In this paper a refinement of the transaction cost approach is proposed. Starting point is the concept of 'atmosphere', as discussed in Williamson's earlier work. Although this concept was originally presented as a central concept, it is hardly elaborated in his later works. It is argued that due to this negligence the traditional notion of cost efficiency is overplayed in transaction cost economics. This omission becomes rather evident when Williamson abandons the clear cut distinction between market and hierarchy. It is stated that further elaboration of the atmosphere concept is needed. For that purpose, observations from a neighbouring field have to be integrated into the theoretical apparatus of the transaction cost approach. An imbedded transaction cost perspective is proposed and its implications are illustrated in an area in which the transaction cost framework offers inadequate predictions: the explanation of inter-firm cooperation and innovation.
EXPLAINING INTER-FIRM COOPERATION AND INNOVATION: AN EMBEDDED TRANSACTION COST PERSPECTIVE

Introduction

Although the transaction cost approach (associated with the work of Williamson) is a young paradigm, its roots can be traced to the 1930s. It is based on the work of Commons (the transaction as the basic unit of analysis), Coase (focus on the transaction costs), Arrow (information and contract costs), Hayek (importance of information and idiosyncratic knowledge), and Simon (bounded rationality), see [2]. Transaction cost economics supplants the (neo)classical firm as production function approach by a much more microanalytic orientation. It includes an examination of the comparative costs of planning, adapting and monitoring task completion under alternative governance structures. Transaction cost economics assumes that human agents are subject to bounded rationality, and are given to opportunism, which is a condition of self-interest-seeking with guile. Transaction cost economics further maintains that the most critical dimensions for describing transactions is the condition of asset specificity. Parties who are engaged in a trade that is supported by considerable investments in transaction-specific assets are effectively operating in a bilateral trading relation with one another. Given these postulates, harmonizing the contractual interfaces that join the parties, thereby to effect adaptability and promote continuity, becomes a source of real economic value.

Transaction cost economics claims that transaction costs are economized by assigning transactions (which differ in their attributes) to governance structures (which differ in their adaptive capacities and associated costs) in a discriminating way. In his earlier work [1] Williamson examines hierarchy/authority as the opposite coordination mechanism of the price system in markets. In his 1979-work [3] the dichotomy between market and hierarchy is transformed into a continuum, with the market and the hierarchy on the extremes. Bilateral governance, one of the intermediate governance structures, is assumed to be an unstable organizational form. When uncertainty increases, the transaction previously coordinated by bilateral governance will either be standardized and shifted to the market, or organized internally. From this development phase of transaction cost economics dates the comparison between the transaction cost approach and the network approach, made by Johanson and Mattsson [4]. They state, that:

"The most important difference is in the nature of the relationship. For us the industrial markets are characterized by lasting relationships between firms because such relationships can reduce costs of exchange and production and can promote knowledge development and change. ... Mutual orientation is developed. To Williamson such relationships hardly exist in markets, only within hierarchies" (p. 15)

This omission, at least from a network view, is somewhat rectified in Williamson's later work [5] when it is admitted that bilateral governance may be a stable organizational form. However, transactions that involve significant investments of a transaction-specific kind, but do not contain safeguards - such as realign incentives, specialized governance structure or other regularities that effect an equilibration of trading hazards - are still considered contractually unstable.

In this paper a refinement of the transaction cost approach is proposed. Starting point is the concept of 'atmosphere', as discussed in Williamson's earlier work [1]. Although this concept was originally presented as a central concept, it is hardly elaborated in his later works. It is argued that due to this negligence the traditional notion of cost efficiency is overplayed in transaction cost economics. This omission becomes rather evident when Williamson abandons
the clear cut distinction between market and hierarchy. It is stated that further elaboration of the atmosphere concept is needed. For that purpose, observations from a neighbouring field have to be integrated into the theoretical apparatus of the transaction cost approach. An imbedded transaction cost perspective is proposed and its implications are illustrated in an area in which the transaction cost framework offers inadequate predictions: the explanation of inter-firm cooperation and innovation [6].

First, however, Williamson's idea of hierarchy/authority as the opposite coordination mechanism of the price system in markets is examined.

Markets and hierarchies

In his book "Markets and Hierarchies" Williamson [1] laid the foundation of what later was renamed Transaction Cost Economics [5]. In the Markets and Hierarchies - approach, markets and firms are seen as alternative instruments for completing a related set of transactions. Whether transactions will be executed at market level or within a firm depends on the relative efficiency of each instrument, given the transactional characteristics. These characteristics include behavioural characteristics of the decision makers involved, as well as environmental attributes. The pairing of uncertainty with bounded rationality and the joining of small numbers with opportunism are presumed to be especially important.

Following Simon, Williamson defines bounded rationality as follows:
"The capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behaviour in the real world".

Due to bounded rationality, it is very costly or even impossible to identify future contingencies and specify, ex ante, appropriate adaptations. As a consequence, it is impossible to deal with uncertainty or complexity in all contractually relevant respects and, at most, incomplete contracting can be achieved. Contracting, albeit incomplete, would nevertheless be feasible if economic agents were completely trustworthy. Human agents, however, are expected to behave opportunistically. Although not every human agent is supposed to behave dishonestly, some agents do disguise attributes or preferences, distort data, obfuscate issues, and otherwise confuse transactions. As a result of that, it is very costly, if not impossible, to distinguish opportunistic from non-opportunistic types, ex ante. Nonetheless, in this situation short-term contracts can be made; adaptations can be made at contract renewal intervals and rivalry among large numbers of bidders will prevent agents from acting opportunistically.

When, however, opportunism is joined with a small-numbers condition, the trading situation is greatly transformed. Because of the small numbers there are few if any alternatives open for a buyer or a seller to replace the counterpart in a transaction. Both parties are encountered in a bilateral trading relation and - in the absence of competition - it is in the interest of both parties to seek terms which are the most favourable to them, which encourages opportunistic representation and haggling. Of special interest to the transaction cost approach is that large-numbers homogeneity conditions which occur at the outset may no longer hold at the contract renewal interval. Because the losers of the original bid lack firm-specific, task-specific, or transaction-specific experience, the winner of the original bid enjoys substantial cost advantages over nonwinners. Due to this information impactedness, the parity among suppliers is upset by first-mover advantages. The sales relationship that eventually arises is effectively one of the small-numbers variety. The winner's first-mover experience is a valuable resource and can be used in strategic ways.
The advantages of internal organization

In circumstances where opportunism and small-numbers conditions are joined, Williamson argues that internal organization enjoys advantages of three kinds over market modes of contracting. First, unlike autonomous contractors, internal divisions that trade with one another in a vertical integrated relationship do not ordinarily have pre-emptive claims on their respective profit streams. Even though the divisions in question may have profit centre standing, their profit-seeking is apt to be exercised in a restrained way. Circumscribed internal trading terms, e.g. transfer prices, preclude supplier divisions from seeking the monopolistic prices to which their sole source supply position might otherwise entitle them. In addition, the managements of the trading divisions are more open to appeals for cooperation: a more nearly joint profit maximizing attitude and result is to be expected. Secondly, and related to the first advantage, internal organization can be more effectively audited. Characteristic of an external auditor is that he is constrained to review written records and documents and in other respects restrict the scope of his investigation to clearly concrete matters. An internal auditor, by contrast, has greater freedom of action, both to include less formal evidence and to explore the byways into which his investigation leads. Information impactedness conditions are thus much more easily overcome in internal than in interfirm trades. Finally, when differences do arise, internal organization realizes an advantage over market mediated exchange in dispute settling respects. Since internal parties are more inclined to adapt cooperatively, internal organization is able to settle many disputes by appeal to fiat, where costly litigation is sometimes unavoidable in market mediated exchange.

The concept of atmosphere

Although internal organization is supposed to enjoy some obvious advantages over market modes of contracting, Williamson asserts that the shift of a transaction or related set of transactions from market to hierarchy is not all gain. Flexibility may be sacrificed in the process and other bureaucratic disabilities may arise as well. For that reason the 'defects' associated with market exchange may need to exceed a considerable threshold before internal organization offers a clear cost advantage. Williamson himself, however, warns that care must be exercised, lest problems be construed too narrowly by emphasizing on net benefit analysis. This will occur if net benefits are calculated in transaction-specific terms, when in fact there are interaction effects to be taken into account. Failure to allow for interaction effects, when in fact they exist, leads to suboptimization. Recognition that alternative modes of economic organization give rise to differing exchange relations, and that these relations themselves are valued, requires for organizational effectiveness to be viewed more broadly than the usual efficiency calculus would dictate. Thus, modes of organization or practices which would have superior productivity consequences if implemented within, and thus would be adopted by, a group of expected pecuniary gain maximizers, may be modified or rejected by groups with different values. Favourable productivity consequences, thus, may no longer occur; efficiency and a sense of well-being are nonseparably joined and supplying a satisfying exchange relation is made part of the economic problem.

The above discussion is summarized in Figure 1. The main pairings are shown by the heavy double-headed arrows which associate bounded rationality with uncertainty/complexity on the one hand and opportunism with a small-numbers exchange relations on the other. Information impactedness is a derived condition, mainly due to uncertainty and opportunism, which in turn can give rise to a small-numbers result. That exchange takes place within a trading atmosphere is denoted by the broken line that surrounds the human and environmental factors which appear in the organizational failures framework.
A supposition

Through the introduction of the concept of atmosphere, Williamson breaks with the usual assumption in economics, implicit if not explicit, that individuals regard transactions in a strictly neutral, instrumental manner. According to Williamson, the comparative institutional significance of the concept of atmosphere is that alternative modes of organization sometimes differ in substantial atmospheric respects:

"Market exchange tends predominantly to encourage calculative relations of a transaction-specific sort between the parties. Such transactions are carefully metered; unsettled obligations do not carry over from one contract, or related set of transactions, to the next. Internal organization, by contrast, is often better able to make allowance for quasimoral involvements among parties" [1](p.38).

Although it can be argued that Williamson's conclusion is hardly surprising, since market transactions - defined as purely discrete transactions - are by definition not able to make allowance for quasimoral involvements among parties, it is surprising that the concept of atmosphere is hardly elaborated in his later work.

This omission becomes rather evident when Williamson abandons the clear-cut distinction between market and hierarchy. In his attempt to indicate how and why commercial transactions can be matched with institutions in a discriminating way, the criterion for organizing commercial transactions is assumed "... to be the strictly instrumental one of cost economizing" [3]. Although Williamson indicates that a more general formulation should include product characteristics in the optimization, the focus is principally laid on the economizing on production expense and transaction costs.

Markets, hierarchies and ... intermediate forms

Taking the economizing criterion into account, buying rather than making will normally be the most cost effective means of procurement when transaction costs are negligible. Not only
can scale economies and collective pooling benefits be more fully exhausted, external procurement also avoids many of the bureaucratic hazards of internal procurement. When, however, production cost economies of external procurement are small and/or the transaction costs associated with external procurement are great, alternative supply arrangements deserve serious consideration. The reason is that, as the specialized human and physical assets become more specialized to a single use, and hence less transferable to other uses, economies of scale can be as fully realized by the buyer as by an outside supplier. The choice of organizing mode then turns on which mode has superior adaptive properties. According to Williamson, recurring transactions of the highly specific kind will invariably be accompanied by vertical integration.

The bilateral governance structure is predicted under the conditions of recurrent, mixed-specific transactions. Compared with highly specific transactions, the degree of asset specialization is less complete and accordingly, outside procurement for these components are favoured by scale economy considerations. The non-standardized nature of the transaction, however, makes primary reliance on market governance hazardous. Referring to Macneil’s relational contract, Williamson characterizes the bilateral governance structure as follows: "... the relation takes on the properties of 'a minisociety with a vast array of norms beyond those centered on the exchange and its immediate process.' By contrast with the neoclassical system, where the reference-point for effecting adaptations remains the original agreement, the reference-point under a truly relational approach is the 'entire relation as it has developed ... [through] time. This may or may not include an 'original agreement'; and if it does, may or may not result in great difference being given it." [3].

Considering the relative adaptability and contractual expense of the bilateral structure, Williamson argues that adaptations across a market interface can only be accomplished by mutual, follow-on agreement, whereas internal adaptations can be effected by fiat. For that reason, the bilateral structure is supposed to have a relative transaction cost disadvantage. The production cost advantage, however, outweighs the transaction cost disadvantage when uncertainty is present to 'an intermediate degree'. When uncertainty is present to 'a high degree', contractual gaps will be larger and occasions for sequential adaptations will increase in number and importance. According to Williamson, the increased degree of uncertainty makes it more imperative that the parties devise a machinery to 'work things out', and transactions previously coordinated by bilateral governance will either be standardized and shifted to the market, or organized internally.

Finally, for the sake of completeness, in the case of occasional, highly specific transactions, the considerable costs of the specialized governance structure can not be recovered and the non-standardized nature makes market relief unsatisfactory. Third-party assistance (arbitration) in resolving disputes and evaluating performance is employed instead. Using the same arguments, this trilateral governance is also predicted in the case of occasional, mixed-specific transactions.

Limitations of the transaction cost approach

The strict reliance on production and transaction cost economizing, thus, leads to the predictions that due to the distinctive features of bilateral governance vis-à-vis internal organization, bilateral governances are unstable structures, and recurring transactions of the highly specific kind will invariably be accompanied by vertical integration. Interaction-effects are, however, not taken into account. Perfectly in line with the usual assumption in economics, from which Williamson dissociated himself as was mentioned before, transactions are regarded in a strictly neutral, instrumental manner. For that reason it is hardly surprising that the just mentioned predictions are in contrast with the findings of industrial network
theorists, as discussed in the introduction of this paper. The predictions are also in contrast with observations mainly from high technology sectors. In these sectors firms shift from internalization toward more market oriented institutional arrangements to regulate transactions. This changing 'structure' follows a 'strategy' aimed at improving the firm's competitiveness through innovation and flexibility, in order to deal with .... the volatile environment, characterized by dramatic market and technological developments. The transaction cost framework is obviously unable to explain interfirm cooperation and innovation.

Elaborating the atmosphere

Up to this point, it has been argued that although the concept of atmosphere was originally presented as a central concept in Williamson's transaction cost framework, it is hardly elaborated in his later work. Due to this omission the traditional notion of cost efficiency (economizing on the sum of production and transaction costs) is overplayed. In Williamson's own words it can be stated that the failure to allow for interaction effects, when in fact they are expected to exist (see for instance Williamson's reference to Macneil's relational contract), has lead to suboptimization. A further elaboration of the atmosphere concept is evidently needed.

To this purpose Granovetter's embeddedness approach [7] is applicable. The embeddedness argument stresses the role of concrete personal relations and structures of such relations (networks) in generating trust and discouraging malfeasance. According to Granovetter this is not necessarily more the case in transactions between firms than in transactions within firms. Institutional arrangements do not produce trust but instead are a functional substitute for it. Distrust and opportunism are, however, by no means absent, due to the fact that networks of social relations penetrate irregularly and in differing degrees in different sectors of economic life. Apart from that, although social relations may be a necessary condition for trust and trustworthy behaviour, they are not sufficient to guarantee these and may even provide occasion and means for malfeasance and conflict on a scale larger than they would in their absence.

Firms are connected by networks of personal relations, not only on top level, but on all levels where the transaction takes place. It takes some kind of 'shock' to jolt the organizational buying out of a pattern of placing repeat orders with a favoured supplier or to extend the constrained set of feasible suppliers. This phenomenon can be explained in part in investment terms: through a continuing association both parties can benefit from the somewhat relation-specific investment of learning to work together, see [8] (p.340). Apart from the cost associated with searching for new suppliers and establishing new relationships, this behaviour is also caused by the fact that users are likely to prefer sources, the relatively low risk involved in dealing with known vendors and the likelihood that the buyer has established personal relationships that he values with representatives of the supplying firm. Settlement of disputes is eased by this embeddedness of business in social relations. Similarly to Macneil's relational contract in the transaction cost approach, Granovetter refers to Macaulay's note that:

"Even where the parties have a detailed and carefully planned agreement which indicates what is to happen if, say, the seller fails to deliver on time, often they will never refer to the agreement but will negotiate a solution when the problem arises as if there never had been any original contract" [7] (p.497).
Explaining inter-firm cooperation and innovation

Although it seems plausible that the network of social relations within the firm might, on the average, be more dense and long-lasting than the one that exists between firms, Granovetter states that there is sufficient social overlay in economic transactions across firms to render the assertion that complex market transactions can only be resolved by internalization within a hierarchical structure. Granovetter underlines this statement by arguing that authority within firms is less important in bringing order to economic life than is supposed in the transaction cost framework. The advantages of internal organization, as described by Williamson, are not likely to appear when conditions are met for a dense and stable network of personal relations, shared understandings, and political coalitions inside the firm. From the viewpoint of management, these coalitions represent malfeasance, because of their resistance to the encroachment of organizational interest on personal or divisional ones.

Taking this into account, it can be stated that the distinctive features of bilateral governance vis-à-vis internal organization are not adequately captured by Williamson. Due to this omission, the superiority of the internal organization with respect to its relative adaptability and contractual expense is questionable. From this it follows, that even highly specific transactions can be found across firm boundaries, even when uncertainty is present to a 'aigh degree'. Whether this occurs, depends on the nature of personal relations and networks of relations between and within firms.

Some concluding remarks

Actors do not behave or decide as atoms outside a social context. Their attempts at purposive action are instead embedded in concrete, ongoing systems of social relations. Emphasizing the role of concrete personal relations and structures of such relations in generating trust and discouraging malfeasance, the conclusion can only be that the distinctive features of bilateral governance vis-à-vis internal organization are not adequately captured by Williamson. Referring to Granovetter [7], one would expect pressures toward vertical integration in a market where transacting firms lack a network of personal relations that connects them or where such a network eventuates in conflict, disorder, opportunism, or malfeasance. On the other hand, where a stable network of relations mediates complex transactions and generates standards of behaviour between firms, such pressures should be absent.

Although these "pressures" are related to the efficiency of transactions, no guarantee can be given that whatever organizational form is most efficient will be the one observed. Absolute efficiency would lead to an instrumental model, which states that if a result of superior economic performance is desired, then a certain organisational arrangement should be adopted in a given context. The descriptive and prescriptive value of this model, however, can be questioned, see also [9].
REFERENCES


