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Capabilities, Confusion, and the Costs of Coordination: On Some Problems in Recent Research On Inter-Firm Relations

by
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Abstract
The arguably dominant approaches to the study of interfirm relations are the capabilities and organizational economics perspectives. This paper discusses their merits and weaknesses, concentrating on the capabilities perspective, which is argued to rest on rather weak foundations, particularly as a theory of economic organization (including interfirm relations). However, it is suggested that both perspectives may be seen as part of an overarching bargaining approach to economic organization (yet to be developed). Both perspectives have identified impediments to efficient bargaining.

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Interfirm relations, capabilities, organizational economics, research methodology

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Contents

I. Introduction

I am not an expert on inter-firm arrangements, and my perspective will therefore to a large extent be that of an outsider to the field. More specifically, I shall bring some broad ideas from the theory of the firm field and, to a smaller extent, the firm strategy field to bear on issues relating to inter-firm arrangements. My discussion will be rather ”meta”, and I shall not present anything resembling a model; instead I shall be concerned with basic insights and with research heuristics and methods.

A starting point for my discussion is to note that the perhaps dominant theoretical approach to the study of inter-firm relations, if there is one, is a *bouillabaise* consisting of numerous ingredients of which transactions costs and capabilities are the most clearly visible parts, but in which other ingredients certainly also flow around (e.g., Nooteboom 1999). I am not a *bouillabaise* expert either, but an examination of the literature reveals that the inter-firm *bouillabaise* is one that is often cooked on the basis of ingredients of which we have little knowledge, these ingredients are combined in ways that are not always transparent (i.e., the recipes are not clearly stated), and we have very little knowledge about how the ingredients – notably, capabilities and transaction costs - interact. Care in the enjoyment of this particular diet is therefore recommended.

Now, what are these ingredients and recipes that we don’t really understand? With respect to the recipe part, it has sometimes been argued that one can follow either a “transaction *value*” recipe to the study of inter-firm organizations or an “transaction *cost*” recipe.[1] A number of writers associated with the capabilities/resource-based approach have made this basic distinction. Moreover, they have argued that it is a fundamental one -- not only in the study of inter-firm relations, but in the theory of economic organization more generally (e.g., Conner 1991; Zajac and Olsen 1993; Madhok and Tallman 1998). In fact, it is taken to be the distinction that separates capabilities approaches from economic organization approaches, such as the transaction cost approach. However, I shall argue that the distinction between transaction cost and transaction value does not really stand up to scutiny. Hence, the “confusion” part of the title of this paper.

Rather than adding to the confusion by stressing spurious distinctions, basic theoretical research should aim at more fully integrating insights with insights from the capabilities

[1] And also corresponding to the distinction between “production approaches” and “exchange approaches” that one may encounter in some of the farther corners of the literature.

approach. To be sure, others have said this before me. However, in this case, as in so many other cases, talk is cheap; "saying" is much more easy than "doing". And so far, very little real integration has actually taken place. A fundamental reason why integrative efforts are bound to be severely handicapped for a long time to come is that a crucial ingredient in the inter-firm *bouillabaise* – namely, that of *capabilities* – is in actuality a cover for our ignorance. Frankly, we don't really know what capabilities really *are*, although I guess most of us agree that there is definitely something to the concept. They are black, if not empty, boxes. As they appear in the literature, capabilities are (mostly) aggregate concepts that may be located in firms, among firms and even in industrial districts (as I have suggested myself, Foss and Eriksen 1995). We are pretty much in the dark about how they relate to individual actions and learning, and I think that we badly need a microfoundation for capabilities reasoning (see Foss and Foss 1999). Thus, I shall make a stride forward in the effort to criticize capabilities reasoning as an antidote to the strawmen who praise it for all virtue, and I do so with a good conscience, since I have myself on earlier occasions indulged in a fair amount of capabilities talk (e.g. Foss 1993).

Now, there is, to be sure, considerable merit to many ideas in the capabilities approach. And this paper should certainly not be read as an unqualified celebration of organizational economics. The latter body of theory does clearly neglect many phenomena that are important to understanding inter-firm relations, not the least learning, as Oliver Williamson (1998) has recently admitted. The points of this paper are rather that

- although capabilities ideas are likely to be crucial for a satisfactory understanding of inter-firm relations, work on capabilities strongly need to be equipped with firmer theoretical foundations;
- there is no point in articificially separating capabilities and organizational economics approaches; and
- both may be argued to have identified impediments to efficient bargaining and contracting. Thus, strictly speaking it does not make sense to claim that there is an approach, namely organizational economics, which in contrast to the capabilities approach is "contractual". In actuality, they are both part of an overarching contractual approach to inter-firm relations (yet to be developed).

II. Some Distinctions — and Some Confusions

A Map of the Field

Let me begin by presenting a taxonomy of sorts (inspired by Sid Winter 1988) that I believe pretty accurately captures how many scholars that do economics-oriented (or at least, economics-inspired) work on inter-firm relations *themselves* perceive of their field (Table 1).

TABLE 1

A map of economics-oriented work on inter-firm relations

			Rationality viewed as…	
			Bounded	***Perfect***
Focal Con-cern		***Production (given capabilities)***	Richardson (1972)	NIO work on, e.g., production joint ventures
	"Trans action value"	***Learning about production***	Langlois (1992), Amendola & Gaffard (1994), Lundvall (1992), Arino & de la Torre (1998), Nooteboom (1999), Zajac and Olsen (1993)	Real options approaches to inter-firm relations (e.g., Kogut 1991)
		Structuring deals between firms	Williamson (1991), Teece (1986)	Incomplete contracts work
	"Trans action cost"	***Learning about the structuring of deals***	Nooteboom (1999), Langlois (1992), the IMP approach (e.g., Johansson and Mattson 1987)	Balakrishnan and Koza (1993)

As we all know the scholarly community that works on inter-firm relations is extremely broad-ranging, encompassing, for example, management scholars, economic geographers and new industrial organization economists, in addition to transaction cost and capabilities theorists. Needless to say, they study inter-firm relations with different approaches and for different purposes. Thus, the taxonomy probably leaves something out, for example, economic geographers would probably like to have the dimension of space added to the taxonomy. And some – but only a few — scholars might reject the taxonomy. Thus, I shall take it as coming close to how the field (simply defined as those who study inter-firm relations) conceives of itself.

Given this, let me say a few words about the taxonomy. There are three dimensions to it — namely, a transaction value/production and transaction cost/exchange dimension, a bounded rationality—full rationality dimension and a statics—dynamics dimension. These distinctions relate to the distinctions that you will often encounter in the literature between capabilities and organizational economics approaches to inter-firm arrangements, particularly from those who are positively biased towards the capabilities approach (e.g., Nooteboom 1993; Zajac and Olsen 1993; Madhok 1996; Tallman and Madhok 1998). Table 2 summarizes these distinctions, or, perhaps rather, partial charicatures.

TABLE 2

A partial charicature of theories applied in inter-firm research

"The Capabilities Approach"	**"Organizational Economics"**
• "Production oriented". • "Transaction *value*". • "Knowledge building and knowledge utilization".	• "Exchange oriented". • "Transaction *costs*". • Structuring incentives and allocating property rights.
• Routines or capabilities are units of analysis	• Transactions are units of analysis
• Differential cognition.	• Cognitive homogeneity.
• Opportunism and other incentive conflicts relatively unimportant.	• Incentive conflicts are center stage.
• Dynamic/evolutionary.	• Comparative static.
• *Application to inter-firm relations:* Taken up with analyzing how firms may develop synergistic effects in inter-firm relations.	• *Application to inter-firm relations:* Taken up with analyzing the structuring of deals between firms.

In the following, I shall discuss the soundness of some of these, often made, distinctions.

Production and Exchange

The perhaps most basic distinction is that between production and exchange oriented approaches – a distinction that was probably first applied in the context of economic organization by Sidney Winter (1988) in a carefully guarded discussion. Indeed, it is necessary to exercise great care when invoking this distinction. This is because from a basic economic perspective, it may be difficult to see what is the big deal about this distinction.[2]

One should think that ultimately efficient economic organization is the one that maximizes joint surplus, given sharing rules, path-dependencies, information asymmetries and risk preferences. Clearly, production – relating to the size of the surplus —as well as exchange —relating to the sharing of the surplus — are both crucial elements of the process, so that

[2] This critique is directed not only at capabilities theorists, but also at organizational economists who have often invoked the distinction for heuristic reasons (e.g. Williamson 1985) (Langlois and Foss 1999; Milgrom and Roberts 1990).

the often-invoked distinction is a misleading one. Strictly speaking, it it thus *not* true that, for example, the transaction cost approach neglects transaction benefits (as, e.g., Zajac and Olsen 1993 assert).[3] (More about this very soon).

Of course, we can conceptually make a distinction between production knowledge and organization knowledge, between knowledge about how to do things and knowledge about how to organize the "doing". However, as Nelson and Winter (1982) point out in their classic work in actuality these bodies of knowledge are completely "intertwined". And that is exactly the point. Consider the notion of a "productive routine". Although this notion is often taken as the very hallmark of a "production-oriented" approach to economic organization, in actuality a routine is an organizational device that integrates dispersed knowledge. It may be given an information cost interpretation and certainly also an incentive-alignment interpretation, namely, as an implicit contract[4] (Baker, Gibbons and Murphy 1997; Foss and Foss 1999). So what is really the point of insisting on a sharp distinction?

Cost and Value

A distinction which is very closely related to the exchange/production distinction is the distinction between "transaction value" perspectives and "transaction cost" perspectives on economic organization, including inter-firm arrangements. It is the management equivalent to the economics distinction between production and exchange, and has been put forward by Conner (1991), Zajac and Olsen (1993), Madhok (1996), Madhok and Tallman (1998), and Pitelis and Pseiridis (1999) (amongst others).

According to these writers, organizational economics represents a pure (transaction) cost oriented perspective that does not include an analysis of the countervailing benefits in the form of increased "value" (rents) from an inter-firm arrangement. This is a charicature, but charicatures usually capture something, and if the distinction is taken to mean that organizational economics is not really taken up with analyzing firms' positioning in the market, or how they make positions and activities fit together (Porter 1985), then there is

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[3] Perhaps this sounds strange, coming from somebody who has just published (with Richard Langlois) a paper with the title "Capabilities and Governance: the Rebirth of Production in The Theory of Economic Organization" (1999). But the thrust of that paper is *exactly* that the separation between exchange and production in the theory of economic organization is an artificial one.

[4] Nelson and Winter (1982) themselves stress that routines signal "organizational truces."

much truth to it. But again, on the level of basic economics, it is hard to see what the fuzz is about.

We know from the basic version of the Coase theorem that in the absence of transaction costs and wealth-effects and supposing that all exchange opportunities will in fact be discovered, agents will reach an efficient state, both in the Pareto sense and in the sense of value-maximization. Among many other things, this implies that we can separate the issue of maximizing the value of production from the issue of its distribution. Under these conditions, how much value will be created, let's say in a basic triad relation between a supplier, a producer and a buyer?[5] The answer is the difference between the *reservation price* of the *buyer* and the *opportunity cost* of the *supplier* (for generalization, see Brandenburger and Stuart 1996).

Of course, such an abstract answer says nothing about the actual prices that determine how the surplus is allocated – these will be determined through bargaining. What we do know is that since the bargaining in the setting considered here is efficient, value will be maximized. Of course, in more realistic settings, there will be all sorts of impediments to efficient bargaining (and contracting), as both game theoretical bargaining theory and organizational economics more broadly inform us about. What is the nature of these impediments?

We can of course begin by rounding up all the usual suspects, such as delay costs, wealth effects, and incomplete information, if we consider it from the point of modern bargaining theory and information economics. From a new institutional economics point of view, many of these impediments are captured by the concept of transaction costs.

The point I wish to concentrate on in the following is that the two theoretical approaches under consideration here – organizational economics and the capabilities approach – focus on *different* impediments to efficient bargaining (and contracting). Accordingly, they also tend to focus differently on inter-firm relations. The impediments that are central in organizational economics, for example, in Williamson's transaction cost approach, are well-known: They relate to the sources of misallocations introduced by the potential presence of opportunism and bounded rationality in an inter-firm relations.[6]

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[5] Note that I refrain from talking about a supplier, a producer and a buyer *firm*, since in this setting there may be no firms (because of the zero transaction cost assumption).

[6] It should be noted that some parts of organizational economics do not assume inefficient bargaining. For example, in the incomplete contracts approach, *ex post* bargaining is taken to be efficient.

However, the impediments to efficient bargaining introduced by the capabilities perspective are not well-known and not so immediately given to interpretation in terms of contract theory. As I see it, they relate more to the various cognitive issues that are not easily captured by the standard asymmetric information paradigm. I reserve this for later discussion, however.

III. Organizational Economics

There can of course be very little doubt that organizational economics, and particularly the transaction cost framework, has been, and continues to be, extremely influential in the study of inter-firm relations. Indeed, it is arguably the dominant framework in the field — although one of the reasons why the capabilities approach has become important is that it appears to remedy some of the deficiencies and anomalies that the transaction cost approach has with respect to treating inter-firm relations.

Trust

In the eyes of the critics there have been many such deficiencies and anomalies. The time-honoured complaint is, of course, that transaction cost economics neglects trust. The trust issue was almost from the beginning something of a red herring, and, to stay with metaphor, it is seems to me to be flogging a dead horse to still insist that transaction cost economics ”neglects trust”. Strictly speaking, it does not.

Apart from Williamson’s own recent work (e.g., Williamson 1991), and other recent work in organizational economics (e.g., Baker, Gibbons and Murphy 1997) an example is provided by Bart Nooteboom’s recent book, *Inter-Firm Alliances: Analysis and Design* (1999), which the author himself describes as ”dynamic transaction cost economics”[7] and which is very much taken up with discussing trust and integrating various notions of trust with basic TCE arguments. So trust is far from being neglected. However, it must be conceded that the transaction cost approach — and certainly its close formal cousin, the incomplete contracts approach — tend to neglect the extent to which implicit contracts may substitute for ownership in protecting specific assets. Of course, subcontracting

[7] More precisely, it is an eclectic blend of ideas from ”old” institutionalism, psychological research, the capabilities approach and transaction cost economics (the latter remains the main ingredient, though).

relationships in Japanese business is the classic example of this.[8] This is where those who insist that trust is still an issue may perhaps have a case.

Transaction Cost Economics is Relatively Aggregative

Let me return to Nooteboom's book for a moment. That book does indeed bring out, though implicitly, some of the difficulties involved in applying the transaction cost framework to the study of inter-firm relations. Notably, those who use transaction cost ideas for this purpose seldom use only these ideas; they normally piece together their own toolbox, in which transaction cost economics is surely an important instrument but seldom the only one. (One might add that these electic exercises rarely go beyond loosely combining diverse insights; there is little theoretical development). There are many reasons for this.

The first reason may be that the transaction cost approach as developed by Oliver Williamson is in actuality a relative aggregative approach for studying economic organization, although it is often marketed differently and although it admittedly takes a nano-economic starting point, namely in the transaction. For example, it is not terribly well suited for studying detailed matters of internal organization. The same may be true with respect to inter-firm relations. Putting all these in the *portmanteau* category of "hybrids" may only be helpful on the most abstract of levels. In actuality, much microeconomic specificity is lost.

I suspect that future inter-firm researchers who want to approach their subject, using organizational economics, are likely to get more specificity and useful insights out of, for example, the latest work in principal-agent theory on subjective permance measurement (although this type of work was originally developed for the analysis of internal organization) (Baker, Gibbons and Murphy 1994). For example, repeated game models of subjective performance assessment would seem to be nicely fitting to understanding inter-firm relations (Baker, Gibbons, and Murphy 1997).

Production and Related Matters

While it is not true to say that transaction cost economics neglects production (e.g., Riordan and Williamson 1985), it is true to say that it tends to portray production in a rather *stylized*

[8] However, see Williamson (1991) for a pertinent discussion.

way. Specifically, there is an implicit agreement that the production function, and its attendant assumptions, is a sound basic conceptualization of what we need to know about production and production costs (Langlois and Foss 1999), but that it needs to be supplemented by insights into internal governance to account for why realized production does not appear on the production possibility frontier. It is also true that issues of innovation and learning – which we all know to be crucial motives behind inter-firm alliances – are not centrally placed in the transaction cost approach or organizational economics in general.

Finally, apart from the presence of relational contracts between firms, the transaction cost approach (and most certainly the incomplete contracts approach) overestimate the extent to which complementary investments lead to a change of ownership (as in Hart 1995). Why? Because it is not recognized that although assets may be complementary, and perhaps highly complementary, in the Edgeworth sense, they may still be *dis-similar*. This means that managing them in one organization may in principle — and for some (ill-understood) reason — outweigh the costs stemming from inferior investment incentives. What is the nature of those ”counter-wailing” costs?

Well, the quick answer is that they arise because of differential capabilities across firms, and most existing work has not really gone beyond that simple assertion. The claim that I shall develop in the following is that we need to understand much better 1) what we mean by capabilities, 2) the dimensions in which capabilities differ, and 3) how differential capabilities influence the transaction costs that firm confronts, before we can use capabilities ideas for understanding inter-firm relations.

IV. The Richardson Puzzle

I take it as an uncontroversial proposition that although organizational economics in its various manifestations is very helpful for helping us understand inter-firm relations, it is not the whole story. Specifically, organizational economics is weak on issues that relate to learning, positioning and other issues relating to business strategy. Arguably, the capabilities does have more to offer here. Therefore, numerous contributors have suggested to include insights from the capabilities perspective. However, as I have argued already, the capabilities perspective is not on a par with organizational economics with to respect to basic issues, such as clarity, the unit of analysis, the basic explanatory mechanisms, etc. It

needs to be further developed. I therefore submit that progress in the understanding of inter-firm relations is dependent on progress in the understanding of capabilities.

"The Organisation of Industry"

Most interfirm scholars would probably agree that the "grandfather" paper on inter-firm relations, and in fact on much of the present-day capabilities approach, is George Richardson's, "The Organisation of Industry", published in the *Economic Journal* in 1972. At about the same time Keith Blois published "Vertical Quasi-Integration" which also argued that economists ought to direct much more attention to inter-firm relations. However, Richardson's paper stands out as the one with the deeper message. This is because Richardson, in contrast to Blois, essentially proposed a new set of basic principles for addressing his phenomenon, centered around the notion of firm capability, and the dimensions of "similarity" and "complementarity". His analysis is summarized in *table 3*.

TABLE 3
Richardson's (1972) basic framework

	Complementary	**Closely complementary**
Similar	Indeterminate (firm?)	Firm
Dis-similar	Market	Inter-firm arrangements

"The Organisation of Industry" is also a remarkable illustration of the virtues of simplicity in theoretical argument: After reading it, one is left with that feeling of being provided with something very simple, obviously correct and yet very powerful in an explanatory sense that only the very best papers convey. In this respect, it is very much like Coase's 1937 paper, and one might indeed suggest that what Coase's paper has been to the whole field of the economics of organization, Richardson paper is to the field that is concerned with firm capabilities. Let us also note in passing that there is a 35 years difference in publication dates between these two classics. It is not surprising, therefore, that there is a strong case

that the capabilities approach is much less mature, and might also need a 30 to 40 years gestation period before it can blossom (cf. Williamson 1998).

The Richardson Puzzle

While Richardson's 1972 paper makes perfect practical sense, and businessmen and other practical persons can clearly relate to its main ideas, once you start to think of it in a modern theoretical mode, it raises many difficult issues that still haven't been resolved. In fact, if we can compare Richardson's 1972 paper with Coase's 1937 paper, it is quite obvious that Richardson still needs his Williamson, as it were. By this I mean that some of Richardson's key concepts, and those that are widely used by inter-firm scholars, are basically not theoretically understood, and they are not easily operationalized. They are black boxes. For this reason, it is unclear how they influence economic organization. This is what I mean when I speak of "the Richardson puzzle".[9]

First and foremost, the Richardson puzzle is a conceptual one. It is a matter of defining key concepts in Richardson's paper – concepts that are crucial in so much of contemporary thinking on firm strategy and economic organization, including work on inter-firm relations. For example, what *are* those capabilities? Or competencies? Or *core* competencies? Or *dynamic* capabilities? Well, if we consult some of the intellectual flagbearers of the capabilities approach, Giovanni Dosi and David Teece, we are told that

> … a firm's *distinctive competence* needs to be understood as a reflection of distinctive organizational capabilities to coordinate and learn. By "organizational capabilities" we mean the capabilities of an enterprise to organize, manage, coordinate or govern sets of activities … Posed differently, a distinctive competence is a differentiated set of skills, complementary assets, and organization routines which together allow a firm to coordinate a particular set of activities in a way that provides the basis for competitive advantage in a particular market or markets.

But this is neither truly informative, nor operational. It amounts to explaining an ill-understood term with other ill-understood terms.

[9] As you may know there is also a "Richardson paradox" (see Foss and Loasby 1998), so why not a puzzle, too?

Relatedly, we would like to know what exactly is meant by capabilities, competencies, or activities being "distinctive", "similar" or "dis-similar", or "related" or "unrelated". Clearly, such characteristics are important, and we can all make intuitive sense out of what they mean – for example, in connection with the horizontal boundaries of the firm – but what *exactly* do these adjectives mean when applied to capabilities (which we don't fully understand in the first place)? The situation is not much better when it comes to operationalizing these terms. First, the proportion between theoretical and empirical work in the capabilities perspective is heavily twisted towards the theoretical side. Second, existing operationalizations of capabilities are not only rather few, but also – perhaps in the nature of things – somewhat awkward. Thus, the number of patents, publications of research employees, etc. are widely and routinely used to proxy capabilities (not just technological capabilities).

One reaction to all this is, of course, to note that the capabilities approach has been oversold by its advocates and simply cannot deliver what it promises to deliver. However, a more positive reaction, which I favor, is to see it as presenting us with important and fertile research opportunities. I discuss this in the following section.

V. Understanding Capabilities

Capabilities: Black Boxes or Residual Categories?

As Claude Ménard (1994: 239) has rightly observed,

> [t]he question of why firms decide 'to make rather than to buy', which is at the core of the transaction cost approach, cannot be answered in a satisfactory way without exploring the very process through which they produce goods or services.

The "very process through which [firms] produce goods or services" is often taken to be the domain of the capabilities approach (Langlois and Foss 1999), so what Ménard essentially says is that organizational economics needs to be infused with capabilities ideas. But putting it in this way may come close to identifying the capabilities approach with what the transaction cost approach is *not* - á la "capabilities mean path-dependence, differential cognition, opportunism-independent coordination problems, etc.". Obviously, we need to be more specific about what we mean by capabilities than simply making it a residual category.

Actually, organizational economics and game theory offer useful ideas for putting some conceptual meat on the capabilities skeleton. For example, Foss and Foss (1999) offer the exercise of reducing a number of the basic ideas in the capabilities approach to basic insights on the efficient allocation of property rights. The purpose of this is to find out how much of the capabilities approach may be so reduced. In fact, we find that many capabilities ideas can be given a sort of microfoundations by basic organizational economics ideas. In itself, this is hardly surprising since a large part of what we mean by firm capabilities refer to organizational processes – to routines and direction – and we would certainly expect to get some theoretical leverage on these matters from organizational economics. However – and perhaps also not so surprising – we also find that there is a significant residual left that cannot be easily reduced. Chief among these is what may be put under the rubric of "cognitive issues".

Cognitive Issues

As Luigi Marengo (e.g. 1995) and Brian Loasby (1991) have continuously and forcefully reminded us of, mainstream economics assumes cognitive homogeneity, that is, people are assumed to classify and process information in much the same way. In contrast, cognitive heterogeneity is often taken to be a key ingredient in the evolutionary theory of the firm and a main justification for the position that evolutionary economics is taken up with the organization of knowledge rather than information (Cohendet, Llerena and Marengo 1998).

Surely there is something to the position that cognitive differences matter for economic organization (Langlois 1992; Foss 1993), a proposition with which any student of international business is likely to agree on. Indeed, one is reminded of the, possibly apochryphical, story about the Japanese supplier firm, committed to total quality, zero defects managements, that unable to make sense of a requirement from its American buyer of 95 % defect free deliveries sent a separately boxed batch of 5 % deliberately broken parts and a note saying "We don't know why you want these." Such differences in world-views are almost bound to have ramifications for the structures of costs that partners in a relation confront. However, what is the nature and the determinants of these costs?

With respect to the issue of determinants, the Japanese supplier story is an instance of what Nooteboom (1999) calls "cognitive distance". As he explains, there is an optimum level of cognitive distance, since some cognitive distance fosters learning, but too much of it hinders communication – clearly a variant on the well-known static/dynamic efficiency

trade-off. Indeed, Nooteboom regards this trade-off as the key problem in the design of economic organization, which raises the difficult issue of how and why cognitive distance and economic organization are related. One possibility here is to identify the consequences of cognitive distance with what Dick Langlois (1992) has christened "dynamic transaction costs". This gives us some leverage with respect to understanding the link.

However while the idea of cognitive distance may seem to be an appealing one when it comes to understanding and conceptualizing the idea of coordination problems between firms that don't turn on incentive conflicts (Foss 1993), the truth is that here again, we are rather ignorant. The problems are conceptual, theoretical and empirical. For example, what is the metric of cognitive distance? What is the underlying theory? And what do we really know about cognitive distance, apart from anecdotes such as the one above. To say that cognitive distance is a manifestation of bounded rationality is not terribly helpful, among other things because what bounded rationality means seems to be completely dependent on the specific user of that term. Similarly, the argument that cognitive distance arises because firms have different routines is, while arguably correct as far as it goes, not very helpful either: It still leaves us ignorant about the connections between routines and cognition.

Modeling Cognitive Issues

So what should we do from a modeling point of view? One could of course look at the huge literature on cognitive biases (e.g., Tversky and Kahneman 1995), but I am not sure this will be helpful. This is because that literature seems to me to be taken rather exclusively up with biases in individual decision making. It does not really go into the maps (whether individual or collective) through which private information is translated into messages – which I submit is the crucial issue if we want to understand how cognition and the boundaries of the firm, and therefore inter-firm relations, are related.

The standard assumption in economics, for example, in team theory and the mechanism design literature, has been that these maps are constructed by some central designing principal and are then provided to the agents. However, we have both pragmatic and theoretical reasons (Marengo 1995) for supposing that such maps emerge in an at least partly spontaneous manner, and that they arise through processes that are characterized by multiple equilibria. Thus, we may expect the emergence of heterogeneous maps across the

population of firms in an industry. That much is pretty well known from recent work in evolutionary economics (Dosi and Marengo 1994; Marengo 1995).

What maps do, and how they connect to economic organization, have been much less treated. First, with respect to what they do, one important thing is that they reduce ambiguity. A recent study by Prashant Parikh (1990) applies game theory to the study of ambigious communication (i.e., where precise communication is (very) costly). He is interested in finding out how a receiver of a message may use situation-specific information to find out what is the true interpretation of a message. For example, message A may have interpretations one and three while message B may have interpretations two and three. If the receiver knows the probabilities of the interpretations, they pay-offs that they face in the game they play, and which message was sent, he may infer the true interpretation of the message. The point here is that the information on probabilities and pay-offs that allow the receiver of a message to infer correctly is likely to be not only situation-specific, but also organization-specific.

"Cognitive distance" may be then interpreted as a measure of the difference between the probabilities and pay-offs that allow an agent to make *correct* inferences, and the subjective probabilities and pay-offs that a given agent holds. The conjecture is that cognitive distance measured in this way will typically be smaller within the firm (or at least business unit or division) than it will be between firms (see Monteverde 1995 for evidence).

This gives us one interpretation of what is meant by the distinction between "similar" and "dis-similar" capabilities, which in this interpretation is simply a way of presenting the continuous variable of cognitive distance in a discrete way. Now, Richardson's great insight was to link the characteristics of capabilities to economic organization, and the above approach suggests how this may be done: The message interpretation problems that I have just alluded to may be impediments to efficient bargaining, and may therefore be sources of transaction costs. I turn to this now.

Impediments to Efficient Bargaining

Milgrom and Roberts (1990: 58) argue that "… the crucial costs associated with using markets to carry out transactions … are the costs of bargaining over short –term arrangements between independent economic agents". This is in contrast to the emphasis in transaction costs economics on asset specificity, uncertainty and frequency under conditions of incompleteness of long-term contracts. Their main point is that if short-term

bargaining costs are zero, and agents are risk-neutral, hold common beliefs and have no private information market outcomes will always be efficient,[10] even in a situation characterized by asset specificity and opportunism. Milgrom and Roberts argue that this points to the importance of bargaining costs for understanding economic organization, since it is only in the presence of such costs that non-market organization can be explained.

If Milgrom and Roberts are right, this might mean that we have overinvested in the attention paid to asset specificity and associated problems, such as, perhaps, the establishment of long-term and relation-specific trust. Now, what are these costs of bargaining or impediments to efficient bargaining? As normally understood, these include the opportunity costs of time spent on bargaining, costs of monitoring and enforcing an agreement, delay costs, and the costs of not reaching an agreement when efficiency requires cooperation. To illustrate, consider *figure 1*.

FIGURE 1

Game 1

		B: x	B: y
A	x	2, 2	0,0
	y	0,0	4,1

Game 2

		B: x	B: y
A	x	2,2	0,0
	y	0,0	4-u,1+u

Game 1 shows the strategies available to agents A and B. The problem here is, of course, that the Pareto criterion is too weak to select a unique equilibrium (both the (2,2) and (4,1) outcome are equilibria). Now, obviously the (4,1) equilibrium has a higher joint surplus than the (2,2) equilibrium, and therefore it will be in A's interest to bribe B to play the y-strategy. So we can imagine bargaining between our two agents.[11] If u, the bribe that they

[10] That is, the same outcomes will be realized as in the situation where the parties could make a complete long-term contract.

[11] Here and in the following I am deliberately overstepping the boundaries between cooperative and non-cooperative game theory.

reach through bargaining, lies between 1 and 2, the equilibrium corresponding to both A and B playing y will be efficient, and, hence, be chosen. Thus, efficiency now implies that the agents agree on maximizing and somehow splitting the joint surplus. In this situation a bargaining failure occurs when bribes cannot be sustained in equilibrium, something that may be crucially dependent on the timing of the game.[12] Much of the economics of organization, including its applications to inter-firm relations, essentially concerns how hierarchical governance forms or forms that are intermediate between firms and markets may remedy these failures.

Note in this example that the relevant bargaining costs refer to the costs of monitoring and enforcing an agreement and to the possibility that trade never materializes. Indeed, this is pretty typical of the modern economics of organization. But there are many other bargaining costs – related to information and communication rather than to enforcement – that are not represented. To see this, note in figure 1 how much we as analysts take as given for the agents. Such representations obscure some rather fundamental questions in order to analyze well-defined situations. Among these questions are, How do players come to know the pay-offs? Or each other? Or the available strategies? Will they hold the same views of the pay-offs? Of each other? Of the available strategies? How, do they know which game, and type of game, they play? When such questions are relevant to the players of a game, I shall say that they face an "*ill-structured bargaining situation*".

In the economics of organization (and in most of game theory), such situations are suppressed by assuming from the outset that players have commonly known, identical beliefs about all other players' strategies, and that those beliefs are consistent with some equilibrium in the game. However, this may not be warranted if there is a systematic link between economic organization and how ill-structured a bargaining situation is.

VI. Implications for Research in Inter-firm Relations

Impediments to Bargaining

We are now in a position to take stock. The basic problem with the economics of organization as it applies to inter-firm relations is not really that it neglects trust or value

[12] For example, if A gives B the bribe before the game begins, B will not choose the y-strategy, which means that A will decide not to give B any bribe. Or, A may promise B to pay the bribe after game, but B will realize that this will not be in A's interest, and will still choose the x-strategy. Although the (2,2) equilibrium is still efficient, it is not joint-surplus maximizing.

(since neither is really neglected). Rather, it is that cognitive bargaining costs are assumed away, because all bargaining situations are taken to be well-structured. To be sure, firms in an inter-firm relation are legally independent entities that are engaged in a continuous bargaining game over the surplus from the relation. Some of the costs of these bargaining activities are surely (variable) enforcement and monitoring costs (Baker, Gibbons and Murphy 1994), and various (fixed and sunk) costs associated with setting up a specialized governance structure (Williamson 1996).

However, before firms can actually bargaining over the division of the surplus from the relation, they need to have overcome cognitive bargaining costs, that is, the costs related to making demands (including product specifications, delivery times, technological specifications, etc.) in a bargaining game understandable to the other party. In other words, the parties have to understand and set up the bargaining game they are engaged in.

We may think of this in terms of basic game theory. Consider *figure 2*, which portrays two prisoners' dilemma games nested in a coordination game.

FIGURE 2

		B			
		a	b	c	d
A	a	**4,4**	**1,5**	0,0	0,0
	b	**5,1**	**2,2**	0,0	0,0
	c	0,0	0,0	*4,4*	*1,5*
	d	0,0	0,0	*5,1*	*2,2*

Intuitively, the players have to solve the coordination problem first, before they can play the PD games. By analogy, in an interfirm relation, firms have to understand the basic structure of the game(s) they will play – that is, reduce cognitive distance -- before they can actually start playing. It is this part of the problem that so far has received very little

attention in the theory of economic organization. However, it is likely to be important in the context of interfirm relations involving firms with different routines, capabilities, etc.

Economic Organization and Competitive Advantage

The activity of reducing cognitive impediments to bargaining involves sunk costs, but may result in the creation of assets (and in some cases liabilities) – namely, relation-specific "codes" (Arrow 1974) – that ease interaction. They may be sources of value creation. Fundamentally, this is because they allow the parties to discover opportunities that they otherwise may not have discovered, both with respect to exploiting the possibilities of combining their existing resources and with respect to exploiting new possibilities for resource combination.

However, there is the further dimension to it that the reduction of cognitive impediments to bargaining are likely to interact in non-trivial ways with other impediments to bargaining. For example, the reduction of cognitive impediments may help the parties to reduce those impediments to bargaining that exist even within well-structured bargaining situations (i.e., opportunism, moral hazard, etc.). On the other hand, the reduction of opportunism, etc. also allows the parties to invest more in relation-specific codes. In other words, investing in overcoming cognitive impediments to bargaining and investing in overcoming opportunism-related impediments to bargaining may be complementary activities in the Edgeworth sense.

We are dealing here with sources of not only value-creation, but also of sustained competitive advantage. In fact, the establishment of codes between firms and the complex interaction between reducing opportunism and reducing distance may satisfy all the four standard criteria of the "cornerstones of competitive advantage" (Peteraf 1993), namely, they 1) are sources of heterogeneity, 2) may be subject to *ex ante* barriers to competition in factor markets and 3) to *ex post* barriers to competition, and 4) they may be immobile. Thus, the analysis all too briefly sketched out here has implications not only for economic organization, but also for the understanding of competitive advantage.

VI. Conclusion

More than anything, this paper has been a call for more integrative work and a dialogue between capabilities theorists and organizational economists that transcends a dialogue of the deafs. More specifically, I have argued that

- We don’t really know what capabilities are. Specifically, the capabilities approach works off very good ideas – and is arguably necessary for the full understanding of inter-firm relations – but it badly needs to be strengthened in the theoretical dimensions.
- I have suggested that existing ideas in game theory and the economics of organization may be helpful for conceptualizing and understanding basic aspects of capabilities, but that there is (probably) more to capabilities than can be captured by the mainstream paradigm.
- In the context of economic organization, one way to approach the capabilities approach is to see it as part of an overarching bargaining approach (yet to be developed), where the capabilities approach have identified non-standard bargaining costs, more specifically cognitive costs related to making sense of/constructing the bargaining game. Economizing with such costs may explain important aspects of economic organization in general, and inter-firm relations in particular.

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