

In this Part, we have proposed a model in a friction-free environment that applies restitution remedies to a range of cases where free riding and moral hazard costs create asymmetries in the distribution of net benefits from network participation. In the following Part we relax the strong assumptions of the model, evaluate the utility of restitution remedies in a more realistic setting, and suggest how extending a right of restitution to members of spiderless networks in certain circumstances can enhance the welfare gains from the increasing trust and cooperation that results from participation in the network.

III. Implementing a Restitution Regime

The preceding analysis has identified both the fragility of many spiderless networks and demonstrated how restitution remedies have the potential of approximating a reciprocity equilibrium that contributes to efficient network functioning. In adjusting and tailoring the quantum of restitution damages in any particular case, the goal is to balance the high costs of verifying network costs and benefits against the goal of sufficient internalization to improve network performance. That objective argues in most cases for a low-powered remedial scheme, one that applies the minimum remedy necessary to deter the self-interested actions that impair the mutual trust and cooperation essential to the efficient operation of spiderless

networks.[123] This means that in most cases, network members could seek to recover from other members no more than the difference between their costs of participating in the network and the benefits they received from it.[124]

In this Part, we illustrate how such a scheme of narrowly tailored restitution remedies can function successfully in real world spiderless networks. Part III.A. considers whether and how a limited restitution duty would apply in the case of the four exemplars of uncompensated externalities described in Part I. In Part III.B., we then show how these low-powered restitution remedies can work as complements to the informal norms that currently govern network relationships. Part III.C. takes up some of the objections to authorizing common law courts to entertain even a limited right of restitution for firms in spiderless networks. We conclude in Part III.D. that even if a claim for restitution by one network firm against another is rarely successful, by specifying the parameters of a claim, the law can function as a bargain-enabling default (a virtual spider as it were) that encourages parties in spiderless networks to coordinate around contractual mechanisms that promote network reciprocity.

A. *Applying Low-Powered Restitution Remedies to the Four Exemplars*

1. *Magnet Firms and Late Arrivals*

The general case of magnet firms was analyzed in detail in Part II, so here we focus specifically on the Silicon Valley case.[125] The question is what should happen when a research institute (like Stanford University), several computer technology related firms, and venture capitalists attract startup companies to relocate in their vicinity, thereby allowing them to capture many benefits, for which they don't pay. The Silicon Valley case is close to Case 2 in the restitution model (unilateral creation of benefits with active beneficiaries),[126] where a magnet firm attracts many other entities to relocate

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[123] Adopting a minimal or low-powered remedial scheme furthers another goal: to reduce chilling and crowding out effects, as we explain in detail in Part III.B.

[124] To be clear, some extension of common law restitution doctrine is required to implement any regime of restitution remedies for spiderless networks. As we have explained, our normative argument is grounded in two fundamental tenets of restitution law: (1) under certain conditions a party who voluntarily confers benefits upon others can recover the value of those benefits from the beneficiaries; and (2) a party who takes value belonging to others without reciprocating in kind must pay for the benefits she received. To apply these tenets to spiderless networks, common law courts must extend existing law to specific instances of opportunistic behavior that threaten network cooperation. In doing so, courts disposed to extend restitution remedies to network members that suffer moral hazard or free riding costs must, of necessity, consider a number of implementation issues beyond the scope of this paper, such as whether damages should be awarded *ex ante* (for potential benefits) or *ex post* (for realized benefits), how the burdens of proof should be allocated among the parties, and how best to assess restitution claims.

[125] *See supra* Part I.C.1.

[126] *See supra* Part II.C.2.

nearby and form a cluster network. In such cases, there is an efficiency justification for allowing the magnet enterprise—or other core members that generate substantial externalities—to capture a substantial portion of the network's surplus and, in any event, at least recover the difference between costs and benefits. The question then is whether Stanford University in our example, as well as other magnet firms that "established" the Silicon Valley network, received enough of the network's surplus.

Answering that particular case requires more facts, but consider how the restitution regime would work in similar cases whenever a research institute ("RI") considers bringing a claim against other network members, say a startup firm that allegedly captured uncompensated benefits from the RI. At the outset, the RI must show that both firms belong to the same network, namely, that there were repeated interactions between the parties, that they engaged in interrelated business activities, and that the RI conferred benefits on the startup firm (or that the startup "took" benefits from the RI). It is likely that the RI participates in more than one network: it might produce information regarding the biological foundation of various drug therapies to which particular startup enterprises benefitted and also produce information relating to the development of new computing technologies with benefits accruing to other startup firms.

Next, the RI would need to show that it generated information that diffused throughout the network—say, information about network partners capable of collaborating on developing a particular drug therapy—that was "used" by the defendant startup, perhaps with the participation of other network firms, in developing relationships that resulted in a new drug. The RI would then be entitled to show how much it invested in research capabilities to build these successful partnerships, including the costs of manpower, materials, and laboratory facilities—as against any corresponding benefits (say, from grants, tuition revenues, patents, and enhanced charitable contributions). If the court finds that benefits are lower than costs, it may award the RI the defendant's share of the difference, or an approximation of it, as restitution damages.[127] And if the RI can prove it is a magnet firm, the restitution regime contemplates a more generous recovery above net costs (and even if the magnet's benefits clearly exceed its costs).

The Silicon Valley case raises the additional problem of late arrivals similar to Case 4 in the model (increasing costs of joining the network). Here, firms that are willing to join the network at a later stage may face higher costs relative to earlier arriving firms. How are late arrivals encouraged to join the cluster rather than move to another location? First, a startup that arrives later and subsequently realizes benefits from the network would be entitled (with an *ex post* remedy) to offset higher costs attributable

[127] In theory, all beneficiary firms in the network are liable for a portion of the restitution damages according to their share in the network's surplus. Thus, the court would need to estimate that share with respect to the defendant firm.

to late entry against any future liability in restitution brought by other cluster members to recover uncompensated benefits. Furthermore, if its participation costs exceed its benefits, the late-arriving firm would be entitled to recoup the difference from firms that realized net benefits from the network.

This solution is inadequate, however, in a case where every firm incurs a net benefit. Here, it is tempting to consider awarding *ex ante* damages equal to the difference between early and late arrival costs. This option, however, begs the question how those incremental costs are to be allocated among other network members, especially when it is unclear who, if anyone, is an *ex post* beneficiary. Given this problem, *ex post* compensation is the preferable solution, permitting firms that create *ex post* benefits for network members to recoup the incremental cost of late arrival, even if their benefits exceed their costs. Damages for the incremental cost of late arrival would then be allocated among network members in the same way a losing member's net costs are allocated.[128]

2. *Free Riding on Indirect Ties*

In the Apple-Sony case,[129] Sony indirectly acquired information from IBM which Sony and Apple then used to develop the laptop computer and to advance Sony's business interests in consumer electronics. Thus, in the network composed, in part, of Apple, Sony, and IBM, IBM conferred benefits on upon both Apple and Sony, but only had an alliance contract with Apple. The question then arises: Is IBM entitled to restitution damages for the uncompensated network benefits it conferred on Sony? We assume that neither Sony nor Apple committed a justiciable wrong, as the information that Sony derived from IBM was not protected by IP law,[130] and we further assume that Apple was not in breach of its contract with IBM. Indeed, it is common in strategic alliance networks for one party to acquire information from a contract partner that has been acquired by the contract partner in collaboration with third parties.

One way to approach the problem is through the traditional tools of contract law. The contract between IBM and Apple arguably accounted for the possibility of information being made available to Sony (or other third parties) and the alliance contract was priced accordingly. Relying on the alliance contract to internalize the subsequent benefits to third parties is suboptimal, however. Not only do the contracting parties face substantial uncertainty at the time of contract, which makes pricing a formidable task, but *ex ante* pricing also provides the party possessing the information inadequate incentives to share it with the counterparty, knowing the information might later be used in alliances between the counterparty and third parties. Thus, if

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[128] *See supra* Part II.C.3.

[129] *See supra* Part I.C.2.

[130] We assume the information is "know-how" that is not subject to property right protection.

IBM has been paid *ex ante* for the subsequent use of its private information by Apple and Sony, IBM would fail to consider any future benefits that Sony—or Sony's counterparts—might derive from that information in deciding what information to share in its alliance contract with Apple and what information to withhold.

An alternative solution is to realize that IBM, Apple, and Sony are part of a strategic alliance network in which IBM conferred substantial network benefits on Apple and Sony but potentially received fewer benefits in return. Thus, the Apple-Sony case is a variation of our Case 3.2 (multilateral creation of benefits where contributions to network functioning are complements).[131] An award of restitution damages to IBM gives parties in IBM's position an incentive to share information with alliance partners, like Apple, even if they appreciate the risk that the information will ultimately be used by third party competitors, like Sony.

But how could restitution remedies be implemented in a case like this? We assume that all three parties' efforts and expertise combined and resulted in the development and manufacturing of the new laptops and more innovative consumer electronics and that IBM did not receive any compensating benefits. Hence, IBM could seek to recover restitution damages from Sony and Apple. The court would need to estimate IBM's contribution to the new laptops and consumer electronics produced by Sony and Apple, respectively, and determine the percentage of the profits made by Sony or Apple that should be attributed to information generated by IBM. From that percentage, the court could determine the quantum of damages to award to IBM. Consistent with the imposition of low-powered restitution remedies, however, a court would need to be appropriately cautious to avoid awarding damages that are higher than IBM's true contribution to the realized profits. Any uncertainty would properly be resolved in Sony's (and Apple's) favor in order to reduce any chilling effects on entrepreneurs who might fear that some of the profit they realize from innovation may subsequently be attributed to information derived indirectly from other network participants.

3. *Exploiting "Structural Holes"*

In the Tata Group case,[132] one large Indian firm uses valuable information it received from smaller Indian firms for its own benefit. The difficult question is whether the smaller firms should be entitled to some of the network's surplus that currently is captured mostly by Tata. If Tata is a magnet enterprise, as in Case 2 in the model,[133] allowing it to retain a large portion of the network surplus is the right solution. In this way, Tata would secure an appropriate return from sharing its reputational benefits with other network

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[131] *See supra* Part II.C.3.
[132] *See supra* Part I.C.3.
[133] *See supra* Part II.C.2.

members. When Tata is allowed to capture the greater part of network benefits, it is motivated to make more efficient decisions regarding the network's operation and composition than if it had to disgorge a substantial portion of its profits.

At the same time, however, not allowing the smaller Indian firms any share in the network surplus above what they receive from their mere participation in alliances with foreign entities is likely to deter some of those firms from participating in the network. This destabilizing result would occur when these firms determined that the expected costs of participation—in particular, the costs of disclosing valuable private information to Tata that could adversely affect their business opportunities—would be prohibitive.

The fact that Tata is a magnet firm, together with the need to attract the small Indian firms to participate in the network, argues for limiting any claim against Tata to the amount of net costs incurred by any one of the smaller firms (C_r-B_{in}), plus a modest premium. Most of the network surplus should remain with Tata, but the smaller firms' incentives to join the network would increase. Indeed, in theory, it might be appropriate to allow Tata to recover from the subset of smaller firms who benefitted significantly through the network. Assuming, however, that Tata's positional monopoly has permitted it to capture rents, it is doubtful whether this solution is justified given the difficulties of proof.

The Tata case might be difficult to resolve unless an expert tribunal, such as the Delaware Chancery Court, had jurisdiction to hear restitution claims in spiderless networks. An expert tribunal can more readily sort the complex interaction between the benefits properly attributable to Tata's position in the network as the reputational intermediary from the rents that are attributable to its positional monopoly. Moreover, this case is an appropriate one for an information revelation mechanism: the emerging doctrine could develop a rule that any firm that joined the network after a fee request from a central firm such as Tata is deemed to have accepted a legally binding offer, thus making any subsequent restitution claims redundant.

4. Exploiting Informational Synergies

In the Microsoft case,[134] one large firm has many strategic alliances and, as a consequence of its central position in the network, can exploit informational synergies to capture a larger share of the future projects available to network members. The knowledge and expertise in pursuing future business opportunities resulting from this synergy of information is not traceable to any other network member or alliance partner. Should Microsoft's alliance partners share in the gains obtained by Microsoft?

The problem this case poses for imposing a restitution remedy is that it is especially difficult to measure the contribution of any given network

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[134] *See supra* Part I.C.4.

member or alliance partner to the gains made by Microsoft at a later stage. At the same time, however, some firms are reluctant to do business with Microsoft because they fear being "exploited."[135] Thus, the Microsoft case is similar to Case 3.2 in the restitution model (multilateral creation of benefits when contributions are complements),[136] but with the complication that one firm—Microsoft—might also be a magnet enterprise, similar to Case 2.[137] In such cases, leaving some of the network surplus to the peripheral firms, in addition to what they would receive by their participation in the network, is a plausible solution that would motivate more firms to participate fully in sharing private information with others, and with the centrally embedded firm in particular.

But the question remains: Can the measurement and evaluation problems this case poses be overcome? As long as the legal objective is modest, a limited restitution remedy would improve internalization of network benefits. This argues for reimbursing the verifiable net costs (C_r-B_{in}) of Microsoft's alliance partners, plus a fixed premium. Moreover, if the C_r-B_{in} value is not verifiable, a court motivated to support spiderless networks has available the alternative suggested above for the Sony-Apple exemplar: Once Microsoft realizes substantive benefits from a new product and the plaintiff can show that its extra-contractual private information was used by Microsoft in developing the new product, the plaintiff is eligible to recover damages measured by the relative contribution of the plaintiff's information to the development of the new product.

B. Crowding Out and Chilling Effects

1. The Crowding Out Problem

The preceding analysis suggests that when evaluation problems are tractable, access to a restitution remedy can potentially ameliorate the moral hazard, free riding, and other transaction cost impediments to network survival.[138] But introducing a potential legal sanction raises a further challenge to the extension of restitution remedies to the network setting: Would these legal remedies crowd out the informal, relational forces that appear to work well in some spiderless networks?

Theory suggests that cooperating parties should aim to capture the benefits of both formal and informal enforcement of reciprocity norms by relying on formal legal remedies to solve complex problems with noisy interactions and on informal methods (whether grounded in reputation, repeated interaction, or reciprocity) to enforce contingencies that are difficult

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[135] *See supra* text accompanying note 42.

[136] *See supra* text accompanying note 104.

[137] *See supra* Part II.C.2.

[138] For examples of moral hazard and free riding problems in a variety of networks, see *supra* Parts I.C.1–4.

to verify but clear enough to be observable.[139] A mixed strategy is feasible if formal and informal enforcement regimes can be complements, but not if they are substitutes where recourse to formality "crowds out" the operation of informality. Here, existing theory and evidence offer limited guidance. Experimental research has demonstrated that, in some instances, formal sanctions do crowd out informal mechanisms.[140] But the fact that formal and informal means of enforcing reciprocal relationships are potentially rivalrous does not mean that a mixed strategy is necessarily inferior or impossible.[141]

How, then, do formal legal obligations to abide by a normative command interact with compliance based on trust and reciprocity? One of us has argued in an earlier paper that crowding out occurs when the legal sanction "*degrade[s] the information* about the nature of the counterparties and the [cooperative] nature of their interactions."[142] First, consider the effects of introducing a legal sanction on how the participants perceive the nature of their interaction. The most familiar example is the experiment using formal sanctions to cause parents to pick up their children from day care on time. To improve punctuality, a fine was imposed for tardiness. The perverse result was an increase in late pickups because the formal fine "crowded out" the reputation-based norm.[143] Tardy behavior was no longer considered a breach of a moral obligation; it was transformed into a market transaction in which a parent had the "right" to pay for delay and thus felt unconstrained by being tardy.

A second factor contributing to the crowding out effect is the impact of formal legal sanctions on the frequency or incidence of the cooperative behavior that supports relational norms. When legal sanctions are keyed to all outcome variables, a "high-powered" legal sanction suppresses the production of information that supports reciprocity.[144] The effect of high-powered

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[139] *See* Gilson, Sabel & Scott, *supra* note 23, at 1386, 1398–99 ("When outcomes can be verified by courts empowered to compel disclosure of relevant information, formal contracts are preferred; where outcomes are hard to characterize, and therefore difficult to verify, but the activity is observable to the parties, informal contracts are feasible.").

[140] *See, e.g.*, Daniel Houser, Erte Xiao, Kevin McCabe & Vernon Smith, *When Punishment Fails: Research on Sanctions, Intentions and Non-Cooperation*, 62 GAMES & ECON. BEHAV. 509 (2008); Ernst Fehr & Simon Gachter, *Do Incentive Contracts Crowd Out Voluntary Cooperation?*, (Univ. of Zurich, Inst. for Empirical Research in Econ., Working Paper No. 34, 2000); sources cited *infra* note 143.

[141] Robert E. Scott & Paul B. Stephan, *Self-Enforcing International Agreements and the Limits of Coercion*, 2004 WIS. L. REV. 551, 579–80 (2004).

[142] Gilson, Sabel & Scott, *supra* note 23, at 1399 (emphasis added).

[143] *See* Uri Gneezy & Aldo Rustichini, *A Fine is a Price*, 29 J. LEGAL STUD. 1 (2000). For an extensive literature in social psychology that also considers the crowding out of intrinsic motivations, see Edward L. Deci, R. Koestner & Richard M. Ryan, *A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivations*, 125 Psychol. Bull. 627 (1999).

[144] High powered enforcement consists in the imposition of standard legal remedies for failure to perform specified contractual obligations. Enforcement is tied to outcome variables and provides incentives for parties to take specified actions to maximize expected surplus. In contrast, low powered enforcement consists in imposing sanctions only for the verifiable failures to reciprocate, but not for the failure of the parties to invest sufficiently in the underlying

sanctions is to increase the consequences of non-compliance: The threat of a severe sanction leads parties to share less information about their desire to make cooperative adjustments to the relationship. Thus, parties facing high-powered sanctions for non-compliance communicate less about the problems they are experiencing and consequently have fewer opportunities to make mutually beneficial reciprocal adjustments over time. In a sense, high-powered legal enforcement intended to create efficient incentives to perform specified actions functions as a "first strike" nuclear weapon, where each party continually faces the risk that a single misstep can transform a surplus-generating cooperative enterprise into a zero-sum game.[145]

Given the crowding out risk, courts concerned to preserve complementarity in spiderless networks should be motivated to impose low-powered remedies designed to encourage compliance with the information exchange regime, and the informal relations it supports, while avoiding the high-powered sanctions that incentivize the behavior that crowds out informality.[146] In this way, legal sanctions would be applied only to those actions that are critical to maintaining and supporting the formation and operation of the network.

Moreover, crowding out in this context is unlikely in any event because the normative structure of business networks is parsimonious. There is no norm of altruism among business firms. No firm is implicitly obligated to cooperate with other network members and produce value for them, even if the cooperating member loses value. There is also no norm of risk sharing among network members who are not in a direct contractual relationship. A firm that gains benefits from the network has no implicit obligation to compensate a firm that cooperated with others in the network but incurred net losses. In sum, the low-powered legal remedy contemplated by imposing a duty of restitution cannot crowd out altruism and risk sharing norms for the simple reason that those norms do not exist in a spiderless business network. To be sure, there are network norms of reciprocity and cooperation but, as we have argued and as the experimental data support, a low-powered restitution remedy is most likely to complement rather than to substitute for those existing norms.[147]

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business activity so as to yield particular outcomes. *See* Gilson, Sabel & Scott, *supra* note 23, at 1399.

[145] The threat of the ultimate sanction thus deters parties from voluntarily revealing the information needed for the counterparty to adjust informally. *See* Gilson, Sabel & Scott, *supra* note 23, at 1399–401, citing Charles J. Goetz & Robert E. Scott, *The Mitigation Principle: Toward a General Theory of Contractual Obligation*, 69 Va. L. Rev. 967, 1013–15 (1983).

[146] *See supra* note 144.

[147] The experimental data suggests that informal norms and legal remedies are complements when each strategy reinforces the effectiveness of the other. *See* Sergio Lazzarini, Gary J. Miller & Todd R. Zenger, *Order with Some Law: Complementarity versus Substitution of Formal and Informal Arrangements*, 20 J. L. Econ. & Org. 261 (2004); Mary Rigdon, *Trust and Reciprocity in Incentive Contracting*, 70 J. Econ. Behav. & Org. 93 (2009). Thus, a legal sanction that covers some but not all of the parties' obligations complements existing norms if the remaining obligations can be enforced informally. Furthermore, the reciprocity equilib-

2. *Chilling Effects*

Liability sometimes chills desirable activities. In tort law, judicial errors cause chilling effects when injurers expect liability even for benign behaviors.[148] The risk of liability might encourage them inefficiently to reduce their activity level. Would the restitution duties outlined above chill desirable activities?

Consider Case 2 in the restitution model (unilateral creation of benefits with active beneficiaries).[149] Here, a magnet firm relocates and small firms consider moving to its vicinity in order to capture positive externalities produced by the magnet firm. Assume that those firms are exposed to liability risks under a restitution regime. They might anticipate that error costs will lead to liability in restitution that exceeds the benefits they expect to capture from the magnet firm. As a consequence, the small firms may elect not to relocate even when relocation is efficient. In contrast, in the absence of expected liability, the firms would relocate in order to capture positive network benefits from the magnet firm.

There are several reasons why this risk of chilling effects should not lead a court to reject a claim for restitution. First, in a world without legal remedies there are offsetting efficiency losses caused by large-scale externalities that threaten the viability of a spiderless network. Without a mechanism to internalize the externalities, for example, a magnet firm may choose not to relocate to an emerging industrial district and no network will be formed, or, even if it did relocate, the network would not function to maximize the entire network surplus. Second, chilling effects are reduced when sanctions are low-powered. In the magnet firm cases (Cases 1 and 2 in the model), the magnet firm recovers less than the entire benefits it created for the others. Any chilling effect is reduced, as smaller firms anticipate retaining measurable benefits. Third, chilling effects might be reduced with an *ex ante* remedy. With such a remedy, each firm would be able to know at an early stage, even before joining the network, the approximate liability—or entitlement—it might bear and decide accordingly whether or not to join. And finally, firms can engage in standard risk management techniques until insurance markets evolve to reduce the variance in liability caused by high rates of error.

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rium, if achieved, might stabilize existing networks and make their operation more efficient. In this way, restitution might create a new norm of fairer, and more efficient, sharing of networks' surplus, according to each member's contribution. *See* Daphna Lewinsohn-Zamir, *The Importance of Being Earnest: Two Notions of Internalization*, 65 U. TORONTO L.J. 37, 59 (2015) (arguing that mild sanction is likely to reinforce voluntary compliance).

[148] Louis Kaplow, *Information and the Aim of Adjudication: Truth or Consequences?*, 67 STAN. L. REV. 1303, 1304–10 (2015) (arguing that chilling effects should be a major concern in setting standards of proof).

[149] *See supra* Part II.C.2.

C. Further Objections

1. Governmental Intervention

A possible objection to extending restitution remedies to spiderless networks is that there are more effective ways to solve the moral hazard and free riding problems we have identified. Thus, for example, the state might better solve the problem through a scheme of taxes and subsidies. Particularly in the case of clusters of industrial districts, local authorities could serve as a spider: they could levy taxes on firms who create negative externalities, or who internalize more benefits from the network than what they externalize to other firms, and subsidize firms that externalize more benefits than they internalize.[150] Local authorities can also use their governmental powers to organize industrial districts in a way that approximates a reciprocity equilibrium.[151]

To be sure, extending the common law of restitution to spiderless networks is not the only possible solution to the externality problems we have identified. As in other areas of business activity, there are tasks better done by the state and others better done by market participants. Pursuing one approach does not exclude the other. Take risk reduction as an example: Sometimes the polity prefers state regulation and sometimes the preference is for market solutions, with the aid of tort law.[152] In the network context, the choice is between centralized state regulation and decentralized market solutions aided by restitution law. While state involvement might have advantages in some cases, it also has flaws. Political constraints and prohibitive costs are possible reasons not to prefer state efforts to internalize network externalities—the state would confront substantial informational barriers in seeking to support and maintain spiderless networks. It would be difficult for any central authority to identify accurately those settings where networks might flourish. In many of these cases, market mechanisms can prove to be more effective and productive than state initiatives, and there seems little justification for precluding the former just because the latter is also feasible. Indeed, the motivation for this Article is the evidence that many spiderless networks either fail or do not function efficiently, and it is perhaps for good

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[150] For similar proposals, *see supra* note 96.

[151] Consider the creation of a "business improvement district" ("BID"). A BID is a public-private partnership in which property and business owners of a defined area elect to make a collective contribution to the maintenance, development, and promotion of their commercial district. They typically provide services such as street and sidewalk maintenance, public-safety officers, park and open-space maintenance, marketing, capital improvements, and various development projects. BIDs are funded through special assessments collected from the property owners in the defined boundaries of the district. For further details, *see* DowntownDC Business Improvement District, Our Organization, http://www.downtowndc.org (last visited July 24, 2016).

[152] *See* GUIDO CALABRESI, THE COSTS OF ACCIDENTS 95–129 (1970) (discussing the pros and cons of market deterrence—a market solution—and specific deterrence—a regulatory solution—as a means to reduce accident costs).

reason that state taxes and subsidies are not found in the examples we have identified.

This is not to say that efforts by the state to facilitate internalization through restitution law would be undesirable. If the state chose to support network welfare, it could authorize the creation of specialized, expert tribunals to consider restitution claims. Expert tribunals could better evaluate the losses suffered by some network participants and impose liability accordingly on the network's "winners."[153]

2. *Evaluation Difficulties*

Another possible objection to recognizing the restitution claims of network members is the daunting task courts might face in evaluating the many externalities present in spiderless networks. Indeed, if costs and benefits cannot be verified at a reasonable cost, no restitution claim would succeed. Therefore, the ability of courts to develop proxies for difficult-to-verify facts is a pre-condition for adopting any right of restitution for network members. In predicting how daunting a task that might be, consider the following points.

First, when authorizing a restitutionary recovery, courts would primarily be charged with measuring net losses and determining whether the losers' participation in the network was efficient. Damage measures need not be accurate. In tort law, for example, damages are often determined through rough estimates rather than by an accurate calculation of losses, especially when bodily injury is at stake.[154]

Second, to compensate the losers, courts would also be asked to impose liability on winners and that requires estimates of benefits internalized and externalized by them. Note, however, that the exact magnitude of the benefits is not the important fact. Instead, the key is to determine the relative share of all winners in the creation of the network surplus. Relative shares are easier to measure than the exact magnitudes of each firm's share. Again, rough estimates are sufficient here, just as they are in tort cases when liability is apportioned among joint tortfeasors or between injurers and their contributorily negligent victims.[155]

Third, as we suggested above, specialized tribunals can play an important role in reducing the costs of verifying restitution claims. Tribunals can be established by the state, by trade associations, or by network participants themselves in order to avoid evaluation difficulties.

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[153] *See supra* Part II.C.5.

[154] *See, e.g.*, Welsh v. Martinez, 157 Conn. App. 223, 243 (2015) (ruling that "[p]roper compensation . . . falls within the necessarily uncertain limits of just damages"); Williams v. Mathieu, 155 So. 3d 54, 59 (La. Ct. App. 4th Cir. 2014) ("[P]ain and suffering . . . are inherently speculative in nature and cannot be set with mathematical certainty.").

[155] *See* DOBBS et al., *supra* note 92, at 286 ("[A]ttribution of fault percentages is necessarily a rough approximation even though it is expressed in mathematical terms.").

3. Enforceability

The prospect of ongoing litigation and enforcement costs is a final objection to extending restitution law to spiderless networks. The creation of network externalities is not a singular event: networks are dynamic organisms and externalities are created continuously. Thus, if litigation results whenever network losses and benefits are shared disproportionately, the magnitude of enforcement costs over time would be unsustainable. One response is that courts, or specialized tribunals, can limit the right to pursue restitution claims so as to avoid repeat litigation by, for example, precluding subsequent claims for a period of years. In addition, courts could require plaintiffs to prove damages based on the defendant's *ex ante* liability for expected gains and losses, rather than its *ex post* liability for realized losses and gains. While there are various considerations in choosing between these two liability rules, enforceability convenience is a prime consideration in this context. One of the advantages of an *ex ante* liability rule is that it requires one determination of liability, at the outset, when the network is created or survival is threatened, and no further liability thereafter.

D. Restitution as a Bargain-Enabling Default

Given the substantial costs of verifying the benefits and costs individual firms incur in spiderless networks, it is tempting to argue that restitution claims of the sort we have outlined above rarely will succeed and even less frequently will be pursued by firms that have suffered lost value in network activity. Nevertheless, a restitution regime can have a positive effect on improving network efficiency even in a world where successful claims are rare. The acknowledgement by the state that a restitution remedy is an available legal option can motivate firms participating in spiderless networks to search for *ex ante* contractual solutions that better address the network's goal of achieving a reciprocity equilibrium. In that sense, a restitution regime can serve as a bargain-enabling default—a virtual spider in the web—that increases the probabilities that parties will more easily resolve the collective action problems that otherwise plague spiderless networks.

The available evidence suggests that networks with spiders offer a broad menu of contractual solutions that mitigate the positive and negative externalities that characterize informal network cooperation. For example, food cooperatives form organically as spiderless networks, but those that survive typically then organize around a bureaucratic structure that internalizes much of the external effects of informal cooperative behavior.[156] Simi-

[156] *See, e.g.*, Nigel D. Poole et al., *Formal Contracts in Fresh Produce Markets*, 23 FOOD POL'Y 131, 132 (1998) ("The challenges facing the food industry in tackling uncertainty and thereby reducing transaction costs are being met in part through an array of contractual arrangements, such as partnerships and alliances that aim to achieve greater vertical coordination and efficiency. . . . Closer coordination can also be achieved through the use of written con-

larly, franchise networks, construction networks, and modern supply chains are merely a few examples of ways a central entity can organize network activity contractually by using master contracts,[157] third party beneficiary law,[158] and related contractual means of internalization.

Spiderless networks lack a means of organizing the distribution of network value precisely because high transaction costs impede the creation of a spider, or any other contractual arrangement, among members. So how might parties opt out of a restitution default when transaction costs are high? After all, opting out requires a contractual arrangement, and if contracts are infeasible, opting out is infeasible as well. Here the coordinating function of the restitution regime offers a possible solution: A bargain-enabling default, such as the restitution remedies we have analyzed, economizes on transaction costs by providing focal points that align the parties' expectations and thus permit them to solve a coordination problem more efficiently. Parties who participate in networks are involved in a mixed motive game. They coordinate on certain expectations but have conflicting interests on others. One way they align their expectations is through communication. When the parties can communicate, experiments show that their "cheap talk" facilitates coordination.[159] As Thomas Schelling famously noted, when the problem is selecting one means of coordinating among many, focal point solutions stand out and attract the attention of both parties.[160] In short, the state's comparative advantage is its ability to create salience by publicizing the restitution default. Once announced, the focal point default economizes

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tracts."); Rachel E. Goodhue et al., *Contracts and Quality in the California Winegrape Industry*, 23 REV. INDUS. ORG. 267 (2003) ("Contracts . . . have been important in broiler chicken production, and in fruit and vegetable production for many years, and are becoming increasingly important in other commodities . . . ."); H. Christopher Peterson et al., *Strategic choice along the vertical coordination continuum*, 4 INT'L FOOD AND AGRIBUSINESS MGMT. REV. 149, 149–50 (2001) ("Many variations of vertical coordination have evolved . . . in agri-food markets . . . including joint ventures, keiretsus, virtual corporations, licensing agreements, production specification contracts, etc.").

[157] *See, e.g.*, Long Term Agreement between Deere & Company and Stanadyne Corporation (December 11, 2001) (5 year supply contract for the purchase of rotary mechanical products, fuel filtration systems, injection nozzles, and related products by Deere from Stanadyne); Agreement between Phoenix Technologies Ltd. and Intel Corporation (December 18, 1995) (supply contract for Phoenix to be a principal supplier of system-level software to Intel); General Terms Agreement between the Boeing Company and Spirit Aerosystems Inc. (June 30, 2006) (general terms agreement covering purchase orders by Boeing for particular product to be supplied by Spirit); Component Supply Agreement between American Axle & Manufacturing, Inc. and General Motors Corporation (June 5, 1998) (requirements contract for motor vehicle components to be supplied by AAM to GMM).

[158] *See generally* Schwartz & Scott, *supra* note 1, at 334–35 (arguing that the legal question regarding third party beneficiary law shouldn't be whether the contract parties intended to confer a bene?t on the plaintiff. Instead, the correct question is whether it would be *ex ante* pro?table for the network contracting members to serve the potential bene?ciary class to which the plaintiff belongs).

[159] *See, e.g.*, Vincent Crawford, *A Survey of Experiments on Communication via Cheap Talk*, 78 J. ECON. THEORY 286, 287 (1998) ("[W]hen players' preferences are sufficiently close, communication via cheap talk can be informative.").

[160] THOMAS SCHELLING, THE STRATEGY OF CONFLICT 54–57 (1963).

on costly pre-contractual communications: this function is especially valuable when the parties have different possible ways to coordinate and there is no consensus as to how to do so.

The current default rule in spiderless networks is zero compensation to network members who have suffered losses from network activity. Appropriately designed restitution remedies can create a more attractive focal point and thereby improve network efficiency. All network firms benefit from an agreement that reduces uncertainty and avoids expected litigation costs. Indeed, even short of a fully specified master contract, the parties can always contract *ex ante* over future damage claims in order to make the implementation of an eventual recovery in restitution less costly.

Conclusion

In this Article we have proposed recruiting restitution law in order to support the formation and operation of spiderless business networks. While some spiderless networks function today without legal intervention, the evidence suggests that many are fragile and fail to form successfully. Our foundational claim is that well-designed restitution remedies will induce more parties to participate cooperatively in forming durable networks and that those networks—both existing and new—will generate increasing levels of trust and cooperation—the core welfare benefits of network value. To be sure, the chilling effects endemic in a legal regime where expected verification costs are substantial, as well as the ancillary risk of crowding out, argues for a low-powered restitution remedy. In most cases, a court extending restitution law to spiderless networks should limit any firm that has suffered uncompensated costs from network activities to the difference between its costs and benefits, unless the firm can establish its central role as a magnet enterprise.

The tremendous growth of spiderless networks in recent years has attracted little attention from legal scholars. This neglect is no longer justifiable. Nevertheless, for several reasons our normative claims are tentatively held. The salient legal issues concern the externalities that some network members confer or impose on other network members and the consequent issues of liability and remedy. But since lawyers have largely ignored the subject, what courts are capable of doing in network contexts are largely unexplored issues. There is thus little institutional wisdom to exploit. Moreover, economists that study networks are not concerned with the issues of liability and strategic defection that occupy lawyers. Hence, the economic literature offers less wisdom here than it does in other contexts.

Despite these caveats, we believe that, carefully deployed, the law of restitution offers business parties a useful mechanism for mitigating the moral hazard and free riding risks that threaten spiderless networks. To be sure, liability for benefits conferred is much less common in the law than

liability for harms or for breach of contract—and for good reason.[161] The new Restatement on Restitution and Unjust Enrichment shows, however, that restitution law can usefully improve efficient operation of business activity in areas of commercial life that traditionally have been considered to be out of its sphere. In a similar vein, we argue that courts should entertain and evaluate claims for restitution in terms that promote the efficient formation and operation of business networks. This normative criterion is more likely to survive a social welfare analysis than is the disinterested posture of current law.

[161] *See* Porat, *supra* note 79, at 198–200 (presenting the law's different approach to benefit and harm cases, and suggesting justifications).