ARTICLES

COMPLEX ENTERPRISES AND QUASI-PUBLIC GOODS

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1. INTRODUCTION

The accelerating forces of technological innovation and globalization influence the forms enterprises take, generating a rapid evolution of some organizational types while threatening others with extinction. Firms are establishing innovative links with their suppliers, their distributors and, increasingly often, their competitors. Grand networks are being created, indirectly linking, in one way or another, virtually every firm operating in several important industries.

1 It has been argued that the evolution of business organizations is Lamarckian, not Darwinian. See generally Herbert Hovenkamp, Evolutionary Models in Jurisprudence, 64 Tex. L. Rev. 645 (1985) (examining the use of Darwinian models to explain the development of jurisprudence).

2 The automotive and telecommunications industries are leading examples of this trend. For empirical studies which describe the links within both of these industries, see Frédérique Sachwald, The Role of Co-operative Agreements in the Automobile Industry, Proceedings of the 18th European International Business Association Annual Conference at the University of Reading (Dec. 13-15, 1992); P.E. Wells & P.N. Cooke, The Geography of International Strategic Alliances in the Telecommunications Industry: The
Complex economic organizations, such as strategic alliances and joint ventures, are peculiar institutional arrangements. They result where (i) access to a productive input or asset is to be continuous and (ii) limited shared access to that asset is more efficient than exclusive access. Limited sharing of access to a productive asset can be effected through a number of arrangements between firms.

First, shared access can be distributed between the participating firms by property rights through the institution of joint ownership. Joint ownership may be exercised either directly over an asset or over an intermediary corporate vehicle which owns the asset in question.

Second, shared access can be distributed by contract, effectively constituting a partial assignment of property rights, such as a use. Contract-based distributions of access permit more subtle relations to be structured among the parties than would be provided by institutional co-ownership. This additional precision may be costly, however, which may explain why co-ownership arrangements are often utilized


A complex economic organization involves multiple firms with conflicting, and often competing, strategic interests. It is more complex than an ordinary corporate grouping.

A strategic alliance has been defined as a bilateral or multilateral relationship characterized by the commitment of two or more partner firms to a common goal. A strategic alliance typically includes a constellation of agreements involving (1) technology swaps, (2) joint R&D or co-development, and/or (3) the sharing of complementary assets, such as where one party does manufacturing and the other distribution for a co-developed product.


This scenario corresponds to the equity joint venture. In this model, two participating firms own shares in the joint venture, which, in turn, holds the various assets devoted to the venture's business activity.

The owner of the residuary share may have greater influence over an asset than a licensee. For example, Toshiba's access to Motorola's technology was conditioned on Toshiba's promotion of Motorola's products in Asian markets. See Mark Hornung, Surging Semiconductors Improve Motorola Picture, CRAIN'S CHI. BUS., May 11, 1987, at 71.
instead. Complex economic organizations will frequently employ several types of institutional arrangements, adopting co-ownership with respect to some assets and more complex sharing arrangements with respect to others.

The basic legal unit corresponding to the firm, the corporation, is often conceived as a set of pre-assembled legal relationships drawn from the elemental legal forms of contract and property.\(^7\) There is, for the moment, a dearth of law regarding joint ventures and strategic alliances which specifies their internal ordering, their relationships to assets within their control, or their external dealings.\(^8\) This pristine state of affairs may benefit business planners seeking flexibility in structuring relationships.\(^9\) Strategic alliances and joint ventures are themselves custom-outfitted with features drawn from a number of more basic elements, using contract, agency and corporation law together, as well as property-based institutions. Our understanding of these organizations, their uses and future evolution, will be enhanced by a fuller appreciation of the economics driving more complex assemblies of the basic institutional units.

Legal and economic thinkers have focused much attention during the past two decades on an effort to determine why ordinary firms exist. Competing theories of the firm arise in both perfect and imperfect\(^10\) competition varieties. By

\(^7\)This description of the nexus between contract and property in the corporation is incomplete. Not only does the corporation have an institutional relationship with its shareholders, directors, officers and agents, but it also possesses the capacity of independent, direct ownership of property.

\(^8\)An example of these legal gaps is the issue of the insolvency of a strategic alliance. Some law specific to complex organizations is, however, developing. See Zenichi Shishido, Conflicts of Interests and Fiduciary Duties in the Operation of a Joint Venture, 39 HASTINGS L.J. 63 (1987) (discussing how courts handle conflicts of interest in joint ventures); Allan W. Vestal, “Ask Me No Questions and I’ll Tell You No Lies”: Statutory and Common-Law Disclosure Requirements Within High-Tech Joint Ventures, 65 TUL. L. REV. 705 (1991) (examining existing disclosure requirements applicable to high-tech joint ventures under statutory and common law).

\(^9\)On the other hand, legal requirements may reduce organizational costs. The legal institution of the business corporation is thought to be a useful pre-packaged set of relational norms and, therefore, a means of reducing costs.

\(^10\)In the imperfect competition category, some theories explain the existence of firms as a mechanism to aid the expansion of market power
contrast, far less is understood about why more complex structures exist; indeed, the existence of complex structures does not fit comfortably within any of the contemporary theories of the firm.

The transaction cost school, founded by Coase and advanced by Oliver Williamson, is the dominant perfect competition explanation for why firms exist, that is, why certain transactions are internalized. The basic outline of the transaction cost model, or at least a caricature of it, is well known: transactions are internalized when they can be effected most efficiently within firms. Certain types of transactions are more likely to be conducted efficiently within firms than across markets. These “market failure” cases often feature transaction-specific (unique) assets or informational asymmetries. Consequently, the transaction cost theory of...
the firm becomes a catalogue of types of market failure.\textsuperscript{15}

Transaction cost theorists have emphasized the failure of markets to effectuate the transfer of technology and other information as a major determinant of the unitary firm\textsuperscript{16} and its transnational variant, the multinational enterprise (MNE).\textsuperscript{17} These particular varieties of market failure are associated with inputs displaying "public goods" characteristics,\textsuperscript{18} productive assets that can be utilized at a

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  \item A transaction cost theory of complex organizations will likewise result in the identification of a characteristic market failure, but the rejection of internalization as a solution must also be explained. Williamson notes that the general term "organizational failure" encompasses both market failure and its symmetrical counterpart, "internal organizational failure." WILLIAMSON, MARKETS AND HIERARCHIES, supra note 12, at 20. A complex organization must overcome both of these challenges.
  \item See WILLIAMSON, ECONOMIC INSTITUTIONS, supra note 12, at 292-94.
  \item The modern theory of public goods is generally traced to Paul A. Samuelson, The Pure Theory of Public Expenditure, 36 REV. ECON. & STAT. 387 (1954). There are varying definitions of public goods in the literature:
  Goods and services which are not marketable to individual purchasers because the benefits flow to all in a group regardless of whether they all pay. Examples are national defense, river-channel dredging, and cloud seeding.
  Public goods also may be goods which, though marketable, have substantial spillover benefits or spillover costs to those not purchasing them—there are lots of innocent bystanders affected.
  A commodity or service which if supplied to one person is available to others at no extra cost. It may be contrasted with a PRIVATE GOOD where one person's consumption precludes the consumption of the same unit by another person . . . .
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declining marginal cost and, at the same time, may be excluded from others' use. These market-failure arguments rely as much on the intrinsic qualities of the good concerned as on the nature of the transaction and thus suggest a goods approach to the theory of the firm.\textsuperscript{19} 

A goods approach, as opposed to a transactions approach, to a theory of the firm displays some analytic texture that is easily lost when speaking abstractly about transactions. Goods, both public and private, may be created or lost, used or disused, bought or sold, shared or hoarded. Further, it seems just as meaningful to speak about the internalization of goods, such as productive assets or factors, through transactions as it is to speak of internalizing transactions themselves. A goods-oriented model eases the integration of important, if not essential, imperfect competition considerations.

The framework proposed here considers two dimensions by which access to productive goods is obtained.\textsuperscript{20} The first dimension expresses whether access to an input is to be on a spot or on a longer-term, continuous basis. This line of analysis is consistent with transaction cost theory. The second dimension captures whether access to a productive good may be shared without destroying oligopoly rents. Taken together, these dimensions suggest the following matrix:

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\textsuperscript{19} The goods approach should be contrasted with property theories of the firm. See Armen A. Alchian & Harold Demsetz, 


\textsuperscript{20} This is not the first attempt to use a two-dimensional framework to explain complex organizations. Bernard Garrette maps strategic alliances on one axis running between market and hierarchy and on a second axis measuring the symmetry or asymmetry of the participating firms' respective competencies. See Bernard Garrette, \textit{Actifs Spécifiques et Coopération: Une Analyse des Stratégies d'Alliance}, 50 REVUE D'ECONOMIE INDUSTRIELLE 15, 24-25 (1989).

Ahern presents a two-dimensional analysis of strategic alliance, with one axis representing the maximization of efficiency and the other the maximization of control, a concept drawn from the resource dependence theory. See R. Ahern, \textit{The Role of Strategic Alliances in the International Organization of Industry}, 25 ENV'T & PLAN. A 1229, 1234-35 (1993).
This article will examine why complex organizational forms exist. It will focus particular attention on two archetypes: the equity joint venture and the strategic alliance. Resort to complex organizational forms favors the selective sharing of access to certain strategic productive assets. These assets will be termed quasi-public goods because they may be shared at little marginal cost provided the sharing or joint-use is pointedly restricted to avoid a general diffusion, which would destroy economic rents. While equity joint ventures facilitate access to assets through the institution of joint ownership, strategic alliances rely on more complex, contract-based shared use of important productive goods. Some complex organizations exhibit features of both forms. For example, the Airbus consortium resembles a strategic alliance to the extent that each participating firm independently manufactures aircraft components at its own facilities while, at the same time, it resembles an equity joint venture in carrying out final assembly and marketing through consortium resources.

21 Airbus Industrie is a consortium of European aerospace firms which jointly produce passenger aircraft. See Roger Eglin, Lessons of the Airbus Example, MGMT. TODAY, Sept. 1992, at 27 (citing Airbus as a prime example of European industrial collaboration).
2. THE MANY COLORS OF TRANSACTIONS

2.1. Transaction Cost Theory and the Organizational Continuum

Transaction cost theory proposes an organizational continuum running between the poles of internalization and market-contracting. Strategic alliances, joint ventures and other organizational hybrids have been described as middle points on this continuum:

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<tr>
<th>Organizational Continuum</th>
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<tbody>
<tr>
<td>Market</td>
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<td>Hybrids(?)</td>
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<td>Relational Contracts</td>
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<td>Firm</td>
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In his earlier work, Williamson argued that hybrids should be rather rare. Later, Williamson revised his thinking,

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22 Williamson speaks of the “gamut from discrete market exchange at the one extreme to centralized hierarchical organization at the other, with myriad mixed or intermediate modes filling the range in between.” WILLIAMSON, ECONOMIC INSTITUTIONS, supra note 12, at 16.

23 See Jean-François Hennart, Explaining the Swollen Middle: Why Most Transactions Are a Mix of “Market” and “Hierarchy” 15-19 (1992) (unpublished manuscript, on file with author) (discussing the differences between prices and hierarchy as methods of organizing); see also Hans B. Thorelli, Networks: Between Markets and Hierarchies, 7 STRATEGIC MGMT. J. 37, 37 (1986) (acknowledging that arrangements exist that fall somewhere between internalization and the open market).

Garrette argues that his empirical study of strategic alliances supports the notion of an organizational continuum. Garrette, supra note 20, at 27. In his study, he asserts:

[L']idée d'un continuum des formes de relations inter-entreprises entre le "marché" et la "hiérarchie" trouve une bonne validation empirique. Ces deux formes ne sont pas les deux éléments d'une alternative, il faut plutôt les considérer comme les pôles extrêmes d'un même axe sur lequel les entreprises qui s'allient se positionnent en fonction du rapport de concurrence/association qu'elles entretiennent.

Id.

24 See WILLIAMSON, ECONOMIC INSTITUTIONS, supra note 12, at 83 (citing https://scholarship.law.upenn.edu/jil/vol16/iss1/1
acknowledging that the population of complex economic organizations was far greater than he had earlier thought and that organizational forms were much more evenly distributed. More recently, Jean-François Hennart has argued that the two poles, firms and market contracting, actually describe extreme and quite rare cases and that most organizations fall somewhere in between.

Williamson's amended organizational view remains that of a continuum, with the middle cases displaying features of both markets and firms. To say that certain organizations are part-firm, part-market may only state what is true about all production: some transactions are internalized and are commanded, and others remain outside the firm and are controlled through the price mechanism.

I and others have argued, however, that these complex organizational forms are not blended cases but instead are distinct types of institutional arrangements. What

WILLIAMSON, MARKETS AND HIERARCHIES, supra note 12).

26 See id. at 83-84. In his critique of Williamson's transaction cost analysis, Neil Kay argues that markets are "very rare and occasional device[s]." N.M. Kay, Markets, False Hierarchies and the Evolution of the Modern Corporation, 17 J. ECON. BEHAV. & ORGANIZATION 315, 331 (1992).

27 Hennart describes the distribution as displaying a "swollen middle." Hennart, supra note 23, at 2 (quoting CHARLES PERROW, COMPLEX ORGANIZATIONS: A CRITICAL ESSAY 255 (3d ed. 1986)).

28 Williamson explains:

[T]he hybrid mode is characterized by semi-strong incentives, an intermediate degree of administrative apparatus, displays semi-strong adaptations of both kinds, and works out of a semi-legalistic contract law regime. As compared with markets and hierarchy, which are polar opposites, the hybrid model is located between the two of these in all five attribute respects.

Williamson, supra note 12, at 281 (emphasis added).

29 Williamson's interest in the middle of the organizational continuum is chiefly with relational contracts. Id. at 280. For a discussion of the relational contract literature, see Jeffery Atik, Technology and Distribution as Organizational Elements Within International Strategic Alliances, 14 U. PA. J. INT'L BUS. L. 273, 276 n.19 (1993).

30 For this reason, the author has resisted using the term "hybrid" to describe complex organizational forms, such as joint ventures and strategic alliances.

31 See Atik, supra note 28, at 287 (noting that transaction cost theory must show why complex organizations are transaction cost minimizing when compared to unitary firms); see also Bryan Borys & David B. Jemison, Hybrid Arrangements as Strategic Alliances: Theoretical Issues in
distinguishes these complex organizational forms is the *kind of transaction* effected: a sharing of access or use. If this is so, according to Williamson's prescription that organizational forms are determined by a *comparison* of alternative institutional arrangements, the organizational form decision for coordinating production involves considering at least three alternative forms: (i) market contracting, (ii) internalization and (iii) shared access to a productive asset within a complex economic organization. This organizational decision must be made with respect to each productive asset or factor.

The choice-of-form decision with respect to complex economic organizations, such as joint ventures and strategic alliances, can be approached somewhat inductively, by asking why these institutional forms of shared access were preferred to market-contracting and internalization with respect to particular assets. Shared use, it seems, can minimize transaction costs in certain circumstances while

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Organizational Combinations, 14 ACAD. MGMT. REV. 234 (1989) (exploring the unique qualities of hybrids).

31 Williamson insists that "[c]omparative economic organization never examines organization forms separately but always in relation to alternatives." Williamson, supra note 12, at 269. As a result, he merely proposes an analytic methodology and not a model of how managers decide to coordinate production. Id. at 269-70.

32 There is a danger in characterizing the determination of an organizational form as a "decision." Firms may not, in any meaningful sense, engage in such decision-making because managers may be completely unaware of how organizational forms are determined.

33 Thus, there is not one organizational form decision but many such decisions.

34 Borys and Jemison argue that complex organizations are formed to avoid the disadvantages of conventional firms:

Unitary organizations often suffer from, among other things, operational inefficiency, resource scarcity, lack of facilities to take advantage of economies of scale, or risks that are more appropriately spread across several business units. Hybrids offer a wide range of solutions to such problems because they draw upon the capabilities of multiple, independent organizations.

Borys & Jemison, supra note 30, at 235. They do not, however, explain why internalization cannot rectify these disadvantages. See id.

35 See Bruce Kogut, Joint Ventures: Theoretical and Empirical Perspectives, 9 STRATEGIC MGMT. J. 319, 320 (1988) (asserting that a necessary condition of joint ventures is that "the production cost achieved through internal development or acquisition is significantly higher than
simultaneously conserving the economic rents these specific productive assets generate.

Complex economic organizations are frequently established between firms of different nationalities; they are becoming a common feature of the international business landscape. The international economic traditions of location-of-production and MNE theory\textsuperscript{38} inform the analysis presented here. The presence of national frontiers, which impede the flow of factors, however, is not necessary to explain the existence of joint ventures and strategic alliances.

The decision to establish a complex institutional arrangement can be thought of as a set of sub-decisions, including: (i) where to locate various stages of production;\textsuperscript{37} (ii) where to locate the boundaries between the firm and the exterior with respect to necessary productive assets;\textsuperscript{38} and (iii) whether the organizational boundaries should be hard, as in market-contracting, or soft, as in shared access.\textsuperscript{39} In international joint ventures and strategic alliances, for a host of environmental and institutional reasons, these organizational boundaries often correspond to national market frontiers.

Depending on the market, local management may be more or less efficient than foreign management in employing local external sourcing for at least one of the partners\textsuperscript{36}).

\textsuperscript{36} For an excellent summary of the literature regarding MNE theory, see Francesca Sanna Randaccio, \emph{Main Developments in the Theory of the Multinational Enterprise: A Critical View}, 38 RIVISTA INTERNAZIONALE DI SCIENZE ECONOMICHE E COMMERCIALI 151 (1991).

\textsuperscript{37} The location-of-production element is relevant to all possible forms of the institutional arrangement. Where production is internalized across national frontiers, an enterprise is said to be multinational.

\textsuperscript{38} A productive asset within a firm boundary is internalized; a productive asset outside a boundary is not. A firm requiring access to a productive asset outside its boundary may either contract in the market for the output of that asset, or it may arrange for access to the asset and share that access with others.

\textsuperscript{39} This boundary algorithm differs from that implicitly presented by Borys and Jemison, who refer to “hybrid-environment” (external) boundaries and “hybrid-partner” (internal) boundaries. Borys & Jemison, \emph{supra} note 30, at 238-41.

The notion of a soft boundary may directly relate the two partners participating in a complex organization. Also, the boundary decision of whether or not to reject internalization logically takes precedence over inquiries into the type of boundary.
factors systematically; one can think of markets for productive assets in which both foreign and local managements bid for ownership. Consequently, the value of certain assets will be greater in the hands of a foreign firm, while others may be employed optimally by a local firm. Resort to a complex economic organization permits sets of assets to be sorted between two participating firms, perhaps one local and the other foreign, thereby providing a mix of access modalities and improving overall efficiencies.

2.2. Types of Transactions

While transaction cost theory addresses many kinds of market failures, it tends to have a rather monolithic view of transactions themselves. It may be that business lawyers and planners are more sensitive to the many flavors transactions display than are many theorists.

When transaction cost theorists speak about internalization, they usually mean ownership, a rather complete domain over the subject asset of the particular transaction upon which command governance can be exerted. Note that internalizing a particular productive asset is, itself, a transaction that can either be internalized or effected across a market. A writer who requires photocopies may either employ a copy shop (market) or acquire a photocopier (internalization). The transaction by which the photocopier is acquired may either be effected across a market (purchase from a photocopier manufacturer) or internalized (self assembly of the various components). Both purchase and do-it-yourself construction (improbable though it may be) result in

40 For example, it appears that both the Zairian and Zambian copper reserves were more valuable when owned by multinational copper firms than when nationalized by the Zairian and Zambian governments because the multinationals controlled distribution channels and possessed other technical expertise. See Michael Shafer, Capturing the Mineral Multinationals: Advantage or Disadvantage?, in MULTINATIONAL CORPORATIONS: THE POLITICAL ECONOMY OF FOREIGN DIRECT INVESTMENT 25 (Theodore H. Moran ed., 1985). The newly nationalized firms also destabilized the pre-existing copper cartel, thereby lowering prices and producing a copper glut on world markets. Id.

41 Hennart argues that a distribution system is often more productive, and hence more valuable, when owned by a local firm. See Jean-François Hennart, A Transaction Costs Theory of Equity Joint Ventures, 9 STRATEGIC MGMT. J. 361, 371-72 (1988).

https://scholarship.law.upenn.edu/jil/vol16/iss1/1
ownership of a photocopier, thereby internalizing the subsequent transactions of making copies.

Internalization is much more varied than simple ownership. To the extent that the notion of internalization conveys a sense of unencumbered operational dominion over a particular productive asset, it may take a myriad of legal forms. Consider the range of transactions that an air carrier faces in providing service to a particular route. It may approach an aircraft vendor and buy an airplane for the route. By “owning” the airplane, the carrier, of course, can direct where and when it flies. Alternatively, it may structure a financial lease, by which it enjoys the normal operational incidents of ownership (but perhaps not the owner’s tax benefits) so long as it remains current in its lease payments. Some default risk is displaced onto the lessor.

If an airline faces a short-term need on a route, it may alternatively “borrow” or charter an aircraft from another firm, perhaps even from a rival carrier. Or it may “sell” the route to another firm and indirectly participate in the financial benefits arising from operation of the route through the sale price realized. Finally, an airline may “share codes” with another carrier and divide operational responsibilities. It is not clear which of these organizational responses represents internalization and which market-contracting. Indeed, several of these arrangements appear to represent hybrids of the two poles.

Internalization and its counterpart legal institution, ownership, apply not only to discrete assets, such as an

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42 An airline’s ownership rights are subject to the regulatory power of the state. Furthermore, its use of an aircraft may be subjected to supervening private rights. Consider the case of Tabitha the Cat, hiding under the floor of a Tower Airlines 747 jetliner. Ron Russell, *Pet Lost in Jet Eludes Searchers in a Game of Cat and Mouse*, L.A. TIMES, July 2, 1994, at B1. The cat’s owner threatened legal action to take the plane out of service, pending the cat’s removal. *Eight Lives to Go*, N.Y. TIMES, July 13, 1994, at A18. The jet flew 12 days and 30,000 miles with Tabitha on board. *Id.* Grounding the jet would have cost the airline far more than what a reasonable person (a non-cat lover) would value Tabitha’s life to be worth.

43 For a discussion of code sharing, see Seth E. Schofield, *As American As Apple Pie*, USAIR MAG., Mar. 1995, at 9. For example, Northwest and KLM share codes on their joint Boston-Amsterdam service. *See OFFICIAL AIRLINE GUIDE, available in SABRE* (an American Airlines database). The same flight has two codes—NW 38 and KLM 638. *Id.*
airplane, but also to larger subassemblies of assets, ranging up to sizeable business units, which may be viable firms in their own right. The relationship between the Fisher Body Company and General Motors provides a useful example. Fisher had been a stand-alone firm, selling car bodies to various automobile manufacturers. General Motors "internalized" Fisher by purchasing its shares and thus obtaining operational control of its productive capacity. Implicitly, General Motors and Fisher preferred this internalization result to other possible institutional arrangements, such as output contracts between themselves or with other manufacturers. General Motors, upon acquiring Fisher, terminated Fisher's ability to deal with other car manufacturers.

Of course, only non-human assets can be internalized in this sense; people (as agents or employees) cannot be fully internalized. The use of command with respect to human actors is subject to significant legal limitations as well as the functional proclivities of people to shirk which are explored

44 See Benjamin Klein et al., Vertical Integration, Appropriable Rents, and the Competitive Contracting Process, 21 J.L. & Econ. 297, 308-10 (1978) (discussing the evolution of the relationship General Motors had with Fisher, beginning with their contractual agreement in 1919 and ending with their merger in 1926).

45 Id. at 310.

46 General Motors' acquisition eliminated two markets: the market for Fisher's shares (its operational control) and the market for Fisher's product (the car bodies).

47 An employee may always elect to terminate an employment relationship in the sense that performance cannot be legally compelled. See Lumley v. Wagner, 42 Eng. Rep. 687 (Ch. 1852) (holding that a court may not order specific performance of an employment contract but that it may enjoin an employee from working for a third party); Robert S. Stevens, Involuntary Servitude by Injunction: The Doctrine of Lumley v. Wagner Considered, 6 CORNELL L.Q. 235 (1921) (discussing the question whether or not a court should be permitted to order performance of employment contracts and enjoin employees from working for third parties). See also Bailey v. Alabama, 219 U.S. 219 (1911) (holding unconstitutional a statute that effectively compelled personal service in liquidation of a debt); Clyatt v. United States, 197 U.S. 207 (1905) (noting that peonage is equivalent to involuntary servitude, which is made unconstitutional by the Thirteenth Amendment).

48 A firm cannot command an employee to carry out illegal, immoral or dangerous acts as a matter of public policy.
in contemporary agency theory.\textsuperscript{49}

An internalized asset or input is subject to more than command governance; it is also withdrawn from the market and excluded from other firms. These rival firms are doubly denied: the owner of the internalized asset may refuse to sell output to its rivals, and the owner may refuse to sell the asset itself, thereby prohibiting rivals from effecting a comparable feat of internalization themselves. Internalization is usually, though not necessarily, accompanied by a power of exclusion.

Ownership of an asset in a legal sense is often represented as a bundle of rights. Similarly, the principal in an agency relationship possesses a series of rights, both with respect to the agent and with respect to third parties. The owner's rights include, most importantly, the right of use, and it is from this right that the possibility of command arises. A principal enjoys comparable rights in commanding the performance of the agent.\textsuperscript{50} But ownership also includes the right to exclude others. An owner of an asset can secure exclusive use. He or she may choose not to create a market in the output of the asset (a refusal to deal) or may refuse to sell the asset itself (hoarding). Similarly, a principal in an exclusive agency (such as an employment relationship) can block other firms from access to an agent's services. Command, of course, is important, but the power to exclude others is a significant category of rights incident to ownership that is neglected by transaction cost theory.

2.3. Transaction Perspectives

In these two examples, the firm with which we are concerned is fairly clear. The airline or General Motors is the transactor which faces the relevant institutional choice: market-contracting, internalization or another alternative with respect to a desired productive asset. Of course, for every transaction (or potential transaction) there is a counterpart

\textsuperscript{49} A non-human productive asset may be mechanically unreliable, but it seems incapable of shirking.

\textsuperscript{50} The law makes finer distinctions between the principal-agent and the master-servant relationships. In a non-employment relationship, a principal may not direct the means by which the agent accomplishes the agency. See Restatement of Agency § 220 cmt. c (1933).
transactor who faces either the mirror-image\textsuperscript{51} or different institutional alternatives. At times, the counterpart transactor is the asset itself.\textsuperscript{52}

Transaction cost economic scenarios presume knowledge as to which “firm” faces the institutional dilemma. They are less concerned with the transaction as seen by the potential seller of the aircraft. The seller is believed to be ever-present, predisposed to sell planes “in the ordinary course of business,” as lawyers would phrase it. As in the example described above, the concern lies less with Fisher Body than with General Motors.\textsuperscript{53} Given the choice, when considering internalization, the usual view is that of the acquirer and not the acquired. The notion of “internalization” bespeaks a subsuming of one asset within a greater collectivity, yet some attention should be paid to the transaction from the asset’s “point-of-view.” Transaction cost notions are based on a special perspective; they are drawn from a particular vantage point.

Some transactions, however, require a deeper assessment of both transactors’ views and fields of decisional possibility.\textsuperscript{54} At the organizational poles, only one transactor’s decision is uncertain and therefore interesting; the other is given. Where internalization is observed, there is present a willing seller of the to-be-internalized asset; where there is market-contracting, there is a willing provider disposed to sell its products. This, after all, is precisely what the notion of market-failure seeks to explain, that is, whether there exists a potential contractor/vendor willing to deal on acceptable terms.

Complex economic organizations, such as strategic alliances and joint ventures, commit two firms to an ongoing relationship constructed around a particular productive asset

\textsuperscript{51} This is the case of locked-in or mutually dependent contractors.

\textsuperscript{52} This is the case in a corporate acquisition. Mergers are even more subtle, as it is often unclear which business unit is doing the internalizing and which is being internalized.

\textsuperscript{53} See Klein et al., supra note 44, at 308-10.

\textsuperscript{54} Harrigan, for example, explains the existence of strategic alliances in “partner asymmetries,” a pre-existing complementarity that optimizes each contractor’s well-being upon entry into the alliance. Kathryn R. Harrigan, Strategic Alliances and Partner Asymmetries, 28 MGMT. INT’L REV. 53 (1988).
or good. The continuing, non-trivial interest that each maintains requires a doubled transaction-possibility analysis. Both firms are important. To explain the existence of a complex organization, an accounting must be rendered as to why this particular mode of organization was the optimal institutional choice for each participant.

2.4. Transactions Involving Public Goods

Public good notions often underlie transaction cost accounts of internalized transactions.\(^5\) Transaction cost theory predicts market failure in cases where a good can be freely shared at low or declining marginal cost and where the costs of exclusion are high. Thus, a proprietary technology can be described as a public good in a market failure story, since the marginal cost of extending its use is declining and perhaps approaches zero. Absent effective nondisclosure or the presence of intellectual property rights, however, the technology is likely to be free-ridden, thereby depressing the investment in developing new technologies and depriving the proprietor firm of expected rents.\(^5\)\(^6\) Nondisclosure, a form of hoarding, is a response to the dissipation of rents caused by free-riding. It occurs when exclusive use of the technology is reserved to the firm which develops it.\(^5\)\(^7\) Internalization of transactions involving a technology or other public good lessens the probability of other firms acquiring the technology at little or no cost.\(^5\)\(^8\)

\(^5\) Richard Caves uses a public goods approach to explain the existence of MNEs. CAVES, supra note 17. MNEs constitute internalization of productive assets displaced in various national territories. See also MARK CASSON, THE FIRM AND THE MARKET: STUDIES ON MULTINATIONAL ENTERPRISE AND THE SCOPE OF THE FIRM 29 (1987) (arguing that “[b]ecause knowledge has the characteristics of a ‘public good,’ the firm with privileged knowledge tends to become multinational”).


\(^7\) Note that nondisclosure operates in the absence of formal property rights. Still, the ability of an organization to contain technology is founded on a range of legal remedies.

\(^8\) More precisely, internalization retards the inevitable diffusion of
Firms, with their command hierarchies, can eliminate much of the free-riding and other difficulties associated with the development and use of productive assets with public good characteristics. The internalization here is complex because it is predicated on the state's recognition of an intellectual property right and its willingness to guarantee exclusivity of use to the proprietor. These guarantees are not only embodied in formal intellectual property rights, such as patents, which restrain use by rival firms, but also in private law mechanisms which enable firms to confine technology successfully. For example, a firm may discipline an employee who effects an unauthorized diffusion of proprietary firm expertise.

Public goods appear to be natural objects for joint ventures and strategic alliances because sharing an asset may generate additional rents to the proprietor. In its simplest form, a public good embodies an underutilized economy of scale. Hennart tells a convincing story about scale-driven joint ventures in the aluminum industry. For technological reasons, the economies of scale of bauxite mines and aluminum refineries are different; a single mine can supply several refineries. Because of the great variation of bauxite ores, an aluminum refinery can process only the output of a particular mine. Aluminum producers enter into joint ventures for both mines and refineries, collectively avoiding opportunistic exploitation of the technologically vulnerable refineries yet permitting the undertaking of large, capital-intensive investments that might be beyond the risk tolerance of a particular firm.

Hennart argues that joint ventures are vehicles for bypassing inefficient markets for intermediate goods.
Although Hennart’s transaction cost theory of equity joint ventures is both powerful and elegant, it seems to fit some complex organizational cases better than others. Like Williamson, Hennart eschews oligopolistic explanations.

3. PRODUCTIVE GOODS AND THE ACCESS DECISION

3.1. Productive Goods

The optimal organizational structure frequently and increasingly requires a transnational distribution of production. When this is so, internalization dictates an MNE, an organizational unit that crosses national boundaries. Neoclassical international trade economics suggests that production will be located in the country which possesses a “comparative advantage,” expressed in relative factor prices. The location-of-production question is, however, sensitive to institutional arrangements, a point not adequately appreciated by traditional international trade theorists. Internalization of a particular asset may be sensible for a local firm but not for a foreign one. Here it is neither the particular productive asset nor the transaction that is determinative of the institutional form but rather the identity of the transactor.

Given transnational production, the decisional analysis then proceeds to the internalization question. According to Williamson, this involves a comparative analysis of institutional forms, with internalization favored where market transaction costs are relatively high or, equivalently, where markets fail. Dunning’s eclectic paradigm similarly

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65 Hymer, Caves, Dunning and other MNE theorists are, however, aware of this point. See Sanna Randaccio, supra note 36, at 152-62.

66 This is a formulation of Dunning’s concept of ownership advantages. See Dunning, supra note 64, at 2-4.

67 Anderson and Gatignon describe this question as the “mode of entry” decision, where entry connotes the organization of assets within a particular national territory. Erin Anderson & Hubert Gatignon, Modes of Foreign Entry: A Transaction Cost Analysis and Propositions, 17 J. INT’L BUS. STUD. 1, 2 (1986).

68 According to Williamson’s characterization of Coase’s early formulation
suggests internalization (in the form of foreign direct investment, given a transnational distribution of production) where firms possess firm-specific advantages that they prefer not to alienate.\textsuperscript{69}

The organizational decision is more complex than determining whether a firm should purchase a productive asset (internalization) or its output (market-purchasing). This complex decision may be described as an "access decision," in which internalization is only one of a larger set of possibilities. A firm must obtain access to all necessary productive assets; "transactions" are the exchanges by which such access is obtained.\textsuperscript{70}

Access to a productive good can be achieved in two ways. First, a firm can directly access the productive good itself. Second, a firm can access the output of the productive good. That is, one can control the chicken or control the eggs. Where one places the organizational frontier (in a vertical integration sense) determines the institutional form \textit{with respect to} the particular productive good.

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of the transaction cost theory of the firm:

Whether transactions were organized within a firm (hierarchically) or between autonomous firms (across a market) was thus a decision variable. Which mode was adopted depended on the transaction costs that attended each.

\textsc{Williamson, Economic Institutions, supra} note 12, at 4.

\textsuperscript{69} See Dunning, supra note 64, at 10-11.

\textsuperscript{70} Hennart distinguishes methods of organization (price system versus hierarchy) from institutional choice. Thus, even when a polar institutional form is used, a mix of organizational methods will often be observed. A market transaction will rely predominantly on the price system, but it may have hierarchical features (i.e., behavioral controls) as well. \textsc{See Hennart, supra} note 41, at 361-62.
As will be suggested *infra*, the access decision includes (i) whether recourse to a productive asset is on a spot or continuous basis, and (ii) whether such access is to be exclusive or shared. This in turn will suggest variety in the nature of organizational frontiers. A frontier represents more than a dividing line between internalized and noninternalized assets where command displaces the price mechanism. A firm can display several kinds of borders: some finite and hard and others fuzzy and permeable.

The organizational frontiers between parties to a joint venture or partners in an alliance are of a different kind than the normal membranes dividing the unitary firm from its environment. A firm participating in a joint venture or strategic alliance may obtain continuous access to a productive good, such as a technology or a distribution network, even though the good is shared. When one firm licenses use to a good internalized by another, there is a frontier between the two firms, a frontier which differs in kind from that between two spot contractors. When two firms jointly own an asset, the asset is not wholly owned by either, but it may be internalized, in the sense of being subject to command hierarchy, by both. In this case, there may be two fuzzy frontiers between each firm and the productive good but no direct frontier between the two participating firms.

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71 Financial flows will be distributed differently. Rather than spot prices, firms will distribute flows based on the productivity of the good, such as percentages of sales in trademark licensing.

72 Comparing these frontier descriptions helps to describe the differences between strategic alliances, in which firms relate directly, and equity joint ventures, in which firms relate to the commonly-held asset (i.e., the joint venture company).
3.2. Quasi-Public Goods

A firm demands exclusive access to those productive assets which generate competitive advantages. Proprietary technologies are the prime examples of such assets, as are assets subject to physical scarcity. When exclusively controlled by a single firm, these assets are withheld in two ways. First, by controlling strategic productive assets, their output may be restricted in pursuit of a classical monopoly strategy. Second, the productive assets yielding such output may be hoarded. Only by controlling the productive assets, inputs, can a monopolist or oligopolist restrict the total flow of output.

Other, nonstrategic assets may be profitably shared without dissipating rents. Indeed, these assets are freely alienable and may be distributed to all comers. Every sale results in marginal revenue. A firm with nonstrategic excess capacity will either sell the capacity or rent its use. This, again, is an economy-of-scale story. The market is an institution based on nonexclusion.

Certain assets, referred to here as quasi-public goods, are best exploited through shared access, whereby a limited number of firms share use of the productive asset but jointly withhold use from all other market participants. Collective control of the productive asset—and thus indirect control of the total output—remains essential in these sharing strategies. Here, too, economies of scale are exploited. These economies may not, however, be fully exhausted in the technological sense because efficiency gains are counterbalanced by loss of oligopoly rents as control of a productive asset dissipates.

The joint maximization of efficiencies and conservation of rents merely provide the statics explanation for the delimited sharing of a quasi-public good. A complex economic organization can discipline technological diffusion, thereby maintaining dynamic R&D advantages for an innovating firm. Indeed, sharing technology may have the perverse effect of depressing rival firm innovation, creating a strategic

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73 For example, consider a farmer who inherits a second tractor. If one tractor is sufficient to operate her farm, she will either sell the tractor or lease it to another, more needy farmer.
dependency advantageous to the innovating firm.  

4. THE DETERMINANTS OF COMPLEX ORGANIZATIONAL FORMS

4.1. Spot/Continuous Access Axis

There are at least two dimensions to consider when explaining the presence of complex organizational forms. The first dimension is temporal in nature: whether access to a productive good may be bargained for and obtained on an occasional, repeated basis or whether important terms of access must be secured over a longer period of time. I term this the “spot/continuous access decision.”

The spot/continuous access decision is consistent with Williamson's "fundamental transformation." Where markets function well, spot access is adequate. Absent a compelling internalization efficiency, a firm will purchase inputs from third parties on an as-needed basis. This is particularly true for commodity inputs. A well-functioning market assures fair, non-opportunistic prices and adequate quantities from a variety of sources over a long period of time. There is little advantage to be gained from securing

74 See MICHAEL E. PORTER, THE COMPETITIVE ADVANTAGE OF NATIONS 613 (1990) ("The most serious risk of alliances is that they deter the firm's own efforts at upgrading. This may occur because management is content to rely on the partner.").

Strategic alliances have been ominously described as "an indirect strategic weapon to slowly 'deskill' a partner who does not understand the risks inherent in such arrangements." David Lei & John W. Slocum, Jr., Global Strategy, Competence-Building and Strategic Alliances, 35 CAL. MGMT. REV. 81, 82 (1992). Similar vulnerabilities can exist with respect to distribution networks. See Atik, supra note 28, at 310-11.

75 See WILLIAMSON, ECONOMIC INSTITUTIONS, supra note 12, at 61-63.

76 The just-in-time practice that originated with Japanese manufacturers substantially shortened the period—and increased the frequency—of supplier transactions. These transactions may not be true "spot" transactions, as they are often conducted within a relational contract. See Atik, supra note 28, at 276-77 n.19 (discussing the relational contract which applies to long-term arrangements through which parties deal repeatedly); see also Ronald J. Gilson & Mark J. Roe, Understanding the Japanese Keiretsu: Overlaps Between Corporate Governance and Industrial Organization, 102 YALE L.J. 871, 884-89 (1993) (discussing the keiretsu model of the Japanese economic system).

77 Eliminating price volatility can be accomplished through a mix of
continuous access to commodities which are likely to be freely and reliably available in the future.\textsuperscript{78} Note that spot access admits both outright purchase of inputs as well as spot use of those productive goods giving rise to the needed inputs.

In cases where markets fail, the small numbers condition,\textsuperscript{79} spot access becomes hazardous, and continuous access is preferable in order to reduce opportunism. Again, this aspect is temporal in nature. Continuous access means a firm can obtain a flow of inputs without having to bargain repeatedly for them. Ownership of a productive asset (i.e., internalization) necessarily provides continuous access to its outputs. Continuous access may also be secured in other organizational arrangements, such as long-term contracting. A long-term contract can be drawn either for use of a productive good, such as an equipment lease, or for its product, such as an output contract. A technology license is an example of a long-term contract for use of a productive good, the good being the proprietary knowledge necessary to produce and exploit wanted inputs.

A long-term output contract thus sits on the same pole with ownership in that it provides continuous access to a productive good, a result consistent with the “Coase theorem” and well known to business planners and corporate lawyers.\textsuperscript{80} Both ownership and long-term contracts eliminate the need to bargain over a greater period of time.

Long-term contracting may have different financial characteristics than ownership,\textsuperscript{81} depending on how prices

options and/or futures contracts.

\textsuperscript{78} KENNETH J. ARROW, THE LIMITS OF ORGANIZATION 40-42 (1974) (discussing various costs of information and their fluctuations due to familiarity and other factors).

\textsuperscript{79} See WILLIAMSON, ECONOMIC INSTITUTIONS, supra note 12, at 61 (noting the benefits of a “large numbers bidding condition”).

\textsuperscript{80} The use of long-term leases and other forms of complex organization is sometimes motivated by extrinsic advantages, such as tax breaks. In such cases, planners seek to graft many of the incidents of ownership onto an otherwise distinct legal form. See WILLIAM A. KLEIN & JOHN C. COFFEE, JR., BUSINESS ORGANIZATION AND FINANCE: LEGAL AND ECONOMIC PRINCIPLES 295-96 (5th ed. 1993) (noting the advantages of leasing as opposed to purchasing an asset subject to debt).

\textsuperscript{81} The supplier party to a long-term output contract essentially owns an option on the value of the productive asset upon expiration of the contract. The purchaser in a sense holds a lease of the productive asset. Id. at 48-50.

https://scholarship.law.upenn.edu/jil/vol16/iss1/1
are set. The sales price for a productive asset essentially freezes the cost of the output it will produce over time.\textsuperscript{82} A long-term contract may or may not have the same result.

The spot/continuous access axis thus appears as follows:

<table>
<thead>
<tr>
<th>SPOT ACCESS</th>
<th>CONTINUOUS ACCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>Ownership</td>
</tr>
<tr>
<td></td>
<td>Long-term Contract</td>
</tr>
</tbody>
</table>

Transaction cost theory suggests internalization will occur where market failure is likely.\textsuperscript{83} Internalization results where the costs of internal (command) ordering are less than market (price) ordering. The spot/continuous access dimension tracks this reasoning. Spot access is relatively cheaper in well-functioning markets. In small-numbers situations, where Williamson finds internalization,\textsuperscript{84} this model suggests continuous access, which may be satisfied by either formal ownership or long-term contracts. Both forms suppress opportunism, and both permit the use of command governance.

4.2. \textit{Exclusivity Axis}

There is another important dimension to consider: whether access to the productive asset must be exclusive or may be shared. If the spot/continuous access decision reflects a minimization of transaction costs, the shared/exclusive access decision is driven by the desire to preserve imperfect competition rents or other strategic advantages.

Some assets, by their physical nature, can only be used exclusively. That is, access by one firm necessarily precludes access by another.\textsuperscript{85} Take, for example, the famed French spring Source Perrier. It produces (or so we are led to believe)

\begin{itemize}
\item Finance theory predicts that the sales price will be the expected value of the return of the asset over its useful lifetime, adjusted for external and internal risks. \textit{See generally id.} at 303-24 (discussing methods of valuing assets and enterprises).
\item See \textit{supra} note 15 and accompanying text.
\item See \textbf{WILLIAMSON, MARKETS AND HIERARCHIES}, \textit{supra} note 12, at 26-30.
\item This susceptibility to exclusion is an economic definition of a private good. \textit{See supra} note 18 (defining private good).
\end{itemize}
a finite flow of water every year. The firm which captures this water necessarily withholds it from all other firms. It is true that the Perrier spring conceivably could be tapped by several firms, but the quantity of water harvested by any one firm would necessarily diminish the quantity that could be harvested by another, effecting an exclusion. In some sense, physical limits can be analyzed simply as an absence of scale economies. They may, however, generate valuable rents to their owners.

Other assets are available in such large quantities that the amount drawn by any one firm has no discernible effect on other firms which desire access to comparable inputs. Most commodities fit into the “nonexclusive” category so that no purchaser can “corner the market” in a commodity. A computer manufacturer may buy its cathode ray tubes from an array of vendors. While the computer manufacturer will certainly own, in the legal sense, the monitors it purchases, it does not by so owning these inputs significantly diminish its competitors’ access. The competitors may easily purchase identical monitors from the same or rival vendors. A well-functioning market will reliably provide goods on a “spot” basis with no viable opportunism and on a nonexclusive basis to all willing purchasers and thus with no diminishment of access to rival firms.

In contrast, a piece of proprietary technology may be hoarded by its owner. This is the essence of the monopoly granted to patent owners: while the information underlying the patent may be published, its use is restricted by law to its owner and the owner’s permittees. Goods embodying the patent are subject to exclusivity, in that they are deliberately withheld from rivals. There are many telling examples from the pharmaceutical industry. Holders of pharmaceutical patents have notoriously exercised their industrial property

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86 This would create a “tragedy of the commons,” whereby unrestricted access to a common asset causes all to overutilize it, resulting in an aggregate negative effect. Garrett Hardin, The Tragedy of the Commons, 162 SCIENCE 1243, 1244-45 (1968).

87 In this case, there will be a concomitant price effect that may or may not be negligible. See TiROLE, supra note 10, at 65.

88 Rivals may obtain access to a patented technology by negotiating a licensing agreement with the patent holder. This license may operate to protect, or even increase, the owner’s monopoly rents. See id. at 410-14.
rights to block exploitation by rival firms, even in markets they chose not to service.  

Exclusivity is also sought over those assets which are deemed to be "appropriable." An appropriable asset is one which can be duplicated at low cost. Exclusivity is a means of containing the information incorporated in an appropriable technology, preserving a return on the investment made by an innovator.

A good which incorporates a proprietary technology may appear to be a commodity to firms seeking access to it because it is reliably available on a seemingly spot, nonexclusive basis. Nonetheless, it may still be subject to opportunism by the technology holder. For example, a computer manufacturer may purchase chips from Intel. Its purchases do not significantly affect the number of microchips Intel holds available for sale, and therefore it is unable to diminish its competitors' access to Intel microchips. Nevertheless, in exercising monopoly power over its proprietary technology, Intel may limit the total number of microchips it sells.

Finally, some goods may be shared at very low cost and with very slight exclusionary effects. Excess computer capacity is an example of a good that may be shared in this way. Productive goods are commodities if they yield no rents and can therefore be shared without declining marginal revenues.

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89 Nations affected by these practices responded by instituting working requirements and mandatory licensing.

90 See Magee, supra note 56, at 326-28 (discussing extensively the issue of appropriability).

91 It is not clear whether Williamson would consider a patent holder's insistence on monopoly profits to be an instance of opportunism, which he refers to as "self-interest seeking with guile." WILLIAMSON, ECONOMIC INSTITUTIONS, supra note 12, at 47; see generally id. at 47-49 (discussing opportunism in detail). Monopoly power arises from a particular kind of small-numbers bidding problem.

92 General Motors purchased the data firm EDS from Ross Perot in 1984. Nancy Hass & Marc Levinson, Off the Reservation, Computers: EDS Ponders Life Without Ross Perot and General Motors, NEWSWEEK, May 30, 1994, at 56, 57. General Motors intended to commit a large portion of EDS' computer capacity to its internal use and lease the rest out to third parties. Id. "CEO Roger Smith bought EDS for GM's personal use—to integrate all of its systems worldwide." Id. at 57.
Together, these three possibilities suggest the following continuum:

**ASSET EXCLUSIVITY AXIS**

<table>
<thead>
<tr>
<th>NONEXCLUSIVE</th>
<th>SEMIEXCLUSIVE</th>
<th>EXCLUSIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodities</td>
<td>Quasi-Public Goods</td>
<td>Public Goods (Strategic)</td>
</tr>
</tbody>
</table>

Note that public goods can easily be *private* property. The notion of a public good describes a technological characteristic of the asset in that it gives rise to diminishing marginal costs. It does not necessarily imply that the good is in the public domain. Absent state protection, chiefly in the form of property rights, most public goods would inevitably fall into the public domain.

Valuable technology will either be a strategic public good or a quasi-public good. The difference may not be intrinsic to the technology itself but rather to the optimal industrial structure set to exploit it. Thus, where the optimal industrial structure is a single firm, sharing of the good will not be considered because doing so would destabilize the competitive structure. By contrast, the optimal industrial structure—again, from the controlling firm's viewpoint in maximizing its total rents—may involve multiple firms sharing the technology.83

As they age, technologies may pass from public good to quasi-public good status.84 There are several empirical

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83 For example, Apple recently announced that it would license its Macintosh operating system to third parties, thus creating the first legitimate Macintosh clones. *Apple Under the Knife*, ECONOMIST, Oct. 22, 1994, at 73. In addition, Bulova licensed its tuning fork technology to Citizen Watch of Japan, which then applied the technology to other electronic applications. *See* Lei & Slocum, *supra* note 74, at 84.

84 Teece has argued that the technology-transfer costs of MNEs are below those of joint ventures and licensing but that the deficiencies of these forms diminish over time. He thus projected a cycle for the exploitation of technology. *See* DAVID J. TEECE, THE MULTINATIONAL CORPORATION AND THE RESOURCE COST OF INTERNATIONAL TECHNOLOGY TRANSFER 80-82 (1976); *see also* Cletus C. Coughlin, *The Relationship between Foreign Ownership and Technology Transfer*, 7 J. COMP. ECON. 400, 408 (1983) (discussing Teece's argument in detail).
studies which suggest that firms initially internalize new technologies, using MNE structures to exploit them in different national territories. As the technologies mature, innovators are more likely to enter strategic alliances or joint ventures built around these technologies.\(^9\)

4.3. Matrix of Organizational Forms

4.3.1. The Matrix

The two axes considered above are meant to capture important features of the terms of access to a productive good. The first axis expresses the vulnerability to opportunism; the second represents the importance of control of strategic productive assets in order to exclude others. When we consider these two dimensions together, we obtain the following matrix:

<table>
<thead>
<tr>
<th></th>
<th>SPOT</th>
<th>CONTINUOUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXCLUSIVE</td>
<td>[empty cell?]</td>
<td>Firm (internalization)/MNE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Output Contracts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exclusive Distributorship</td>
</tr>
<tr>
<td>SEMI-</td>
<td></td>
<td>Strategic Alliances</td>
</tr>
<tr>
<td>EXCLUSIVE</td>
<td></td>
<td>Equity Joint Ventures</td>
</tr>
<tr>
<td>NON-</td>
<td></td>
<td>Market</td>
</tr>
<tr>
<td>EXCLUSIVE</td>
<td></td>
<td>Licensing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Franchising</td>
</tr>
</tbody>
</table>

Various common institutional forms are displayed in these cells, but note that these placements are somewhat tentative. Further, certain categories may spill over into different cells.

\(^9\) See Chwo-Ming Joseph Yu & Ming-Je Tang, *International Joint Ventures: Theoretical Considerations*, 13 MANAGERIAL & DECISION ECON. 331, 336 (1992). Yu and Tang argue that U.S. MNEs preferred establishing wholly-owned subsidiaries (internalization) prior to the 1970s, a period of marked technological cost advantages for U.S. enterprises. *Id.* As the technological lead in the United States waned, however, U.S. MNEs began to favor joint ventures as a preferred entry strategy to foreign markets. *Id.*
For example, a licensing agreement may have a high degree of exclusivity and dependence and therefore be accurately described as a strategic alliance, or it may be available generically to many licensees.

Again, continuous access to a productive asset will be sought where Williamsonian opportunism is likely, whereas spot access is optimal in well-functioning markets. Exclusive access fits firms with strategic assets, general access is associated with commodities, and joint access to quasi-public goods generates a host of complex forms. The essential insight promoted here is that access has at least two dimensions: one refers to opportunism and the other to competitiveness. Thus, the matrix is perhaps more "eclectic" than are more purely transaction cost explanations of organizational hybrids.

4.3.2. Spot/Nonexclusive Cell

In this matrix, market-contracting is located in the spot/nonexclusive cell. Markets function well in large-number conditions. Where markets function, a firm requiring an output can reliably obtain access to it, lessening the pressure for internalization. Internalization has its costs too, as Williamson reminds us, and firms will resort to market contracting for those inputs that are distant from their core competencies. In strong markets, there is an ongoing confidence regarding access on reasonable terms, thus favoring spot transactions.

Markets imply, however, multiple transactors for each vendor. A firm which resorts to access through the market to obtain an input recognizes that the identical input is also available, perhaps on comparable terms, to its competitors. Thus a foregone strategic opportunity for a monopsonist may create a monopolist. For example, IBM made a strategic decision to obtain the operating systems for its personal computers from a third-party vendor, Microsoft. Microsoft sells its operating system, MS-DOS, to IBM's competitors as
well. Microsoft, like Intel in the example described above, may extract rents from sales of MS-DOS, a "commodity," to all of its customers. Microsoft is somewhat disciplined, however, because at some point IBM, or other manufacturers, might abandon MS-DOS for a proprietary (internalized) operating system.

4.3.3. Continuous/Exclusive Cell

In the continuous/exclusive cell resides the unitary firm. The transaction cost explanation for the existence of firms emphasizes the firm as a response to opportunism. As explained above, continuous access to necessary inputs is important in order to address opportunism. A firm is only one institutional variant which secures continuous access. Why then are firms utilized when there is a range of institutional solutions to opportunism?

Exclusivity of access is an equally important consideration driving the choice of a unitary firm as an institutional arrangement. Indeed, there is no organizational form superior to the firm for restricting access to valuable technology.

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99 A recent article explained:
In its rush to get a personal computer to market, IBM decided to rely on Intel's microprocessors and the DOS operating system, which Microsoft didn't create from scratch but bought from another Seattle company for $50,000. IBM made both Microsoft and Intel sign elaborately detailed contracts that, quite amazingly, left them completely free to sell to IBM's competitors.

Id. at 68.

Contrast this with Apple's use of a proprietary, "internalized" operating system. While developing its own operating system may have introduced certain inefficiencies, Apple has largely been successful in withholding its operating system from its competitors. See, e.g., Apple Under the Knife, supra note 93, at 73.

100 Ironically, it was IBM's selection of Intel's microchips and Microsoft's MS-DOS as IBM standards which created these rents. Intel CEO Andrew Grove has stated: "I'm very grateful to IBM for making us that gift." Sherman, supra note 98, at 58.

101 See Do It My Way, ECONOMIST, Feb. 27, 1993 (supplement, A Survey of the Computer Industry), at 11, 12. IBM, together with Microsoft, has developed OS/2, a new proprietary operating system, which was not intended to be made available to IBM's rivals. OS/2 has not been very successful at distinguishing IBM's personal computers from those manufactured by its competitors. See Sherman, supra note 98, at 74.

102 This issue is explored extensively in the literature concerning MNEs.
The internal discipline maintained within a firm can effectively discourage diffusion. The legal notion of "trade secret" embodies a free flow of knowledge within the firm, coupled with a rigorous barricade against the exterior. Consequently, firms permit technological flow within the firm's limits, and they can therefore facilitate technology transfer. A relatively large firm, such as an MNE, may permit the exploitation of technology in many markets while effectively excluding competitors from access to strategic productive assets.

Holders of valuable assets\(^\text{103}\) may resist joint ventures, licenses and other forms of strategic alliances for fear of losing control of these assets.\(^\text{104}\) While these forms may provide safeguards against technological diffusion, they do not match the hermetic qualities of a unitary firm.\(^\text{105}\) A more complete theory of the firm will emphasize both the firm as a response to opportunism and its effectiveness for containing technology.

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See generally Sanna Randaccio, supra note 36.

\(^{103}\) The valued asset is not necessarily a technology. IBM resisted any kind of joint venture or licensing for years, in part, it has been argued, to avoid yielding valued inoperability with rival systems. See Alan Robinson, IBM to Bid Again to Build Computers in Mexico, MIAMI HERALD, Feb. 4, 1985 (Business Supplement), at 23.

\(^{104}\) IBM rigorously avoided international equity joint ventures. For example, it chose to withdraw from the Indian market rather than submit to India's mandatory joint venture law. See Joseph M. Grieco, Between Dependency and Autonomy: India's Experience with the International Computer Industry, in MULTINATIONAL CORPORATIONS: THE POLITICAL ECONOMY OF FOREIGN DIRECT INVESTMENT 58-59 (Theodore H. Moran ed., 1985). IBM's reputation for hostility to joint ventures allowed it, unlike any other U.S. computer manufacturer, to avoid Mexico's prior mandatory joint venture law. See Robinson, supra note 103, at 23.

\(^{105}\) Ahern describes the bitter experience of a Canadian firm, which claimed its foreign joint venture partner "stole technology, manufactured the product (in the same plant where they took advantage of scale and joint-use economies), and sold it, at a reduced price, in direct competition with the alliance partner." R. Ahern, Implications of Strategic Alliances for Small R&D-Intensive Firms, 25 ENVT & PLAN. A 1511, 1518 (1993). The CEO of a second Canadian firm was less perturbed: "[A]fter all, we stole technology from [two other firms] to develop our first [circuit] board." Id. at 1520. Thus, the risk of diffusion to an alliance partner is a separate issue from the risk of diffusion to external competitors.
4.3.4. Continuous/Semiexclusive Cell

The conjunction of opportunism concerns with the presence of viably-shared economic rents provides an environment appropriate for complex organizations, such as joint ventures and strategic alliances. Complex economic organizations provide continuous access to key productive assets. A firm can typically draw on a joint asset in a manner not dissimilar to its dealings with wholly-owned, internalized assets. Consider two firms which commonly invent a technology, such as Phillips and Sony, which developed the compact audio disc. Each firm can produce products incorporating the compact disc technology. Each firm can treat the technology as its own in producing its products. A complex economic organization may permit each participating firm to exert command governance over a productive asset.

This simultaneous, independent command may be subject to limits. First, there may be a finite number of firms which can efficiently use a productive asset. Economies of scale may limit the optimal number of firms taking a command interest in a particular good. For example, during the nineteenth century, several railroads wishing to cross the Mississippi River at St. Louis built a bridge together to carry their trains. Up to a certain density of traffic, each railroad could run its trains over the bridge as if it were a wholly-owned part of its rail system. At a certain point, however, the collective demand placed on the bridge would exhaust its total capacity, requiring each railroad to deal with its partners in order to secure passage rights.

Second, management costs may increase as the number of participating firms increases. Likewise, the potential for inter-firm conflict may increase with the number of partners. This

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106 See Michael Schrage, IBM Looks at Optical Laser Discs, WASH. POST, Mar. 9, 1984, at E1 (noting that the compact audio disc was jointly introduced by Sony Corporation of Japan and N.V. Phillips of Holland).

107 Each firm benefits from the other's use of the technology, as they jointly establish compact disc technology as a standard. Id. at E2.

is but a transaction cost limitation on the viability of complex economic organizations. The Airbus consortium is comprised of aircraft firms from the United Kingdom, Germany, France and Spain, additional partners drawn from the remaining European Union member states might have caused the consortium to break down.

Third, utilization of certain joint assets might require the cooperation of the other participant to the alliance or joint venture. Indeed, this mutual dependency may be the key to the structural stability of large, noncontractual organizations.

Both equity joint ventures and strategic alliances are included in the continuous/semiexclusive category. Despite the casual manner in which these terms have been introduced, there are important organizational differences between these two archetypal forms.

An equity joint venture involves the establishment by two firms of a third entity, the joint venture company, which is usually separately incorporated. In an equity joint venture, each partner firm owns shares in the joint venture company. This third entity is the productive asset with which each partner transacts; there is little direct interaction between the two sponsoring firms. In one sense, at least with respect to corporate formalism, the joint venture company is external to both sponsoring firms. In other respects, the joint venture company may be subject to limited command from each sponsoring firm. An equity joint venture thus represents a peculiar type of internalization.

With a strategic alliance, two participating firms transact directly with each other. Each firm may provide the other with access to an internalized (owned) asset; one firm may provide technology or a product, the other a distribution channel. Reciprocal access to assets may even be provided. While the firms may share access to key assets,

109 See Eglin, supra note 21, at 27.
111 Hennart recognizes this distinction. Accordingly, he limits his transaction cost model to equity joint ventures. See Hennart, supra note 23, at 4.
112 For example, in the strategic alliance between AT&T and Olivetti, each firm provided the other with access to its distribution network. AT&T sold
their respective abilities to command those assets are not equivalent. The firm which “owns” the asset may possess greater certainty and control than the firm which merely enjoys “use” rights. The continuous/semiexclusive access category includes both of these types of organizational arrangements.

5. Complex Organizations: Joint Ownership and Shared Use

5.1. Joint Ownership

Joint ownership can describe a variety of institutional forms. Generally, joint ownership provides for relatively unrestricted, on-demand use by each of the co-owners of a productive asset, while at the same time barring all other firms from use of the asset.

An equity joint venture is one example of joint ownership, in that two partner firms jointly own the shares of the joint venture. In such a case, the incorporated joint venture may be the productive asset subject to joint ownership. For example, General Motors and Toyota jointly owned the shares to NUMMI, an incorporated car manufacturing facility in Fremont, California, and both owner companies marketed items produced by the NUMMI plant.

Joint ownership becomes more problematic when one co-owner has the ability to block access by the other co-owner. In these cases, internalization may be far from complete in that a co-owning firm may not unilaterally secure access to the co-owned productive asset. A jointly-owned asset subject to finite

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Olivetti’s personal computers in the United States, and Olivetti sold AT&T’s office equipment in Western Europe. For a discussion of the alliance between AT&T and Olivetti, see Atik, supra note 28, at 274 n.3.

113 Equity joint ventures, on the other hand, may not be good examples of joint ownership. The formal division of control represented by the relative shareholding may not correspond to the effective access that each joint venture partner has to the assets covered by the joint venture agreement.


115 See Union Members in California Approve Four-Year Contract, WALL ST. J., Aug. 15, 1994, at B4. The cars produced by NUMMI include “the Chevrolet Geo Prizm, the Toyota Corolla and the Toyota compact pickup truck.”
physical limits is necessarily subject to co-owner exclusion: what one co-owner uses is no longer available to the other. Quotas or other allocation mechanisms must be engineered to avoid opportunism and conflict; a firm which remains within the limits of its quota may enjoy relatively untrammeled command:

A co-owned asset which requires ongoing cooperation by a co-owner can be effectively withheld by a withdrawal of support.\textsuperscript{116} This type of joint ownership produces a mutual hostage situation.\textsuperscript{117} Therefore, it is clear that joint-ownership, as an institutional response, does not necessarily eliminate access concerns.

For many assets, particularly those with "public good" characteristics, joint ownership can provide each co-owner with the possibility of command governance. A well-known European Union case described the effort of various small paint manufacturers to develop a common paint formula for use on ocean vessels.\textsuperscript{118} Each participating firm could draw on this common asset (i.e., use the formula) without restraint.\textsuperscript{119} The co-owning firms recognized, however, that the commercial value of their formula would diminish if it were placed in the public domain. Accordingly, they withheld it from their competitors, provoking a competition action by the European Commission.\textsuperscript{120} As the Transocean Marine Paint case demonstrates, joint ownership also results in an exclusion against non-co-owners.

Direct joint ownership of an incorporated joint venture may effectively result in indirect joint ownership of a joint venture's assets. Thus, two parties to an equity joint venture may obtain access to particular assets of the venture, such as a

\textsuperscript{116} Access to a productive asset may require "two keys:" both co-owners must cooperate to enjoy the benefit or use of the asset. Most equity joint ventures require ongoing support from each co-owner to function.

\textsuperscript{117} For an explanation of reciprocal cooperation as a structural element promoting alliance stability, see Atik, \textit{supra} note 28, at 293.


\textsuperscript{119} Each manufacturer, however, was required to pay a commission for sales made in another manufacturer's territory. \textit{Transocean Marine Paint Ass'n}, 1974 E.C.R. at 1065.

\textsuperscript{120} Commission Decision 67/454, \textit{supra} note 118, at 11.
distribution network.

5.2. Shared Use

Contract-based shared use differs both formally and structurally from joint ownership. Formally, one firm sharing access remains the legal owner; its access is incident to its ownership interest. The other firm enjoys access as a licensee of the owner firm. While both firms enjoy a property interest in the shared asset, their interests are not symmetrical.

Strategic alliances are built around the practice of shared use. For example, Chrysler shares its U.S. distribution network and brand names with Mitsubishi. Chrysler sells certain Mitsubishi models under the Dodge and Plymouth nameplates through Dodge and Chrysler-Plymouth dealerships.

Contract-based shared use may also introduce competition between the participant firms. This may not, however, eliminate the enjoyment of imperfect competition gains. Firm A, owner of a technology, may license Firm B on terms which assure extraction of oligopoly rents. Intel, for example, has licensed manufacture of various microchips to other microchip manufacturers. These firms compete with Intel, but because they must pay royalties to Intel on the microchips they sell, Intel is able to enjoy some rents from these sales.

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121 See Atik, supra note 28, at 273.
123 As an illustration, in 1988, the author purchased a new Mitsubishi-produced Plymouth Colt from a Chrysler-Plymouth dealer. The automobile is marked “Imported for Plymouth” while the automobile’s key is stamped “Mitsubishi.”
124 See Lei & Slocum, supra note 74, at 82.
126 See, e.g., Louise Kehoe, Intel Closes Silicon Valley Plant, FIN. TIMES, Dec. 8, 1989, at 132 (noting that Intel expected to receive high royalty and licensing revenues).
5.3. Simultaneous Exclusive Access

A third case demonstrates that what appears to be shared use can in fact be simultaneous exclusive access by a number of firms exploiting a single asset in different territories. More precisely, what may casually be thought of as a single asset may in effect be a bundle of assets that can be neatly severed along national lines. Technology embodied in industrial property is in fact partitioned into a set of discrete territorial property interests under the various national legal systems. Thus, for Firm A to enjoy Japanese rights to a technology and for Firm B to enjoy European rights to the same technology is not in fact shared access to a single asset but is rather mutually exclusive access to cleanly partitioned assets. Simultaneous exclusive access, and not shared access, underlies many international strategic alliances.

What makes this form interesting is that while the productive assets are neatly partitioned, their respective outputs may not be. Even if different firms are exploiting productive assets in clearly segregated markets, they may have a joint dissuasive effect on other potential market entrants. Thus, segregated productive assets may in fact constitute a form of sharing because they yield substitutable outputs.

6. CONCLUSION

Contemporary theories of the firm fail to explain the presence, and increasing prevalence, of complex organizational forms of enterprise, such as strategic alliances, joint ventures and other "hybrids." In part, this explanatory failure results from the polar question that a theory of the firm seeks to answer: why are certain economic exchanges (transactions) effected across markets while others are conducted wholly within the firm? The internalization question is nearly universally posed in dichotomous terms. As such, there is as much made of the explanations given to the "why not markets?" question as to the "why?" question. Reasons why markets are not efficient are deemed to be determinants of the

127 This proposition overstates the case somewhat. Technology that is not encapsulated in formal industrial property rights, such as trade secrets and tacit knowledge, is, in fact, shared.

https://scholarship.law.upenn.edu/jil/vol16/iss1/1
firm and vice versa. Further, the dichotomy can be expressed either in terms of institutional form (firms or markets) or in terms of governance (command or price). Simply put, merely showing that markets fail does not explain the existence of firms, as there are other institutional alternatives, including the complex economic organizations discussed in this article.

Transaction cost economics provides only a partial explanation for the existence of complex economic organizations. While these arrangements are, in part, a response to market failure, they also permit the selective sharing of strategic assets among independent firms while conserving valuable economic rents. I use the term "quasi-public goods" to describe those assets which can be efficiently shared by several firms through joint ownership or shared access, but which are withheld from the public domain in order to preserve competitive advantages. Complex economic organizations exist to exploit quasi-public goods effectively.

General shared access is efficient in instances where there is no rent associated with an asset; asset access costs are reduced by their broadest distribution. A nondifferentiated commodity (e.g., unskilled labor) or a public domain technology is more profitably shared. A highly valued asset (such as a rent-producing piece of proprietary technology), on the other hand, is better restricted to exclusive access. The problem here is not so much one of transaction cost minimization, although there are small numbers concerns and Arrow's paradox as well, but it is rather a pure question of economic rents. By creating competition, rents are destroyed. Licensing can address most of the transaction cost/market failure concerns associated with special assets, but it may be unsuited to preserving oligopoly.

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128 This is a parody of transaction cost theory.
129 The link between command governance with firms and the price mechanism with markets is not without exception. Hennart has observed that command governance is not exclusively associated with internalized transactions and that the price mechanism can operate within firms, thereby producing a richly variegated taxonomy of organizational forms. See Hennart, supra note 41, at 370.
130 This is the case when dealing with true public goods.
131 See Hennart, supra note 41, at 365 (discussing Arrow's paradox and joint ownership as a possible solution).
A quasi-public good may be shared at little marginal cost by a select group of firms, but it can be effectively withheld from general use. Quasi-public goods will necessarily produce rents; it is this quality which distinguishes them from commodities. Thus, there is value to be preserved by limiting their general diffusion.

A complex economic organization is a superior structure to exploit special productive assets (quasi-public goods) where (i) the prospect of market failure makes spot-contracting unreliable, (ii) access can be viably shared without general diffusion but (iii) enhanced attention must be paid to preserving economic rents.

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132 Legal institutions exist to permit sharing of a technology among a group of authorized firms while restricting use by rivals.