The Division of Knowledge: Knowledge Transfer Practices in Outsourcing

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Abstract
The Division of Knowledge deals with the key distinction between the implicit and the explicit bodies of knowledge about firm processes, both within the client firm and across outsource vendors. This concerns the explicit codification for the client, by the vendor, of the tacit and informally transferred systems testing knowledge base of the firm. The primary theoretical contribution of this formalized explication of the parallel division of knowledge development lies in building an understanding of the knowledge transfer process across an outsourcing context in which the vendor is tasked with developing, documenting and sharing an explicit knowledge base of testing processes as both a working tool and a specific customer service owed to and owned by the client, while the client maintains an extensively tacit approach to skill development in its systems testing organization.

1. Introduction

Knowledge management is an enduring development in industry practice and scholarly research [13]. Knowledge, in the abstract, is a key asset of firms, as is widely recognized [1], [28]. And, as is generally agreed upon, improving employee knowledge has important positive outcomes for the firm, since the effective deployment of a firm’s knowledge is expected to result in marketplace successes [3], [32]. Aside from serving as an operational advantage, the knowledge stores of a firm are its collective organizational memory [23], though there are types of knowledge that are more and less easily codified and transferred, if a firm cares about maintaining an accurate record of what it knows.

Lately, it has become popular to speak of the “knowledge-based theory of the firm” when discussing the role of knowledge management in the modern enterprise, though the concept has not yet been fully iterated in theoretical terms as an offspring of the resource-based perspective [11]. Even so, the emergent knowledge-based conceptualization of firm performance and success suggests that the effective facilitation and management of tacit and explicit knowledge types leads to sustainable competitive advantage [29]. There are those who contend that the real work of knowledge management is effecting the transfer of tacit knowledge, since explicit knowledge is by definition transferable and presents little challenge [30], [31]. Hence, the true key to sustainable competitive advantage lies in tacit and not explicit knowledge, for that specific reason.

In the general study of knowledge management, the transfer of knowledge is considered a vitally important process [31], and is thought to be a critical aspect of strategic alliances with partners, because the quality of inter-organizational interactions is expected to influence technical knowledge transfer between firms [21]. Even within the firm, knowledge transfer is considered to be highly dependent upon interactions among team members [17], and all indications are that knowledge transfer is an inherently social process of the workplace in many ways [29]. Knowledge transfers routinely take place within and across organizational borders, whether the process is managed or not, because it seems to be an inherent characteristic of the human condition [3]. Moreover, it was predicted almost two decades ago that the truly competitive companies in the use of information technology would evolve to be technology architects rather than proprietary systems builders [16], effectively presaging the criticality of the client-vendor relationship in modern IT development, with its essential and critical knowledge transfer issues.

Notwithstanding the long-time trend in IT development and management toward technological
alliances and partnerships, research to date has not dealt effectively with, nor with any great detail, the inter-organizational sharing of knowledge – having instead generally focused on intra-organizational knowledge management processes [9], [22]. In other words, much more is known about how knowledge is transferred within companies than without. However, firms interact with each other on a regular basis with the expectation of enhancing their performance through knowledge transfer processes [19]. Hence, it seems that effective knowledge management must transcend the boundaries of the organization to reach its sourcing partners, and the extent of outsourcing between a client and a vendor will likely determine the degree of knowledge sharing between the parties [9].

This study investigates and explains the knowledge sharing process between a Fortune 500 organization and its systems testing outsource vendor. A key goal of the study is to understand knowledge transfer processes between the client and the vendor, as an aspect of understanding and partially explaining the growing role and increased importance of inter-organizational knowledge transfers in the post-industrial economy. Lessons learned from this interpretive inquiry between two strategic partners indicate that outsourcing relationships might often take forms that largely parallel the popular archetypical dichotomy of tacit and explicit knowledge in practice, with one specific knowledge form being characteristic of vendors and another of clients.

The paper is organized thus: following a brief explication of the present state of scholarly discourse on the topic of knowledge transfer as a specific knowledge management practice, we will describe a field study in which a series of qualitative depth interviews were conducted with key informants of a client and its systems testing outsource vendor, all focusing on the topic and practices of knowledge transfer in the systems testing process between them. Interpretive assessments of the implications of key practices and trends observed will then be offered with discussion oriented around implications for optimization of the knowledge management process through effective knowledge transfer in systems testing organizations. The paper will conclude with implications for ongoing inquiry into the discourse of knowledge transfer as a specific knowledge management practice between vendors and clients engaged in strategically important testing and assessment of systems development work.

2. Discourses on knowledge types and transfers

As Schultze has aptly noted, there are several parallel epistemological contexts in the literature from which to consider the practice of knowledge management [30], [31]. These alternative theoretical worldviews are largely differentiated by their particular form of discourse, which is much akin to a qualitative metaphor for paradigm as practiced by the logical empiricist. Knowledge is frequently characterized by Schultze and her colleagues as a double-edged sword; too little leads to inefficiency, and too much causes rigidity. This balance of knowledge in organizational efficiency is paralleled in human judgment and thinking processes, and the understanding of worker thought, work perceptions and judgments leading to work decisions are the heart of knowledge management as a practice of rational firms.

Mark Twain was wrong: ignorance and confidence are not a recipe for success [31, p. 550]. The consensus of scholars and the practice is that knowing how to do work better leads to better work, and that markets generally reward good work.

We think that knowing how people learn to know how to do good work is important, and this is the reason behind our investigation of knowledge transfer processes between a client and its vendor. The constructivist discourse considers that knowledge is shaped by the social practices of individuals in communities of practice [31, p. 558] and that organizations are systems of distributed cognition (p. 557). Hence, as part of our explication of the social cognition of organizations – the social mechanisms for the transfer of knowledge in organizations – we consider the phenomenon of knowledge transfer in the form of a constructivist discourse on the nature of outsourced systems testing services provided by a vendor to a client.

A discourse, as explained by Schultze and her colleagues [30], [31], is the explanation of a duality – a juxtaposition of two opposing forces, or a contradiction – through some theoretical lens that permits you to understand their integration. In the case of the constructivist discourse, the lens is social processes in the communities of practice related to the firm’s work; the juxtaposed forces are the distinction between tacit and explicit knowledge and the particular challenges associated with the management and transfer of tacit knowledge, in particular.
As a discourse representing the consensus duality of inquiry [31], a key consideration of emergent constructivist views is that transferring knowledge between partners is not as efficient as integrating or merging it between them as solutions are jointly and cooperatively sought for the problems of business [11]. This might be thought of as knowledge sharing, as opposed to transfer. Even so, the transfer of knowledge is a fundamental aspect of the knowledge management concept, and must be considered from several theoretical perspectives. The constructivist discourse, conceptually related to Schultze and Leidner’s [30] interpretivist approach, calls for the socially-constructed interpretation of knowledge management processes studied from a local and emergent perspective through close interaction with organization members.

2.1. Constructing a social cognition of firms

The Constructivist Discourse considers organizations to be systems of distributed cognitions. [31, p. 557]. In considering how people think about what they know, and how it influences their decisions and judgments, the psychological literature of Social Cognition may be useful. Social Cognition is not without its own dualisms of discourse: semantic and episodic memory forms are archetypical dualities [37], and seem analogous to our emerging understandings of explicit and tacit knowledge in the IT literature. The duality of conscious and unconscious information processing in judgment and decision making is instructive [20], [27], with implications for the operation of routine processes guided by deeply internalized knowledge. The effects of influence strategies that span overt and covert persuasion techniques leverage the activation of implicit and explicit information in memory [34], [35], in highly related “personal knowledge management” strategies of influencing judgment and decisions.

There is also the key distinction between routinized and unique decision and judgment scenarios [7], [36], [4], with implications for the use by decision makers of knowledge structures highly analogous to tacit knowledge, or explicit knowledge, respectively. Similar metaphors are found in Chaiken’s [5] work, regarding heuristic and systematic decision making processes based on knowledge in memory, and in the effortless activation of “chronic” knowledge categories [2], [15], much like the way in which tacit knowledge springs unbidden to quick and effective application when problems arise. By contrast, highly explicit information stimuli can lead to detailed information processing and judgment formation [14], [24], [33], representing the other side of the duality between tacit and explicit knowledge types.

The parallels between Schultze’s social construction approach to organizational cognition, and what is already known in the psychology literate about how people construct judgment and make decisions based on social information sources, lead to interesting theoretical platforms from which to launch qualitative inquiries of the sense-making processes that tacit knowledge conversion requires in inter-organizational knowledge management [30], [31].

To transfer knowledge we have to think about how we think. In the knowledge management literature we are beginning to do so; in the psychology literature, scholars have made similar discoveries, and they can serve as a useful context for considering the critical duality of tacit and explicit knowledge.

2.2. Overcoming sticky and selfish knowledge

The Neo-Functionalist discourse [31] is typified by the resource-based approaches that have traditionally been used [6], [8], [10], [11], [12] to leverage an emergent “knowledge-based theory of the firm.” The very concept of opportunism is embedded in the transaction costs literature that is taken as emblematic of the New-Functionalist discourse; principals can even withhold knowledge transfer to prevent agents from becoming competitors, but this consideration does little to aid in the understanding of how one company operating in an innovative technical market can form alliances with another for purposes of sharing knowledge in order to be more successful.

The consideration of knowledge as a key resource for firms has already formed a “Knowledge-Based Theory” approach to buyer-supplier research [25], and similar characterizations of the primacy of knowledge as a corporate asset are iterated in the knowledge management literature [11], [19], [28], [29]; we believe that in the specific context of outsourcing of systems testing services a similar “Knowledge-Based” constructivist discourse can demonstrate that knowledge resource production and knowledge resource sharing need not be in diametric opposition.

We think that social forces overcome the challenges inherent in “sticky knowledge,” which is that tacit knowledge that is difficult to transfer between parties [36]. Tacit knowledge is not easily shared by traditional documentation practices in knowledge bases, though a critical consideration of knowledge management is to convert the tacit to explicit so that it can be more easily shared [31]. Even so, tacit practices be observed and transferred in the day-to-day work of team partners who come to know each others
routines and methods by example. This is like the process of junior team members being mentored by senior team members at a time when explicit knowledge lacks important contextual meaning to a new hire.

2.3. Alliances and partners in knowledge transfer

We also think that the formation of alliances facilitates knowledge transfer between firms, particularly in the client/outsourcer relationship. Knowledge transfer is greatly facilitated in interactive strategic relationships [21]. Innovative performance is thus enhanced and contingencies for reacting to change are developed [22], since firms interact with each other in large part to gain new knowledge [19]. However, this is dependent upon adaptive inter-organizational communications taking place [25]; knowledge transfer is an inherently social process in our conceptualization, and this implies a great deal of reliance on interpersonal communication both within and between firms to facilitate knowledge transfer processes.

Our investigation leverages dyadic key-informant interviews across a client/vendor partnership for systems testing. We follow the constructivist discourse of social factors mediating the duality of tacit and explicit knowledge forms in this inter-firm transfer process, and this is achieved through the interpretive method of hermeneutic analysis of the client/vendor relationship. We know that alliances effectuate the transfer of knowledge [12], and that hierarchy-based alliances perform better in this process than market-based alliances [26], so there some need to look at the hierarchical structure of social relationships within and between the partner firms to understand the social construction of tacit-to-explicit knowledge for purposes of inter-firm transfer.

3. Field study: Dynamic key informants

3.1. Method – Hermeneutic social construction

In this interpretive/constructivist research discourse, we match reporting relationships with structural hierarchy of both sides of an outsourcing relationship in order to facilitate the process of the Hermeneutic Circle [18]. The Hermeneutic Circle consists of a recursive process by which a researcher cycles from the whole to the parts and back again, in order to completely consider all pertinent aspects of a phenomenon. As part of this process, there are seven key steps, of which the circle is the first. Researchers must also engage in contextualization, considering the social and historical background of the research setting. They must consider the interactions between researchers and respondents, thinking of how the data are social constructed (this has synergies with the constructivist discourse approach, clearly), and researchers must engage in a sequence of abstraction and generalization, relating discoveries to theoretical and general concepts. The practice of dialogic reasoning must be engaged in, looking for possible contradictions between theoretical expectations and actual results, and multiple interpretations must be permitted, with sensitivity to the differences that may exist between viewpoints of multiple actors in the analysis. Lastly, researchers must practice “suspicion,” which is a hermeneutic process by which the researcher strives to be aware of possible biases of participants in the research interactions.

In the Hermeneutic Circle, the “whole” consists of shared meanings that emerge from interactions between specific points of view [18], and we practice this analytical technique of cycling between the general and the specific situation of the phenomenon in several ways:

1) By seeking the identity dyads of practice across the vendor/client partnership.
2) By looking at hierarchical structure from one company’s point of view and then from the partner’s point of view,
3) From considering managerial versus operational interpretations of critical concepts in knowledge transfer and the client/vendor relationship.

3.2. Dyads of practice

There were several communities of practice in the client/vendor outsourcing relationship for systems testing. First, there were the people who actually tested software; these could be vendor-side employees situated in Bangalore, India, though there were opposite member analogs at the client headquarter, as well as a few vendor members who had transitioned to the client side as full time employees. For purposes of making the comparison, we interviewed test leads on the vendor side and test leads on the client side, and this view represented the most specific aspect of the relationships for hermeneutic purposes.

Secondly, there were testing organization employees who had been given advanced responsibility for managing testing projects as project managers on the client side, or as senior test leads on the vendor side. This community of practice was distinguished by a certain degree of experience, skill and seniority as a member of the testing organization.
In this view, some discussions were at a specific level, and others were more general, lending to an alternative consideration of general and specific viewpoints in the hermeneutic cycling process.

Lastly, there were key managers. Though titles are difficult to directly correspond, the senior managers of the inter-organizational testing relationships were at what is best characterized as the Senior Vice President level. In this community of practice, the strategic overview was best represented and the clearest view of the operation of the “whole” offered.

These communities of practice were interviewed in a key informant process, using depth interviews guided by a formatted question guide. The interview guide is displayed in the Appendix. Initial interpretations of interview responses are analyzed from the specific point of view characteristic of test leads as a first step in interpretive analysis. These are the individuals who are trained to conduct testing, and to train others to test as they join communities of practice. It stands to reason that their needs for knowledge transfer will be quite different and more specific than those of other levels of the inter-organizational hierarchy.

3.3. Testing and documentation – Test leads and knowledge transfer

There was a marked and clear reliance by vendor-side test leads for documented knowledge. In asking how new testers might learn about the work, the answer was consistently, “from documented knowledge,” with the provision that questions not covered by documented knowledge stores would usually be answered by “seniors.” Seniors were testing personnel with time in place, considered formally and informally, alike, to have accrued seniority as a member of a testing team. Interestingly, it was considered part of the job responsibility of a “senior” to mentor new and junior team members, helping them learn difficult tasks and making themselves available for questioning as need be.

In this respect, it seems that on the vendor side, the people closest to the testing work rely extensively on a documented base of explicit knowledge as an initial and general training resource, and that specialized training and orientation to tasks take place in interpersonal representations of tacit knowledge provided by “seniors” to those junior on the team.

On the client side, there was the sense that testing personnel were expected to acclimate themselves to the task on their own recognizance. Documented stores of explicit knowledge were readily available, and their availability was generally considered common knowledge, but their typical orientation to task was much less structured than on the vendor side, and the key point seemed to be that client-side testing personnel were expected to make their own way, and usually did so by affiliating with more knowledgeable colleagues for “desk rides,” and other interpersonal tutorial assistance, which seemed very tacit in form. The explicit knowledge bases that were commonly known to be available were known about at a tacit level, in the sense that testers knew, themselves, that there were explicit stores of knowledge available for access, but were left to access them and utilize them at their own pace, and in accord to their own tastes, whereas the vendor side testers for entirely more formally oriented toward the documented base of explicit knowledge.

3.4. Tacit innovations – Cleve nonconformists and the Brown Bag seminar

At the project management level of testing organization responsibility there was an interesting display of tacit knowledge use and transfer. On both the vendor side and the client side, these personnel were very much nonconforming innovators. In choosing not to conform to the highly visible vendor practice of accessing explicit knowledge stores, the vendor side of the dyad expressed that success came from intuition, diligence and a certain willingness to be innovative in looking at problems from new perspectives. This was a social process, in which testing members from other product organizations in the hierarchy were often consulted and informed in accord with issues under consideration.

On the client side of the dyad, the project-level personnel engaged in something that seemed very much like making tacit knowledge explicit. The client-side individual expressed concern that little was explicitly known about system requirements that could impact testing procedures, and related the experience of becoming involved with the development organization in informal lunch-time seminars called “brown bags,” where training and mentoring on development processes was provided in order to more fully inform the testing organization about the systems that they were involved with assessing. An offshoot of the perceived value of the informal interaction with other aspects of the firm, designed to aid and train testers, was the development of a formalized reporting process of informal procedures, whereby the project area of the testing organization reported among itself as to issues of the day and solutions found to be useful, and an encapsulation of this report was passed up the
chain of command to more senior decision makers in the client organization. The information gathered at the project management level seemed tacit in nature, as it originated from the unique views and perspectives of the testing project team members, but was made more explicit through the upward reporting process in which codification often took place in the form of email messages.

Interestingly, when asked what would improve knowledge transfer processes at that level, the answer revolved around the desire for more documented stores of explicit knowledge. The Brown Bag seminars that solved some testing problems in tacit manner only served as a substitute for a wished-for knowledge base of documented systems requirements to guide testing procedures.

3.5. The big picture – Managing the relationship and codifying tacit knowledge

At the highest dyadic levels were two very senior managers on each side of the strategic partnership. In probing for knowledge transfer processes on the vendor side, the local manager for the outsource provider (from India, where much of the testing work took place) represented that his company engaged in an extensive codification of knowledge stores. “Documentation” was to key term used to refer to how knowledge was transferred. On one hand, this merely reconfirmed the perceptions of the lower level knowledge workers in the testing organization, where, on the vendor side, documentation was highly visible and greatly prized. However, this manager related that his key responsibility was actually to manage the flow of the relationship, and that what he learned for his own work inevitably took place through interpersonal channels, leaving a sense of largely tacit transfer processes taking place during personal meetings.

Yet, when considering the viewpoint of the most senior member of the client side organization, the reason for the documentation focus of the vendor became clearer. This executive related that there was some concern that the client company had lost track of their own formal knowledge of systems testing through the extensive engagement in outsourcing of the process. While it was clear that many individuals in the client organization were quite skilled in testing, and possessed unique knowledge of the process, it was the vendor who was required to have the documented technical knowledge to train personal for and to perform the actual testing work. Client-side managers were expected to know how to manage the execution of the testing work, essentially managing project groups comprised of the vendor testing teams. There was the expectation that many of these project managers would have rich tacit knowledge about the testing procedures, but that their personal skills were not necessarily codified in an explicit knowledge base that the company owned and could access independent of any vendor relationship.

From this point of view, the client-side executive related, the company had come to feel it was out of touch with the expertise necessary to test systems, and had undertaken to codify the skills and processes used for testing their systems. This was achieved through a charge to the vendor to compile a knowledge base that would essentially serve to explicitly codify the testing process and its related explicit knowledge base. This knowledge base would be produced as a working product to be owned by the client, but to be used by both to inform the testing process. In this manner, it seemed that the client was seeking to transfer some degree of its own tacit knowledge to the vendor for explicit codification.

From a social construction perspective, the top level managers were thinking about the interaction between their two companies and how it would result in knowledge for both to leverage to be more efficient in the testing process. This consideration accurately represents the metaphor of the social cognition of organizations, in that managers were actively managing the social process by which knowledge and learning were promulgated between them.

4. Interpretive conclusions

The client in this strategic testing relationship presents as largely tacit. At several hierarchical levels in the firm, persons express that much of what is known about how testing operates resides in the heads of the persons performing the work and managing its oversight. This has been considered to be slightly problematic, in view of the frequency with which capable managers are rotated through different job responsibilities in different strategic units of the company. It was considered a wise move at several levels of the hierarchy to make attempts to codify the informal know-how of the testing organization, and this coincides with the formative challenge in knowledge management, which is the conversion of tacit knowledge to explicit knowledge in order to facilitate ease of transfer between learning individuals and learning organizations.

The vendor organization presents as quite explicit in its orientation to knowledge and its transfer. This is fortuitous, since the client is requiring the vendor to
codify the tacit knowledge of the testing process into a common knowledge base to more fully inform the entirety of the strategic relationship. One reason that the vendor personnel may be so oriented to explicit knowledge transfer in documented stores of knowledge resides in the concept of seniority. The vendor, being Indian, has an interesting orientation toward seniority and reporting relationships which is very structured, quite visible, and, interestingly, quite tacit in its representation. Everybody on the vendor side “just seems to know this is how it works.” By contrast, on the client side, there as a hearty egalitarianism operating between the various levels of seniority in the organization. More senior individuals are readily available and accessible to less senior individuals, and this may be a synergy of the uniquely tacit knowledge utilization of the client, in that its interpersonal interactions in the accomplishment of business unit knowledge are possessed by FedEx in tacit form, and must be transferred to its vendor. As a basic level observation, the client tends to carry what it knows in its collective heads, while the vendor tends to document all knowledge and takes very little for granted if it is not already codified. It would appear that the supremacy of strategic alliances in achieving tacit knowledge transfer is demonstrated in this practice synergy of a tacit client interaction with an explicit vendor for purposes of codifying a tacit base of knowledge. This is something the vendor is very good at – documenting important knowledge. The client is also very good at making effective use of tacit skills through its own learning organization deployment.

5. Concluding thoughts

The resource-based theory of the firm, from which the knowledge-based theory of the firm evolves, specifies in a general sense that knowledge transfer between partners can be risky, owing to the likely occurrence of opportunism, which may manifest itself once a vendor as codified the strategically-important knowledge of a client. However, in this particular relationship, the vendor appears to be dedicated to learning how to best accommodate the unique needs of an extensively tacit client. This may be due to the Porterian consideration that the client has extensive capital assets necessary to compete in the business segment, and duplication of its knowledge assets is only part of what differentiates the client against its competitors.

In considering the knowledge-based theory of the firm in a constructivist discourse, it seems apparent that the fortunes of the two companies in this outsourcing relationship are intertwined at a social level. What they know is conveyed at many levels through social channels and the inherent contradiction between explicit and tacit knowledge sources finds resolution in the integrative application of skills across the boundaries of both firms, in the synergistic execution of testing discipline.

6. References


**APPENDIX**

**Qualitative Interview Guide**

**Knowledge Transfer in Testing**

FedEx STEP program:
1) How do you train someone who knows nothing about how you test?
2) How did you learn about how to do testing in your current position?
3) How do you let others know about things important to your job?
   - your colleagues?
   - your boss?
4) How do you get answers to questions when you are faced with something you don’t understand?
5) How do you learn on the job?
6) How do your colleagues learn on the job?
7) How does your boss learn on the job?
8) How do your subordinates learn on the job?
9) What is training like?

- In the best possible world, what would training be like?
- What would you do without training?
- What is the opposite of training?

10) How do you encourage Tacit Knowledge sharing in your organization?