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Transaction Cost Economics and Open Innovation: Reinventing the Wheel of Boundary

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Abstract

Transaction Cost Economics (TCE) has with no doubt had a strong impact on theories of economic exchange, with a suggestion that the boundaries of firms are consequences of transaction costs. But although such costs are evident also in contemporary post-bureaucratic contexts, in terms of for instance collaboration costs and the risk for opportunistic behaviour, firms tend to open their boundaries for knowledge exchange. In this paper, we highlight the problematic use of TCE in the context of open innovation, arguing for its limited descriptive power and potentially harmful normative practice. A case study of the Volvo Group ? a Swedish builder for commercial vehicles moving in the direction of opening up their innovation processes ? will help illustrating these claims. The case questions the belief that hierarchical control defeats transaction costs. Also, it suggests that an overemphasis on calculative reduction of transaction costs together with a focus on governance and rationality leave little space for an innovative and creative climate, thus diverting the attention away from potential transaction benefits. The self-fulfilling prophecy character of subscribing to the assumptions of TCE may therefore not merely hamper but actually undermine innovation.

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Transaction Cost Economics (TCE) has with no doubt had a strong impact on theories of economic exchange, with a suggestion that the boundaries of firms are consequences of transaction costs. But although such costs are evident also in contemporary post-bureaucratic contexts, in terms of for instance collaboration costs and the risk for opportunistic behaviour, firms tend to open their boundaries for knowledge exchange. In this paper, we highlight the problematic use of TCE in the context of open innovation, arguing for its limited descriptive power and potentially harmful normative practice. A case study of the Volvo Group – a Swedish builder for commercial vehicles moving in the direction of opening up their innovation processes – will help illustrating these claims. The case questions the belief that hierarchical control defeats transaction costs. Also, it suggests that an overemphasis on calculative reduction of transaction costs together with a focus on governance and rationality leave little space for an innovative and creative climate, thus diverting the attention away from potential transaction benefits. The self-fulfilling prophecy character of subscribing to the assumptions of TCE may therefore not merely hamper but actually undermine innovation.

Introduction

Transaction Cost Economics (TCE) has had an immense influence on the theories of economic exchange and the development of organisational processes and practices. Coase's (1937) neo-classical arguments and Williamson's (1975, 1991) further elaborations of transaction costs have established a dominant paradigm in explaining human (economic) behaviour in relation to markets and organisations. The proposed shift of focus from fixed resources and entities per se to the type of transactions performed within a market has provided an easily understandable view of the relation between the firm and its environment. However, as the theoretical foundation was developed in an institutional setting much different from today's economy, it is arguably questionable to apply the TCE framework uncritically both descriptively and normatively in contemporary post-bureaucratic contexts. Industries and firms of various kinds are increasingly reported to be opening up organisational boundaries for collaborative purposes (Chesbrough, 2003; Cooke, 2001) despite the danger of an increase in various transaction costs, thus partially challenging the broad parameters of a TCE theory of the firm.

In this paper, we will examine the application of TCE in a setting characterised by institutional change and innovation. More specifically, we will highlight the problematic use of TCE in the context of open innovation (Chesbrough, 2003, 2006; 2011; Chesbrough, et al., 2006), arguing for its limited descriptive power and potentially harmful normative practice. To support these claims, a case study of the Volvo Group will help to illustrate the mind traps to which some of the basic principles and prescriptions of TCE lead. Volvo Group is a Swedish builder for commercial vehicles acting in the mature but highly transformational automotive industry.

The paper is structured accordingly; after a short method section, a literature overview of TCE and open innovation will follow. Then, the case of Volvo Group will be introduced and critically analysed in relation to a TCE theory of the firm, ending with a concluding discussion.

Method

In order to discuss the application of TCE on innovation practice, a single case study approach has been employed for this paper. The authors are aware of the perceived limits on such a research design (e.g. not allowing for statistical generalisations), but concur with for instance Eisenhardt and colleagues (Eisenhardt, 1989; Eisenhardt and Graebner, 2007) that it is well suited to generating new and valid insights in early stages of theory building and to provide analytical generalisation in relation to theory rather than to population.

The empirical data for this paper is based on a longitudinal research project, following "open" and "distributed" innovation processes in, among others, the Volvo Group. Since 2009, the project has conducted more than fifty interviews with key managers and project leaders on various positions within the Volvo Group organisation. Most of the meetings have been recorded, resulting in over 60 hours of tape. Empirical data also include documents (presentation material, press releases, web content, news articles, and internal documents), as well as observations on site.

The case for Transaction Cost Economics (TCE)

In the seminal text *The Nature of the Firm*, Coase (1937) argues that firms exist due to institutional transaction costs, making it gainful to organise and manage business operations

within an organisational hierarchy instead of solely utilising the open market. Although the theory suggests that it is generally more efficient to operate through market relations where the price mechanism determines trade rather than through the hierarchy of an organisation where managerial power is pre-eminent, according to Coase there are a range of other costs involved in trading on the market. These can be, for instance, the cost of searching and evaluating information, bargaining, and policing and enforcing counterparts over which one has no direct control. Williamson (1998, 1975, 1991) further developed Transaction Cost Economics (TCE) by drawing on managerial and behavioural theories, to facilitate a TCE approach to explaining human action. He makes assumptions that people act opportunistically in relation to information asymmetry (what is defined as “self-interest with guile”) but that they are constrained by a “bounded rationality” (Simon, 1991). Consequently his arguments suggest that transaction costs increase insofar as there is behavioural uncertainty in dealing with non-trusted, opportunistic parties in the market place. Governance through hierarchy reduces these transaction costs *ex ante* as there is limited need for searching and evaluation of information and for negotiating with parties, and *ex post* because internal organisational controls and enforcement diminishes uncertainty. When combined with the level of asset specificity (i.e. sunk costs invested in particular transactions, in relation to the transaction frequency and complexity), this knowledge enables managers to distinguish those activities that should be organised in-house from those that should be opened up for collaboration with outside partners in the market place. Hence, both Coase’s and Williamson’s argumentation suggests that the organisational structure is – or at least should be – a dependent variable of the managers’ perception of what transaction costs they face in their daily operations.

Macher and Richman (2008) analysed in their literature review over 3,500 abstracts related to TCE, out of which approximately 900 articles were empirically testing the theory. Several other reviews have been conducted over the years to highlight the extensive number of empirical studies on TCE (e.g. Carter and Hodgson, 2006; David and Han, 2004; Joskow, 1988; Lyons, 1995), mostly with confirming results of its relevance. As a descriptive theory, it is hence possible to argue for a correlation between at least some of the proposed transaction cost dimensions and the developed organisational forms. Less generic applications of TCE in economics and business (c.f. Joskow, 1988; Shelanski and Klein, 1995), have sought to analyse or explain, for example, vertical integration and ‘make-versus-buy’ decisions (e.g. Masten and Meehan, 1989; Monteverde and Teece, 1982; Wolter and Veloso, 2008), governance in relation to asset specificity, (e.g. Nickerson and Silverman, 2003; Sampson, 2004), international business and subsidiary control (e.g. Gatignon and Anderson, 1988) and strategic alliance structuring (e.g. Oxley, 1997; Parkhe, 1993). The theory has also begun to impact other social science areas, such as law and public policy, as well as contributing to various forms of inter-disciplinary research (Macher and Richman, 2008).

Williamson (1998, p. 40) concludes that the development and application of “transaction cost economics, like everything else, will benefit from more and better empirical work. I have no hesitation, however, in declaring that transaction cost economics is an empirical success story.” He is also convinced that TCE should not only be used as a descriptive theory but also as a normative theory. As such, he urges managers to let their decisions be influenced by an analysis of the firm’s transaction costs when managing their business operation.

A key move, if transaction cost economics is to more fully engage strategy, is to push beyond the generic level at which it now operates and to consider particulars. Thus rather than ask the question ‘What is the best generic mode (market, hybrid, firm, or bureau) to organize X?’, which is the traditional transaction cost query, the question to be put instead is ‘How should firm A – which has pre-existing strengths and weaknesses (core competencies and disabilities) – organize X?’ (Williamson, 1998, p. 48)

Besides turning both Coase and Williamson to Nobel Laureates, the “success” of TCE has resulted in a use of the principles in explaining as well as arguing for a wide range of strategic and organisational decisions. As a descriptive theory, it provides apparent evidence for relations between transaction costs and aspects such as the choice of the firm boundaries, control mechanisms, financial models and strategic alliances. As a normative theory it is said to offer managers rational grounds for more efficient judgments in important strategic matters.

While there is no denying the impact of TCE on both academics and practitioners, there are we believe some flaws in its application as a descriptive and normative theory. We will discuss certain of its limitations in relation to the emerging field of open innovation (Chesbrough, 2003, 2006; 2011; Chesbrough, et al., 2006) – a field that, according to the underlying principles of TCE, should benefit precisely from the promises and challenges of such applications.

What is open innovation?

Coined by Chesbrough (2003) in its initial form, ‘Open Innovation’ parallels the concerns of TCE with respect of where to set the boundaries of the firm and to what extent knowledge is flowing in and out of its borders during innovation work. Chesbrough argued that companies traditionally have a tendency to keep the innovation activities inhouse, and protect the borders from knowledge exchange with the external environment, what he called ‘closed innovation’. Based on successful empirical cases, mainly from the IT and High-Tech sector, he urged companies instead to open up their innovation processes to encourage a deliberate inflow and outflow of knowledge as this would accelerate innovation and expand market opportunities. Much of the open innovation process is, according to Chesbrough, contingent on a contractual use of intellectual property in terms of trading (both buying and selling) on the market or with selected partners.

From an organisational theory perspective, Chesbrough has been criticised for bringing little new to the table. For instance Trott and Hartmann (2009) say that “the Open Innovation community has given insufficient credit to previous researchers who described, analysed and argued in favour of most of the principles on which Open Innovation was founded, long before the term for this new model was actually coined”. Christensen et al. (2005) suggest that open innovation is not signifying an altogether new phenomenon since it draws on earlier ideas, for instance, of boundary-spanning knowledge flows in innovation work (Cohen and Levinthal (1990), Rosenberg (1982) and von Hippel (1988)). Indeed, organisations have often been pictured as being an integrated part of their environment, influenced by suppliers, competitors and customers, absorbing knowledge from research, adjusting the structures, processes and task operations to the industry in which they operate (e.g. Freeman, 1984; Porter, 1985; Thompson, 1967; Weick, 1979). What can be seen as distinctive with Open Innovation, though, is the intense impact of information technology on the organisation of innovation, with consequences on both the process and the outcome. Information technology has, at least to some extent, altered the way that many organisations coordinate and distribute innovation and product digitalisation has in many respects paved the way for new business models and service offerings. Organisations now have new opportunities to involve external actors to partake directly in the innovation process (Remneland-Wikhamn et al., 2011), beyond solely communicating with selected stakeholders (such as lead-users) to get feedback and suggestions of improvements (von Hippel, 1986) or linking the business to innovation activities emerging outside of the firms (e.g. Lettl et al., 2006; von Hippel, 2005). This can, for instance, involve the trading of intellectual property on established online markets or patent auctions (e.g. Niioka, 2006), or facilitate the solving internal innovation problems

through intermediaries such as InnoCentive and NineSigma (e.g. Allio, 2004; Huston and Sakkab, 2006) or idea contests (Terwiesch and Ulrich, 2009; Terwiesch and Xu, 2008) and by other means of crowdsourcing activities (Brabham, 2008; Howe, 2008; Surowiecki, 2004).

So what we have seen emerge in industry sectors as well as the society at large is the increased possibilities to communicate and interact among individuals arguably with less constraints of time, cost and location – the so-called revolution of time-space intensification (Odih and Knights, 2002). From a TCE perspective, this would be expected to reduce transaction costs at least relating to, for example, searching, evaluating, and monitoring. This in turn would support an intensification of a willingness among organisations to open up their innovation processes to the inflow and outflow of knowledge. However, the risk of opportunistic behaviours by those outside of the organisations' hierarchical control systems still is perceived as a major threat to collaborative relations, as well as the often immense coordination costs involved in facilitating such distributed approaches. Consequently economic theory and to large extent managerial practice still maintain a strong focus on arm-length transactions and governance at a distance.

How has TCA been applied in cross-boundary (innovation) settings?

A large body of literature argues that innovations increasingly emerge in collaboration across organisational boundaries (e.g. Benkler, 2006; Cowan and Jonard, 2009; Perkmann and Walsh, 2007; West and Lakhani, 2008). Coase's and Williamson's argumentation, that a firm's boundaries are being (or at least should be) decided on the calculative basis of transaction costs, are implicitly and explicitly appearing rather frequently in the discourse of academic research on cross-organisational collaboration. Williamson (1985) states that TCA is suitable for explaining any type of exchange relation.

I submit that the range of organizational innovations that mark the development of the economic institutions of capitalism over the past 150 years warrant reassessment in transaction cost terms. The proposed approach adopts a contracting orientation and maintains that any issue that can be formulated as a contracting problem can be investigated to advantage in transaction cost economizing terms. Every exchange relation qualifies. (Williamson, 1985, p. 17)

Oxley (1997) investigates governance properties of strategic alliances, and argues that firms tend to choose more hierarchical alliance forms when the monitoring of appropriability of value is difficult due to weak property rights leading to contractual hazards. He concludes: "These results emphasize an important finding of the current study: that it is attributes of the transaction and not firm-level characteristics that determine the type of alliance form chosen" (Oxley, 1997, p. 405). Parkhe (1993) found support for hypotheses linking the performances in strategic alliances with the perceived potential for opportunism. This reasoning would advise firms to organise themselves in-house and with strong vertical integration to minimise these risks. A closely related stream of literature is one that deals with 'make-or-buy' decisions (e.g. Masten and Meehan, 1989; Monteverde and Teece, 1982; Williamson, 1971; Wolter and Veloso, 2008), indicating that companies should purchase upstream inputs from the market when transaction costs are considered low, and reproduce themselves when the transaction costs are considered high.

There are also an increasing number of contributions from the TCA literature specifically focusing on cross-boundary innovation. Langlois and Robertson (2009) propose, in their study of the US automotive industry, that "dynamic" transaction-cost theories (which include the parameter cost of economic change) are more suitable than the dominant approach of concentrating on asset-specificity and other more static parameters. As many firms and

industries are facing substantial internal as well as external pressure for adoption of new technological as well as organisational innovations, there is not only the risk of opportunistic behaviour to take into account, but also the risk of losing in competitive strength due to inertia (Hannan and Freeman, 1984; Nelson and Winter, 1982), myopic awareness (Levinthal and March, 1993) and 'not-invented-here syndromes' (Katz and Allen, 1982).

Gulati and Singh (1998) highlight the vast amount of coordination costs involved with cross-organisational cooperative attempts. They mean that "the anticipated organizational complexity of decomposing tasks among partners along with ongoing coordination of activities to be completed jointly or individually across organizational boundaries and the related extent of communication and decisions that would be necessary." From this they argue, for instance, that the greater the interdependencies and technical content in an alliance, the more there is a tendency to apply hierarchical governance structures in organising. Grigoriou and Rothaermel (2010) suggest that TCE should be paired with a capability-based view (Kogut and Zander, 1992) to explain boundary choices under disruptive technological change. They propose that coordination costs as well as the need for external explorative capabilities drive incumbents' decisions of joining or not joining an alliance.

Benkler (2006) has challenged the transaction cost approach in discussing the emergence of free and open source software and similar social productions, arguing that these projects neither rely on markets, nor hierarchical control in producing wealth.

Programmers do not generally participate in a project because someone who is their boss told them to, though some do [...] It suggests that the networked environment makes possible a new modality of organizing production: radically decentralized, collaborative, and non-proprietary; based on sharing resources and outputs among widely distributed, loosely connected individuals who cooperate with each other without relying on either market signals or managerial commands. (Benkler, 2006, p. 60)

Benkler's reasoning is to a large extent based on the production of non-rival goods, providing specific opportunities and challenges in wealth production. But his reasoning is also much in line with Powell's (1987; 1990) general suggestion for a distinction between markets, formal organisations and hybrid networks, as different means of governance. Networks are here viewed as based on relations and complementary strengths, open-ended and based on mutual benefits and interdependence. In Williamson's view, the hybrid form is a mixture in governance structure attributes between the dichotomy of market on the one side and the hierarchy on the other. In Benkler's and Powell's view, however, the network form is a distinctive and separate organising form.

In short, TCE has had an immense impact on academic theories, showing a potential to illuminate economic life in various empirical settings. Supporters of TCE also propose that the theoretical assumptions of transaction costs would be beneficial for practitioners to incorporate into their decision models. Managers working with open and distributed innovation activities are as such considered a potential target for this normative endeavour, since they act in situations with possibly high transaction costs, such as coordination costs and apparent risks of opportunistic behaviours. In order to assess the validity of the TCE arguments in the context of open innovation, in the next section we provide some case study material of the Volvo Group, a corporation moving in the direction of opening up their innovation processes.

The background of Volvo Group

Volvo Group is a world-leading manufacturer of heavy vehicles such as trucks, busses and construction equipments. The company was founded in Gothenburg, Sweden, in 1927 and has since then been transformed into a global corporation with over 90,000 employees, having production facilities in 20 countries and sales activities in more than 180 countries. In the 80s, Volvo began a diversification approach with the aim of reducing the corporation's otherwise strong dependence of the current state in the cyclic vehicle market. In this period, Volvo entered businesses such as leisure, pharmaceuticals and food, but it was just a temporary strategy which was replaced by an opposite position in the 90s going back to a focus on the core business. Since the mid 70s, Volvo has looked to increase their markets through mergers, acquisitions and alliances. In 1977, a proposal to merge with another Swedish automotive manufacturer, Saab-Scania, failed to be approved, and instead a cooperation agreement was set up with Renault in 1979. A merger with Renault was planned in 1993 but also this attempt failed. After Volvo Group sold its car manufacturing business (Volvo Car Corporation) to Ford Motor Company in 1999, a consolidation process in the truck sector started as the Volvo Group acquired Mack Trucks and Renault Trucks in 2000, and Nissan Diesel (nowadays called UD Trucks) in 2006.

From the outside, the consolidation process is much in line with the predictions of TCE, i.e. that corporations historically have tended to choose hierarchical collaborations to avoid contractual hazards. In the press release from Volvo, announcing the joined forces with Renault VI and Mack, the CEO Leif Johansson pointed out;

The intended integration of Renault VI/Mack gives Volvo strength to be able to create added value for dealers and customers. The three brand names – Volvo, Renault VI and Mack – will be kept separate in their own distribution networks. Volvo will gain a stronger position relative to competitors, as well as substantial economy of scale in its industrial system. The operations of Volvo and Renault VI/Mack pertaining to powertrain, purchasing and product development will be merged in order to achieve the strongest possible synergy effects. These factors combined will help to create better conditions for growth and profitability and for increased shareholder value. (Volvo Group press release 2000-04-25)

As a result of the mergers, the corporation was structured in a matrix organisation with business areas (BAs) leading the production and sales via their strong brands (Volvo Trucks, Renault, Mack, UD Trucks, and a few others), and business units (BUs) finding synergies and cost efficiency across the BAs in areas such as product development, procurement and production. With the mergers, Volvo Group turned into the largest manufacturer of heavy trucks in Europe and second largest in the world.

Volvo Group in transition

The automotive sector, as many other industries, faces radical market pressure in terms of global competition, shorter product life cycles, higher R&D costs, strong patent laws and standardisation wars. These are arguably some of the major driving forces for corporations such as the Volvo Group to embrace a consolidation strategy. Parallel to this development, however, the industry also meets the escalation of knowledge and information powered by new information technology and digitalisation of vehicle data opening up for new market opportunities and convergence of traditional knowledge disciplines. The servitization ideas (e.g. Baines, et al., 2009; Chesbrough, 2011) of moving from merely delivering technological products to customer solutions with value-added integrated services were embraced by the Volvo Group in early 2000s. In the Volvo Group this was discussed in terms of becoming a 'solution provider', and a notion of 'soft products' began to circulate to highlight the need to

look further than solely the traditional ‘hard products’. A task force was formed in 2004 with the assignment to formally define ‘soft products’ and to bring up ideas for moving the corporation in this direction (which pretty much ended up in incorporating everything else than selling hard products, i.e. aftermarket, extended product offerings and service offerings). Based on interviews and a survey, the task force concluded that the organisation lacked clear objectives, strategies and budgets in line with soft product priorities, but pointed also out issues related to the existing organisational structure and culture within the corporation. One such aspect was the perceived unclear responsibilities in decision making related to areas (such as most ‘soft’ initiatives) involving more than one BA or BU at a time. Another aspect was the evolved engineering culture, focusing the attention and tributes to ‘hard’ technologies. New goals and measures were from this established to change the course of the corporation. New roles emerged in many of the BAs, with names such as “soft product managers”, and even a new soft product unit was declared in 2008, hierarchically located directly under the Group Executive committee. The attention on services and aftermarket sales was also intensified as the financial crisis struck the Volvo Group hard in 2008 and 2009, with a drastic decrease in demand for purchasing new heavy vehicles.

Changes in the innovation process

With the acquisition of Renault VI, Mack and Nissan Diesel in early 2000s, the Volvo Group faced the challenge of integrating the innovation process to reach synergies across the business areas, while still maintaining the brand differentiation and competition on the market, toward the customers. The corporation established a business unit called Volvo 3P, responsible for product planning, product development and purchasing, to support all the four brands respectively. Volvo Powertrain, coordinating the driveline activities, is to supply the whole group with driveline components, and Volvo Parts is a business unit providing support and services for the aftermarket of all business areas. In this respect, the matrix organisation divided the responsibilities so that the product portfolio, the customer interactions and the market activities were still “owned” by each business area, while the innovation process of “new” products had to be channelled through Volvo 3P, who in turn could appoint other business units for the actual R&D work, such as Volvo IT or Volvo Technology.



Fig. 1: The organisational structure of Volvo Group

In a traditional state-gate process of innovation (c.f. Cooper, 1990), based on thorough methodologies, division of responsibilities and well-established expertise, the hierarchical model has proven to work rather well in the Volvo Group. As digitalisation and other ‘soft’ aspects become dominant features in many vehicle and telematics technologies, which in turn is opening up the potential for the emergence of new ‘open’ solutions and services (Chesbrough, 2011), the established hierarchical innovation process began to be challenged. Was the established organisation not suited for the new forms of innovation? Aspects such as the difference in timeframes were highlighted; comparing the normal stage-gate process (a development of a truck can take up to 10-12 years and should have a lifetime of several decades) and the new ‘soft’ innovations (where at least some services can be developed very fast, and might be obsolete in a few years). It is also apparent that the knowledge in developing successful solution offerings might not be available where the formal decision-power and the financial resources are located. It was not even sure that the Volvo Group as a whole had enough competences in many of these new areas that ‘soft’ products touch upon.

The emergence of new innovation initiatives

Several activities in the Volvo Group took place in 2009 and 2010 to put an emphasis on capturing the ‘soft’ ideas to generate new promising projects and business models. One such activity is the so called ‘InnovationJams’ which were initiated in early 2009 in the business unit Volvo Technology. Inspired by IBM (c.f. Bjelland and Wood, 2008), sessions are being set up during scheduled timeframes (e.g. 48 hours) with the aim to generate lots of new ideas and opportunities for the corporation. It functions like a virtual online forum, where open discussions are held in structured forms around selected innovation topics (such as safety, energy or environment) and where the participants in the ‘jam’ are being asked to come up with new ideas and to write feedback on others’ suggestions in order to develop them further. As none of the participants are allocated paid work-time for this activity, the incentives to contribute can be considered more complex than through “normal” hierarchical orders. The ideas are evaluated by the host of the jam, based on agreed criteria (e.g. business value, innovation height, and potential for implementation) as well as from the comments of other participants. A few of the ideas are then being selected as projects, getting a small budget (around 20.000 Euros) for further refinement. One of the incentives for the idea provider is to become part of this implementation work and to be involved as the idea progresses to ultimate realisation. Another incentive is recognition within the organisation to facilitating a consolidation of the participant’s identity. A third is possibly joy and fun in creatively contributing to the development of innovative products and services.

Three separate such sessions were held internally within the Volvo Technology organisation in 2009. In total, over 500 ideas were generated, resulting in about 30 innovation projects. A fourth event took place in May 2010, involving participants from the whole of the Volvo Group. In this case, more than a thousand employees from various sites in the corporation jointly brainstormed, leading to 350 new ideas, more than 1500 comments and seven projects. Later in 2010 the activity spread even further and sessions were held in Volvo IT and in Volvo Construction Equipment but also with Volvo Technology as facilitator in external settings such as in Volvo Car Corporation and in Lindholmen Science Park. The latter is an open arena for research and development within intelligent vehicles and transport systems, mobile Internet and modern media and design. In October 2010, the Volvo Group also launched “InVolve” on their website, where they asked for external participation in the innovation process:

The global community, e.g. inventors, suppliers and academia, is an enormous resource for creativity and innovation. InVolve is a meeting place with recurring events where the Volvo Group looks beyond its own resources and turns to the global community to identify new solutions for key challenges. For each event, top ideas will be explored together with Volvo Group experts and the winning idea will be awarded. (Volvo Group Webpage, 2010-10-24)

Being open requires awareness of IP?

Innovation initiatives emerging outside of the traditional stage-gate process in the Volvo Group, such as the InnovationJam, show aspects of ‘openness’ in terms of blurred organisational boundaries (internal as well as external) and less hierarchical governance, opening up the possibility of decentralised and freer participation in innovation work. Managerial position and line of authority does not mean as much in these settings – but rather the open dialogue among diverse and engaged collaborators moves the process further.

The InnovationJams themselves worked rather successfully, generating many new creative ideas and potential projects. However, an organisational challenge emerged to find support for and to incorporate the project outcomes in the existing established innovation structure. Another challenge was to manage the process (protecting intellectual property) when involving cross-boundary collaborative work – especially when working with external actors. Fear of opportunism and the extended bureaucratic process (signing of contracts etc) was to some extent perceived as harming the participants’ motivation to contribute.

The Volvo Group seen from TCE

This short case study of the Volvo Group could easily be analysed through the lenses of TCE, arguing that the consolidation process in the late 90s was a rational strategy for avoiding transaction costs when growing the business. It could be seen as a safer way to avert opportunism in shared product development than utilising inter-organisational contractual arrangements. However, it would be difficult to argue that the transaction costs simply disappear as a result of retaining activities solely within the organisational boundaries of the Volvo Group. Facilitating the various BAs and BUs to collaborate in innovative work may still be considered “costly”, in terms of protective and competitive behaviour, opportunism, communication challenges, power struggles, and other dimensions of everyday organisational life and politics. A defender of TCE would then perhaps suggest extending the theory even further, arguing that transaction costs could also be applicable to understand intra-firm organising activities – i.e. how various business units act in order to reduce costs of transactions (e.g. opportunism) by strictly determining their internal borders. This would then be followed by a similar discussion of problems of intra business-unit organising activities, which if again resolved through the assumptions of transaction cost theory, would end up explaining the behaviours of single individuals in relation to each other (or perhaps facetiously why not body parts, cells and atoms?). As we argue in this paper, the picture of human behaviour and the organising effects of the firm are not necessarily false – at least not as a highly limited description of organisational life. It is not wrong, but it is rather dangerous – especially when being used as a normative theory of how organisational behaviour *should* occur in innovation work. Just taking this consolidation process as an example, a quote from one of the project managers of corporate strategy in the Volvo Group points to the need to see beyond the transaction cost paradigm when looking to advance the businesses;

We have a tradition where everything should be kept within our four walls. We have for instance made a lot of acquisitions over the years – not only in truck brands but also in various other

activities. And we have many bad experiences of when we push diverse businesses into our corporate system, adding all our overhead costs and limiting the strategic freedom they once had. It is not easy to make them flourish then. (Project Manager, Corporate Strategy & Business Development, Volvo Group)

The challenges of cross-unit collaborations became even more obvious when the Volvo Group started to implement new strategies of ‘soft products’, where much of the innovation work needed different kinds of facilitation than through the established stage-gate process. ‘Soft innovations’ tend to emerge in the interface with external stakeholders such as partners and customers, and they immediately affect and possibly demand the engagement of business units and business areas across the Volvo Group structure.

We are structured as if we would only produce hard products. We are thus in many respects not suited to developing solutions and do not have an organisation optimised for innovating these kinds of integrated services. It needs a shift in corporate culture to change the mindset toward this direction. (Soft Product Manager in Volvo Trucks)

The organisational structure and culture in the Volvo Group was considered as being well-suited for developing, producing and delivering technology products, such as trucks, buses and construction equipment, but less so in terms of working with ‘soft products’. For this latter purpose, the idea of rationalising the organising activities into separate and autonomous organisational units governed by internal contracts, budgets and cost metrics, seemed a bit more problematic. In this matter, the TCE assumption that organisations better deal with ‘costs’ related to ongoing transactions than do markets could be challenged. Taking into account the considerable costs of collaboration inside the firm, we would question whether transaction costs are (or should be) the sole reason for where to set the boundaries in relation to the external market. The TCE proposition that the higher asset specificity, the more optimal is a strategy of vertical integration (e.g. Williamson, 1985) could also be challenged drawing on the Volvo case. A major problem with this proposition is its disregard of historical specificity and the Volvo Corporation provides a counter case for the more specific its assets (e.g. focusing its efforts on producing hard products), the *more* benefit is to be found in working with external sources of innovation in order to complement and confront its established knowledge base.

It is important to remember that TCE was developed within an industrial logic largely different from today’s conditions. Clearly the Volvo Group developed when those conditions prevailed; that is, when the organisational structures and cultures were aligned, and product offerings, technological regimes and competitive strategies were still built on bulk-material manufacturing and mass production. Acting within such a paradigm based on resource constraints would imply a zero-sum (win-lose) relation, since the resource consumption would diminish business opportunities for other competing firms on the supply side and increase prices or decrease availability for consumers on the demand side. Following such an institutional logic, it is understandable that theory as well as practice emphasised minimising of costs, protecting against opportunism, and enforcing rational control mechanisms to reduce risks and to facilitate efficient process flows. But in contemporary knowledge-based economies, where the main resource is non-rival information, the basic assumption of win-lose optimisation is challenged (Arthur, 1996; Benkler, 2006). Knowledge-based industries, which would seem to be the future for the automotive industry, are faced with the different challenges. As they need to reach and involve users to build critical masses and network effects (Shapiro and Varian, 1998) as well as broad varieties of customisable alternatives, it becomes more questionable to stay with solely a cost oriented focus. Or put it differently, parallel to the costs involved in relation to the risk of losing, there is a cost involved relating to the risk of not winning (Kahneman and Tversky, 1979). Teece (2000) highlights the

following attributes if firms are to be successful in generating, acquiring, transferring and combining knowledge assets. These are a) flexible boundaries, b) high powered incentives, c) non-bureaucratic decision-making, d) shallow hierarchies and e) an innovative and entrepreneurial culture. As the Volvo Group began the journey from product-orientation to knowledge- and solution orientation, such a shift soon became apparent to them.

We can take the truck as a simple example. From a product-oriented perspective, the best and cleverest is to minimise the number of product variations and spare parts, since it will create a very cost-efficient vehicle. From an aftermarket perspective, it is the opposite. They wish to maximise sales by offering individualised solutions. These perspectives can be in conflict with each other and need to be considered and decided upon already in the design phase. (Soft Product Manager in Volvo Trucks)

When moving to a 'soft product' strategy, the previously effective way of organising through clearly demarcated boundaries between business units and the corporation began to be seen as less appropriate. This system of decentralised responsibilities, governed through measures and budgets for cost control, and cross-organisational collaboration secured through internal and external contracts worked well with conventional manufactured products but Volvo seemed still to be structured in this way. "*We are structured as if we would mainly produce and deliver products. We are thus in at least some aspects not optimised for developing service solutions*", as one of the managers said to us. A strong culture of constraining costs – including transaction costs – seemed at least to some extent to be hampering the innovation abilities of the firm. This also highlights how it is important to challenge Williamson's (1985, 1991) idea of distinguishing the governance structures of market, hybrid and hierarchy in a continuum, where borders can be moved with ease and rationality depending on the current transaction cost structure. Structural arrangements of any kind are embedded in a wider set of relations, and the path dependent decisions leading to the stabilising of certain associations are not easily disrupted (Remneland-Wikhamn, forthcoming). The alignment of organisation structure to other organisational elements, such as work processes, cultures, know-how, communication channels, reward systems, installed base of technology, suggests that each modification disrupts the organisation as it raises new possibilities and limitations (Powell, 1990).

Innovation is said to bring two distinct value processes to the table, one of value *creation* and one of value *capture* (Bowman and Ambrosini, 2000; Lepak, Smith, and Taylor, 2007; Shapiro and Varian, 1998). The creation process for knowledge intensive goods is arguably theoretically linked to aspects such as open dialogue, creativity, diversity, inclusiveness, cross-boundary collaboration and network effects. Looking at the value capturing process, it could be associated with business models, strategising, competition, boundaries, opportunism and closeness – much in line with the underlying assumptions of TCE. As Volvo moves to a soft product strategy, the innate tension between the processes of value creation and value extraction comes in to play, as 'soft' became paired with an increased 'openness' in terms of knowledge flows across internal and external organisational borders. The InnovationJam initiative, for example, shows the potential for cumulative idea generation to a large extent separated from organisational belonging. One of the specific purposes with the InnovationJam in the first place, is in fact to facilitate the innovative culture across business units and business areas in the Volvo Group. It had a good reception in the organisation as several new ideas and innovation projects emerged out of the process. The further the reach of the activity, however, the more challenging it became to balance value creation with value capture. It showed clear differences on involvement and participation in the value creating process when the jam was held within one Business Unit compared to when it was tried out in a multi-organisational setting. In the latter case, one of the first issues raised among the firm

representatives was that of protection and handling of Intellectual Property Rights. Enforced control in terms of more rules of engagement, careful selection of participants as well as innovation topics, had arguably a negative influence on the creative potential. Hence, the initial focus on potential value capture had negative spill-over effects on the value creation process, reducing the actual value capturing opportunities for all.

$$\text{Value of the firm} = [\text{Total Value Creation}] * [\text{Proportion of Value Extraction}]$$

Enhanced by:

- **Open dialogue**
- **Creativity**
- **Diversity**
- **Collaboration**
- **Cross boundary**



Enhanced by:

- **Secrecy**
- **Business models**
- **Opportunism**
- **Competition**
- **Strategizing**

The motives for certain individuals to participate in the InnovationJam seemed not to be driven by hierarchal orders (at least not in the case of the internal jams within Volvo), or even necessarily by monetary rewards (since the chance of “winning” is rather small, and the outcomes will not be privately owned). Employees were neither paid a salary nor allocated time for the event – they participated in their spare time or in between their daily work responsibilities. Others (e.g. Bergquist and Ljungberg, 2001; Lakhani and von Hippel, 2003; Lerner and Triole, 2000) have pointed out the driving forces for such participation can be linked to aspects such as direct personal benefits from the outcome, reputation building, reciprocity expectations, or power to influence. However, focusing implicitly or explicitly the attention on boundaries, risk-reduction, protection of interests and the concern with minimising opportunism and other transaction costs could severely reduce the relational motivation in innovation work. A calculus translation of use value (e.g. the joy of engineers’ collaborative efforts in idea generation) to exchange value (e.g. rationalising the ongoing relations into purely transactional costs) would not only be an incomplete rendition but might even harm the willingness to participate in the shared innovation work in the first place.

Summary and Discussion

In this paper, we do not argue against the idea that transaction costs might occur, or that TCE describes one perspective on events that happen in industrial settings within and among firms. We do not object to the arguments that TCE proponents claim in relation to perceived realities facing practitioners in their everyday life. And even if it is unlikely that the decision makers in Volvo Group study in detail the academic contributions of Williamson and colleagues in order to form their decisions, it is clear that similar patterns to those suggested by TCE theory can be found in practice.

What we do object to is the argument that TCE should be the sole normative basis for strategic decisions related to innovation, and more precisely to open innovation. For TCE is highly selective in its portrayal of organisational and human behaviour emphasising some human traits (i.e. opportunism and bounded rationality) as against other equally existing traits (i.e. love, reciprocity, honesty, curiosity, pride, dignity etc). Admittedly market relations within a capitalist economy naturalise and take for granted such assumptions but academic

theory that reflects them uncritically contributes significantly to their reproduction. In this sense, the assumptions of TCE are a self-fulfilling prophecy once managers exercise power in accordance with such a framework (Knights, 1992). This is not only a limited picture, but also rather dangerous in that its self-fulfilling nature renders radical change difficult thus stifling the kind of cross-boundary innovation work that is evolving in companies like Volvo that are diversifying in response to new knowledge based services in 21st century global economies. In fact, as the case of Volvo Group indicates, calculative cultures that seek to protect market positions and path dependent decisions from disruptive external forces are counterproductive in the context of knowledge-based institutional change. To suggest that firms should embrace TCE even further in order to find solutions for coping with their problems would only escalate the damage.

In this paper, we have pointed to three mind traps related to TCE in dealing with innovation work related to knowledge-based resources. *First*, the argument that organisational form is a fundamental function of transaction costs indicates a belief that borders can be rearranged easily and at will with few other consequences than governance effectiveness. Too much focus on governance and rationality leave little space for an innovative and creative climate. *Second*, the belief that hierarchical control automatically defeats opportunism and other ineffective transaction costs is very much questionable since transaction costs are unlikely to disappear just by establishing boundaries around certain organising activities – especially regarding innovation work involving multiple actors. *Third*, the emphasis on the reduction of potential transaction costs and the imposing of calculus intentions tends to divert the attention from potential transaction benefits, which then risk hampering the innovative potential existing in cross-organisational collaboration. Moreover, the self-fulfilling prophecy character of subscribing to the assumptions of TCE may not merely hamper but actually undermine innovation. Too much focus on value capture in exchange destroys the potential creative capacity of cross boundary joint innovation practices.

To put it more boldly, TCE alone is often bad for practice (Ghoshal and Moran, 1996) and in particular for open innovation practice. Applying TCE as a descriptive theory for innovation work would be as to seek the answer to entrepreneurial drive from lawyers and accountants only. Applying TCE as a normative theory would be as to asking the lawyers and accountants to also deciding the entrepreneurial strategies and structures. It is therefore more productive to seek the driving forces for cross-organisational initiatives, such as open innovation activities, in the potential benefits of doing so rather than in supposedly (and even questionable) reduced costs. Research on open innovation calls for a more thorough understanding of the dynamics and creative potential of acting “open”, as well as to find constructive means of reducing or eliminating eventual hinders of doing so in practice – or in other words, let the creative possibilities determine the organising mechanisms rather than only the estimated transactional costs.

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