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On the different “worlds” of intra-organizational knowledge management: Understanding idiosyncratic variation in MNC cross-site knowledge-sharing practices

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ABSTRACT

This qualitative field study investigated cross-site knowledge sharing in a small sample of multinational corporations in three different MNC business contexts (global, multi-domestic, transnational). The results disclose heterogeneous “worlds” of MNC knowledge sharing, ultimately raising the question as to whether the whole concept of MNC knowledge sharing covers a sufficiently unitary phenomenon to be meaningful. We derive a non-exhaustive typology of MNC knowledge-sharing practices: self-organizing knowledge sharing, technocratic knowledge sharing, and best practice knowledge sharing. Despite its limitations, this typology helps to elucidate a number of issues, including the latent conflict between two disparate theories of MNC knowledge sharing, namely “sender–receiver” and “social learning” theories (Noorderhaven & Harzing, 2009). More generally, we develop the term “knowledge contextualization” to highlight the way that firm-specific organizational features pre-define which knowledge is considered to be of special relevance for intra-organizational sharing.

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1. Introduction: the issue of relevant knowledge and knowledge sharing in MNCs

Knowledge management and knowledge sharing have become ubiquitous topics in research on multinational corporations, or MNCs (Birkinshaw, Bresman, and Nobel, 2010; Kogut & Zander, 1993). A significant amount of work in this area, as Foss (2006) points out, examines the nature and extent of knowledge flows. This is suggested by many MNC studies focusing on the measurement of comparative cross-unit knowledge-sharing intensity (Ambos & Ambos, 2009; Holtbrügge & Berg, 2004; Mahnke, Pedersen, and Venzin, 2005; Monteiro, Arvidsson, and Birkinshaw, 2008; Noorderhaven & Harzing, 2009; Zhao & Luo, 2005).

It is becoming increasingly recognized, however, that only a subset of the actual knowledge residing somewhere within business organizations is of strategic significance. Identifying knowledge that is actually relevant to strategic decision-making (as opposed to merely day-to-day operations) poses a non-trivial challenge (Hong & Nguyen, 2009; Kasper, Lehrer, Mühlbacher, & Müller, 2010). This inheres in the limited amount of time and mental capacity that organizational members have to process new information and knowledge (March & Simon, 1958). Technological change has exacerbated the problem.

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As new IT systems increase the volume of knowledge available to firm members, they engender bottlenecks of information overload and deepen attention deficits (Hansen & Haas, 2001; Simon, 1997).

Our research addressed the specific question as to how MNCs identify and define which knowledge is strategically relevant, how such knowledge is transferred, and – an emergent question from the research – why only a very specialized range of knowledge within MNCs gets earmarked for intra-organizational knowledge transfer across MNC units. We derive a phenomenologically based theory of how multinational companies foreground specific knowledge as being especially relevant by examining in some detail the highly heterogeneous cross-site knowledge-sharing practices reported in 6 MNCs with in-depths interviews conducted at 3 different national sites (headquarters/subsidiaries) of each firm (18 total sites, i.e. headquarters/subsidiaries).

We conclude that the particular cross-site knowledge-sharing practices engaged in by MNCs are driven by a process of knowledge *contextualization*. By this we mean something other than just the insight that knowledge is highly context-dependent (Swart, 2011; Williams, 2007). The following analysis underlines the extent to which knowledge-sharing practices of MNCs were highly selective and specialized as to the kinds of knowledge that could be shared. The term “knowledge contextualization” highlights the way that firm-specific organizational features pre-define which knowledge is considered to be of special relevance for intra-organizational sharing. This results in heterogeneous “worlds” of MNC knowledge sharing, ultimately raising the question as to whether the whole concept of MNC knowledge sharing covers a sufficiently unitary phenomenon to be meaningful – or whether talking about “MNC knowledge sharing” is akin to talking about “MNC production.”

2. Research background

Although the terminology varies – tacit vs. explicit knowledge, procedural vs. declarative knowledge, codified vs. personalized knowledge – many studies on MNC knowledge sharing postulate a dichotomy of knowledge types (Holtbrügge & Berg, 2004; Noorderhaven & Harzing, 2009; Zhao & Luo, 2005). The best way to explain what knowledge contextualization consists of is to contrast knowledge *contextualization* with processes of knowledge *conversion* and knowledge *codification*. In these two latter cases, the question is how tacit and explicit forms of knowledge *interact* with each other within the MNC.

Knowledge *conversion* involves learning processes in what can be termed the “learning spiral” (Boisot, 1998; Nonaka & Takeuchi, 1995). The learning spiral is a virtuous circle in which firms are incessantly involved in the “conversion” of tacit into explicit knowledge and vice-versa in order to augment the organization’s stock of knowledge. A question of some debate is whether such conversion is possible or actually takes place (Nonaka & von Krogh, 2009; Tsoukas, 2003).

A related, but more specific phenomenon underlining the importance of interaction between tacit and explicit forms of knowledge concerns the *codification* of knowledge (Cowan, David, and Foray, 2000; Hansen & Haas, 2001; Håkanson, 2007). This is especially relevant to MNC knowledge sharing because one common assumption is that the efficiency of knowledge-sharing systems depends precisely on a high level of knowledge codification (Prencipe & Tell, 2001; Steinmueller, 2000). The commonly given rationale for this is that, beyond an initial investment of rendering knowledge into a commonly shared code, the cost of subsequently diffusing and accessing such knowledge is very low (Arrow, 1974). Hence, the essence of codification lies in “the process of conversion of knowledge into messages that can be processed as information” (Cowan & Foray, 1997: 596).

Knowledge “contextualization,” as developed here, is not necessarily inconsistent with conceptions of knowledge conversion and codification. But instead of focusing on operations performed upon knowledge and on efforts to transform knowledge from one type of embodiment to another, the concept of knowledge contextualization underlines the way knowledge is framed, specifically the way selective knowledge within the organization is foregrounded.

The concept of foregrounding goes hand in hand with the notion that “knowledge is an ambiguous, unspecific and dynamic phenomenon, intrinsically related to meaning, understanding and process” (Alvesson & Kärreman, 2001: 995); it is, therefore, not only difficult to manage but also difficult to study. An interview-based field study approach was adopted in order to accommodate and register qualitative differences among MNCs and their managers in the way knowledge is conceived of. The objective of the study was always two-fold. On the one hand, in-depth interviews were designed to identify differences among MNCs in their cross-site (i.e. headquarters-subsidiary and subsidiary-subsidiary) knowledge-sharing practices and the way such practices are designed to identify strategically relevant knowledge. On the other hand, the analysis also aims to identify some constants amidst heterogeneity in knowledge-sharing practice and even in conceptions of what constitutes relevant knowledge.

Since the resource requirements of conducting in-depth interviews tend to limit sample size, the external validity of interview-based studies depends on ensuring heterogeneity of firms and of cross-site knowledge-sharing practice in the sample: the greater the within-sample heterogeneity, the higher the likelihood that any underlying common tendencies might hold for the population at large. Conventional theory indicates that the main axes of variation among MNCs are based on the respective importance of global integration and local responsiveness (Harzing, 2000; Prahalad & Doz, 1987). In general, three basic MNC types are assumed, defined by their relative pursuit of global integration (I) and local responsiveness (R): global MNCs (high I, low R), multidomestic MNCs (low I, high R), and transnational MNCs (high I, high R). Each of these MNC types can be associated with a different basic type of overall organization (global hierarchy, decentralized federation, self-organizing firm). Prior research indicates furthermore that each of these MNC types involves a different mix of formal and informal knowledge-management processes.

Global MNCs (high I, low R) are organized as *global hierarchies*, with subsidiaries largely subordinate to, and tightly controlled by headquarters (Kasper, Lehrer, Mühlbacher, & Müller, 2009). Knowledge-sharing contexts in such MNCs are apt to be “hierarchical” in the sense that knowledge-sharing considerations are dominated by sharing of knowledge between headquarters and subsidiaries as opposed to among the subsidiaries themselves independently of headquarters. Knowledge-sharing practices are likely to be standardized and formalized by headquarters, with the level of formalization increasing according to both the overall size and the number of subsidiaries within the firm.

In contrast, multidomestic MNCs (low I, high R) resemble *decentralized federations* in their daily operations (Andersson, Forsgren, and Holm, 2007; Bartlett & Ghoshal, 1989). An MNC strategy predicated on a high level of local responsiveness results in greater intra-organizational heterogeneity in company practices across MNC units, as each unit seeks to optimize operations to meet local requirements. Since some MNC units will develop better or more innovative practices than others, a primary purpose of knowledge sharing in multidomestic MNCs is to mediate the sharing of best practice (Jensen & Szulanski, 2004). The location, i.e. the particular MNC unit in possession of any given best practice cannot be known in advance. Furthermore, the organizational embeddedness of such knowledge can pose difficulties even in detecting the location of such knowledge (Hong & Nguyen, 2009). The role of headquarters is to help orchestrate communication among subsidiaries in a way that will allow best practice to be identified and then shared (Jensen & Szulanski, 2004). Given the habituation of national subsidiaries to a high level of autonomy within MNCs organized as decentralized federations, such firms are likely to rely on informal as opposed to formal processes of cross-unit knowledge sharing. Some scholars believe that decentralized federations are becoming scarcer in the wake of globalization (Brock & Birkinshaw, 2004).

Transnational MNCs (high I, high R) pose the greatest challenges to knowledge sharing. Interdependence among MNC units creates a need for knowledge sharing that goes well beyond mere sharing of best practice (Williams & Lee, 2011). The requisite organizational arrangement for knowledge sharing has to accommodate the advantages of both centralization for coordination and decentralization for local adaptation. Such an arrangement can be termed *self-organizing* (Volberda & Lewin, 2003; Hutzschenreuter, Pedersen, and Volberda, 2007). Although transnational MNC units do organize to identify and share valuable knowledge, they do so in a largely bottom-up, emergent fashion. Hutzschenreuter et al. (2007) describe the nexus between self-organization and local responsiveness as follows: “Self-organization requires a belief in the local rationality of individuals and units (e.g. those closest to the customer know the customer best), and it is consistent with the often espoused idea of delegating decision-making to the lowest possible level” (2007: 1161). At the same time, MNC systems for cross-site knowledge sharing that are dynamically self-organizing in character can also contribute to a high level of global integration (Bartlett & Ghoshal, 1989; Williams & Lee, 2011). Just how the self-organization of cross-site knowledge sharing in MNCs can be orchestrated is an empirically open question; many authors emphasize the importance of corporate culture (Michailova & Minbaeva, 2012) and “administrative heritage” (Bartlett & Ghoshal, 1989). In any case, these same authors emphasize that such systems work best if they are informal in nature.

Needless to say, other MNC typologies do exist. Instead of examining differences between MNCs as a whole, one could in principle study variations at the sub-unit level. Many studies draw on the typology of Gupta and Govindarajan (1991), who identified four basic roles that MNC subsidiaries play in intra-MNC knowledge transfer (Integrated Players, Local Innovators, Global Innovators, and Implementors).

However, a major reason for trying to ensure variation at the MNC level rather than just the sub-unit level is that the classic MNC types (global, multidomestic, transnational) usually involve more than just organizational characteristics *per se*. In fact, scholars employing this typology alternatively use the three MNC types to designate any of the following three dimensions: (1) organizational traits of the MNCs (Sundaram & Black, 1992; Leong & Tan, 1993); (2) the strategy of the MNC, as in Harzing (2000) and Morrison, Ricks and Roth (1991); and (3) the business context of the organization, as proposed originally by Doz (1980) and re-affirmed in an important re-assessment by Venaik, Midgley, and Devinney (2004). The business context, which can inhere either in an industry, a specific industry segment, or some kind of inter-industry market context, consists of various outside “pressures” exerted by the outside environment upon the MNC. In fact, the very strength of the I–R typology is that it captures much of the co-variation across all three of the dimensions above. Obviously, these three dimensions may not always align, as when an MNCs strategy and structure do not match the competitive context of the MNC (Bartlett & Ghoshal, 1989). In general, however, the three dimensions do align and one motivation for seeking variation within the sample across the classic MNC types (global, multidomestic, transnational) is to ensure, for greater generality, variation in both business context and MNC firm characteristics.

3. Sample and research method

Knowledge and knowledge-sharing practices within organizations are complex and multifaceted phenomena. We follow the suggestion of Ambrosini and Bowman (2001) who recommend analyzing different knowledge practices (what managers *do*) as opposed to trying to distinguish among different types of knowledge (what managers *know*); this in turn goes back to the frequently noted distinction between know-how and know-what (DeFillippi, Arthur, and Lindsay, 2006; Ryle, 1949) or between practice and possession of knowledge (Hong, Snell, and Easterby-Smith, 2009). We aimed to gain deeper insight into MNC knowledge-sharing practices by conducting a qualitative study with comparative cases (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). As Doz (2011: 583) notes, “qualitative research is uniquely suited to opening the ‘black box’ of organizational processes.” Qualitative methods appear particularly suitable for developing a deeper understanding of corporate knowledge-sharing practices (Bluhm, Harman, Lee, & Mitchell, 2011).

Table 1
Description of multinational firms in sample and interviewed units.

Firm	Sales; number of employees; number of countries in which it operates	Location of headquarters where interviews were conducted	Location of the two firm subsidiaries where interviews were conducted
Mgmt. Consultancy 1 (MC1)	US\$3.7 bn; 18,000; 26	USA	Austria, UK
Mgmt. Consultancy 2 (MC2)	€550 m; 1700; 23	Germany	Austria, UK
Industrial Materials 1 (IM1)	€1.2 bn; 3200; 26	Scandinavia	Austria, Canada
Industrial Materials 2 (IM2)	€32.6 bn; 95,000; 60	Benelux	Brazil, Germany
High-Tech 1 (HT1)	€375 m; 5500; 16	Austria	China, India
High-Tech 2 (HT2)	€170 m; 1000; 9	Austria	USA, UK

6 firms, 53 interviews, 18 headquarters and subsidiaries. Two countries designated as Benelux and Scandinavia for anonymity.

3.1. Sample selection

For the sake of ensuring wide variance, sample selection was guided by the goal of having an equal proportion of global MNCs, multidomestic MNCs, and transnational MNCs. Firm selection was iterative. In the process of contacting various companies and conducting initial interviews, we made an assessment of MNC type (global, multidomestic, or transnational). Only when the attribution was clear-cut across the three areas of strategy, organizational, and business context were firms retained for this project. Descriptive statistics about the six companies analyzed are provided in Table 1.

The objective in building such a grouping of firms was not to achieve a representative sample of the MNC types but simply to guarantee wide variation among MNCs and MNC business contexts. At the same time, for each MNC type we interviewed at two different firms in the same industry, that is, keeping the industry (or industry segment) fixed for each type. Keeping the industry fixed for each MNC type and interviewing at multiple firms in each industry builds in a certain replication logic (Yin, 2003) and especially facilitates more robust conclusions about the impact of environmental factors on firm patterns within the sample. The six MNCs are referred to below according to their basic type of industry, i.e.:

- Management Consulting 1 (MC1): transnational MNC;
- Management Consulting 2 (MC2): transnational MNC;
- Industrial Materials 1 (IM1): multidomestic MNC;
- Industrial Materials 2 (IM2): multidomestic MNC;
- High Tech 1 (HT1): global MNC;
- High Tech 2 (HT2): global MNC.

3.2. Data collection

Initial contacts at all firms indicated that cross-site knowledge sharing constituted an important process and a source of potential or actual competitive advantage. Interviews were conducted at three different country sites of each firm in order to assess knowledge-sharing practices from multiple perspectives within the organization. The field study thus took place at 18 sites of the six companies, in 10 different countries and on three continents. At each site 2–4 (usually three) interviews were conducted with experienced managers, yielding a total of 53 interviews. All six firms were headquartered in Western countries, either in Europe or North America. Table 1 provides an overview of the firms interviewed at; Table 2 provides a summary of the managers interviewed for this research and the respective language (English or German) the interview was conducted in.

The choice of interview sites and key informants had to satisfy multiple criteria. One interview site for each company was always the headquarters, whose managers were asked to recommend two foreign subsidiaries of strategic importance for further interviews. At each firm, one subsidiary in relative proximity to the headquarters and one subsidiary at a greater geographical distance were requested. This was done in order to build center-periphery variation into the sample, adhering to the logic of theoretical sampling (Strauss & Corbin, 1990; Yin, 1993). The selected interviewees were recommended by our firm contacts as well positioned to comment on the firm's use of knowledge as a resource as well as knowledgeable about strategic and organizational issues within the firm as a whole.

3.3. Survey instrument

The interviews were semi-structured and became increasingly focused over the course of the study. Interviews with firm managers lasted approximately two hours, with two members of the research team present at each. Interviews were taped, subsequently transcribed for analysis, and finally codified according to a categorical framework described below.

The semi-structured interviews were organized around several sets of questions, each devoted to a specific issue area (Fontana & Frey, 2000). Since knowledge-sharing systems consist of both personalized and codified components (Holtbrügge

Table 2
List of interviewees.

No.	Position of interviewee; location of interview; number of interviewers; interview language (English; German)	No.	Position of interviewee; location of interview; number of interviewers; interview language (English; German)
	MC1		MC2
1.1	Knowledge Manager; USA; 1; E	1.1	Associate Partner; Germany; 2; G
1.2	Knowledge Manager; USA; 1; E	1.2	Associate Partner; Germany; 2; G
1.3	Information Professional Team; USA; 1; E	1.3	Associate Partner; Germany; 2; G
2.1	Information Professional Team; UK; 1; E	2.1	Consultant; Austria; 1; G
2.2	Information Professional Team; UK; 1; E	2.2	Consultant; Austria; 1; G
2.3	Information Professional Team; UK; 1; E	2.3	Consultant; Austria; 1; G
3.1	Consultant; Austria; 1; G	3.1	Information Specialist; UK; 1; E
3.2	Consultant; Austria; 1; G	3.2	Consultant; UK; 1; E
		3.3	Associate Partner; UK; 1; E
	IM1		IM2
1.1	Gen. Manager Marketing; Scandinavia; 2; E	1.1	CEO; Benelux; 2; E
1.2	Controlling; Scandinavia; 2; E	1.2	Managing Director; Benelux; 2; G
1.3	Executive Vice President; Scandinavia; 2; E	2.1	Technical General Manager; Brazil; 2; E
2.1	CEO; Austria; 2; G	2.2	CFO; Brazil; 2; E
2.2	Product Devel. Group Leader; Austria; 2; G	2.3	Operation Manager; Brazil; 2; E
2.3	HR Manager; Austria; 2; G	2.4	Sales Manager; Brazil; 2; E
3.1	Sales Manager Region 1; Canada; 2; E	3.1	Executive Board; Germany; 2; G
3.2	CEO; Canada; 2; E	3.2	Technical Manager; Germany; 2; G
3.3	Sales Manager Region 2; Canada; 2; E	3.3	Manager Training Dept; Germany; 2; G
	HT1		HT2
1.1	HR Manager; Austria; 2; G	1.1	Managing Director; Austria; 2; G
1.2	CEO; Austria; 2; G	1.2	CEO; Austria; 2; G
1.3	Specialist Controlling; Austria; 2; G	2.1	President; USA; 1; G
2.1	CFO; China; 2; G	2.2	Managing Director; USA; 1; E
2.2	CEO; China; 2; E	2.3	Sales Director; USA; 1; E
2.3	HR Manager; China; 2, E	2.4	Managing Director; USA; 1; E
3.1	Controlling; India; 2; G	3.1	Production Director; UK; 2; E
3.2	CFO; India; 2; E	3.2	Managing Director; UK; 2; E
3.3	CEO; India; 2; G	3.3	Quality Director; UK; 2; E

53 interviewees from the top and upper management level; length of interview: about 2 hours each.

& Berg, 2004; Zhao & Luo, 2005), interviewers inquired both about the technical systems supporting sharing of codified knowledge and about more personalized knowledge sharing, with particular emphasis on the nature of internal firm “networks” and “communities of practice.” With respect to both personalized and codified knowledge sharing, questions were posed about the relative intensity of knowledge exchange and also its strategic importance, that is, whether the exchanged knowledge involved bilateral discussion of topics relevant to strategic decision-making or instead merely operational data. Table 3 provides an overview of the final interview protocol.

Other questions asked pertained to the structure, strategy, and industry-context of the organization, including questions about the global product strategy of the firm, particularly the degree of local tailoring of products. Related inquiries about the industry context centered on the extent to which the firm’s markets were local, global, or some combination of the two.

3.4. Content analysis

An iterative method was used to analyze the data. Data analysis comprised two main stages. First, we developed summaries of the knowledge-sharing practices within each of the selected MNCs. The transcribed interview statements were thematically coded (Gibbs, 2009) and grouped according to ten principle categories listed in the final interview protocol (Table 3). The results of the three interviews per site were aggregated to yield an overall assessment on each firm unit (headquarters or foreign subsidiary). Two different members of the research team encoded each interview in order to promote intercoder-reliability. Assessments of knowledge-sharing patterns were triangulated by synthesizing the perspectives of different interviewees at each firm. The assessments of the three units per company were combined to yield a characterization of the MNC and its knowledge-sharing practices as a whole. This exercise was performed for each of the ten thematically coded categories listed in Table 3. Findings were compiled into a 60-cell matrix consisting of 6 columns (one column per company) and 10 rows (one row for each of the 10 categories listed in Table 3). This matrix was posted and reworked in a cycle of iterations until an overall consensus could be reached. This was important not only for triangulating findings within each company, but also for making comparisons between the companies. This consensual view of the basic findings formed the basis for subsequent interpretive steps.

Second, we endeavored to condense the findings concerning cross-site knowledge sharing to some basic patterns of variation while at the same time incorporating insights gained from the interviews that did not show up in the 60-cell matrix

Table 3
Final semi-structured interview protocol.

Thematic issues	Main categories	Typical questions asked
Nature of the firm's knowledge and use of knowledge as a firm resource	1. Individuals' perception of accessibility of personalized and codified knowledge	How do you gain access to important information? When you are unable to complete certain tasks, to whom do you turn for help?
	2. Perception of value of available knowledge	How valuable or useful do you consider this information to be? When is this knowledge most useful to you?
	3. Patterns of knowledge use in the firm	How do you use this knowledge? In what ways is knowledge treated as a strategically important resource? How is it managed?
	4. Means and processes of knowledge retention	How and where do you store acquired knowledge? Which knowledge management tools are available in your firm? (list of possibilities provided as prompt)
Knowledge-sharing patterns and internal firm networks	5. Estimated intensity of knowledge flows within the firm at a personal and codified level	How would you gauge the intensity of knowledge sharing at a personal and codified level? How would you gauge the strategic importance of knowledge shared among different sites of the firm?
	6. Role of formal or informal networks in the firm	Of what nature are "networks" of managers in your firm? Are these formally or informally managed? Are their "communities of practice"?
Organizational structure	7. Organization, level of centralization, and control and planning mechanisms of the firm	How is your organization structured? Which planning instrument does your firm use? How are instructions issued?
Organizational culture	8. Anecdotes about company culture to corroborate and deepen the information collected on all the preceding issues	What do employees have to do to be successful within the company? Please relate critical incidents shedding light on shared norms and values, leadership style, the firm's way of dealing with mistakes.
Firm strategy	9. Basic competitive strategy of the firm; importance of local conditions with respect to customers, products, and cost factors	Who are your customers? What products do you offer? What are the key business drivers of your firm? How do local conditions matter (at your particular location)? Do local cost conditions have a major impact on the role of your unit within the firm?
Industry context	10. Basic nature of markets (regional, global or a combination of both)	In which markets is your firm present? What special characteristics do these different markets exhibit?

from the first step. In this step of analysis, the key categories of variation were derived inductively from broader consideration of the findings. These inductively derived categories of variation were:

- The specific type of knowledge defined as relevant by the MNC;
- The basic "tools" of knowledge transfer across MNC sites;
- The organizational "locus" that defines knowledge as relevant for sharing;
- The direction of flow of knowledge across MNC sites.

This second stage of data analysis resulted in a more inductive coding of interview statements concerning not only questions of "what" and "how" knowledge is transferred, but also "where" knowledge is revealed to be strategically relevant in the organization and "by whom." Besides amplifying differences in knowledge-sharing practices, this step resulted in the identification of certain commonalities across firms. Thus, while the sample exhibited pronounced heterogeneity in knowledge-sharing practices across firms, it did so in a way that facilitated reflection on an underlying process of knowledge contextualization that presumably applies a greater population of MNCs beyond the sample.

4. Results: different "worlds" of MNC knowledge sharing

Given the small sample size, differences in knowledge-sharing practices did not only vary by MNC type but also manifested a further degree of idiosyncrasy beyond just what any basic typology of global, multidomestic, and transnational MNCs would predict. This idiosyncrasy appeared to be highly industry-specific: for example, both management consultancies emphasized the sharing of project-specific knowledge, both high-tech firms mainly shared technological knowledge, and both industrial materials firms focused on sharing function-specific best practice knowledge. Across the three MNC (industry) groups, there was surprisingly little overlap in the content or process of cross-site knowledge sharing.

A key finding of the study, reductively expressed, is that cross-site knowledge sharing in each of the sampled firms, far from being diffuse, was confined to narrowly defined organizational channels. The firm's knowledge-sharing practices were highly selective and specialized regarding the particular pieces of knowledge that would be shared, by whom knowledge would be shared, and by which means knowledge is identified as relevant for sharing.

To better communicate this qualitative insight, the following sections provide brief synopses of each of the three MNC groups covered in the sample. These synopses reveal three very different "worlds" of knowledge sharing. The ramifications of these qualitatively heterogeneous knowledge-sharing worlds will be developed in Section 5. The concept of knowledge contextualization will be introduced to illuminate the idiosyncratic heterogeneity of knowledge-sharing practices reported by the interviewees.

4.1. Group 1: Management Consultancies 1 and 2

Pressures for local differentiation among management consultancies encouraged a high degree of decentralization in decision-making as well as in knowledge management. *The single subsidiaries both here and internationally have very high autonomy, simply because it is necessary to be able to serve the local market best* (MC2 – Associate Partner). At the same time there were considerable pressures for global integration. Many clients and client projects were multinational in nature, requiring multiple subsidiaries to collaborate on specific projects. To economize on costs, communities of practice and IT systems were designed so that knowledge developed in one subsidiary's project could be redeployed in the work of other subsidiaries. The fact that MC1 featured a formal knowledge-sharing function with titled knowledge specialists (e.g. Knowledge Manager, Information Professional Team Member), as opposed to the looser patchwork of knowledge-sharing initiatives at MC2, can be explained by the larger size of MC1 (see Table 1).

Yet at both companies, for all the formal efforts at promoting the sharing of technical knowledge (through IT systems) and personal knowledge (through organized communities of practice), interviewees consistently considered knowledge to flow more through informal channels. In both firms communities of practice were considered an important knowledge-sharing tool. The firms strongly promote such communities officially, yet according to interviews *informal* communities of practice (or "networks") play the decisive role. In sum, management encouraged knowledge sharing in official ways, yet in practice these MNCs relied on decentralized, "self-organizing" behavior to share knowledge.

Self-organizing knowledge sharing via informal networking among consultants was found to lubricate the informal labor market for manning projects within these firms. Intra-firm knowledge sharing, both in its formal and informal aspects, provides an opportunity for employees not only to share knowledge, but also and especially to advertise their special skills to colleagues. *As we have a kind of internal market-platform, it is very important to become known within the company. . . It is not self-evident that one will be recruited for a team. That is why it is very important to establish a network, to communicate with a lot of people, to try to get to know other colleagues working on other practices or in other units. This is one indicator of success* (MC1 – Consultant).

To reiterate, knowledge-sharing networks in management consultancies are embedded in an internal firm market. Because of this internal market, consultants actually refrain from codifying much of their knowledge. They provide enough information to convey who worked on a given project and what they basically did, but not so much as to obviate the need for personal interaction and inclusion in new projects. So although the infrastructure for cross-site knowledge sharing is highly developed, the utilization of formal knowledge-sharing tools (such as reports, intranets, etc.) is limited by the consultants' efforts to ensure that reports are only pointers to expertise and that other consultants have to phone and ask for clarifications. The determination of an internal firm market provides one answer to the open question of how the self-organization of cross-site knowledge sharing in MNCs can be orchestrated.

4.2. Group 2: High Tech 1 and 2

The products and services offered by these MNCs were not locally differentiated. The high-tech companies both focused on serving particular niches (e.g. standardized chips) and customer groups (e.g. globally operating customers) that can be accommodated with a standardized product. Both companies reported a high degree of centralization in decision-making and knowledge management, with the headquarters positioned in the role of a knowledge hub. A top-down hierarchical structure enforced strict quality control through IT tools and rigid reporting procedures. Innovations were centrally developed and directly transferred from the headquarters to the specific subsidiaries. *Especially the processes are standardized and strongly dominated by the headquarters* (HT1 – CFO). *To be quality leader is a global goal and it is handled very well within [the headquarters]. (. . .) It is the same with delivery performance. This is solved up to 100% in [the headquarters] and is massively forced within the other units* (HT1 – Controller). Knowledge sharing is thus centrally controlled and static in organization, i.e. not self-organizing.

Headquarters, in these firms, defines what knowledge is relevant. Quality control was a paramount function in a business environment of standardized high-tech chips and important global firm customers. At the same time, these conclusions are subject to a caveat concerning one's definition of knowledge. Given the centralized control of processes by headquarters, information exchange between subsidiaries and headquarters tended to be very one-sided among MNCs in this group and can be seen as *reporting* rather than real knowledge exchange. *We have a very tight reporting system. The two CEOs are strongly involved, on a technical as well as on a financial level* (HT2 – President). The cross-site exchange of *data* is undoubtedly quite high among these firms, as it is simply required by the operation of these firms' centralized control systems.

Yet the cross-site exchange of *knowledge*, as interviewees construed the term, was often reported to be low. One interviewee cited precisely the *lack of a knowledge structure* (HT1 – Controller). A Managing Director admitted that on a company-wide level *there is a bad information culture. It is better where a personal relationship has developed. We have a bad information and knowledge culture. I recognize this because we do not have any information strategy and there is no platform, no instrument, where this culture exists* (HT2 – Managing Director). Despite many such statements, these firms revealed little inclination to alter their knowledge-sharing practices, much in contrast to the firms in Group 3. This finding was a surprise, because initial contacts at the firms had suggested that knowledge sharing was an important priority of these firms. Firms in this particular industry seem to pay lip service to knowledge sharing but show little indication of actually moving to implement it.

In light of these findings, the knowledge-sharing system of the high-tech firms was not merely “hierarchical”, but more specifically “technocratic.” In these firms, knowledge had become embedded in products and processes. *You will find processes codified [abgebildet], forms, documents. We also use project tools for project communication and assessing progress, data, calendars, contracts – there is little in the firm that has not been codified [abgebildet]* (HT1 – HR Manager). *Knowledge is in drawings, the routines of manufacturing. It's not locked into one person, but in the whole company and that sets us apart from other companies* (HT2 – Quality Director). Such statements suggest that these firms have invested in knowledge codification, and that such knowledge codification even provides competitive advantage. As the just-cited quality director of High Tech 2, explained: *What would distinguish us from other companies is that we have got technical knowledge that other companies do not have and I think that is very important. There are things that we can do from a technical point of view that other companies cannot* (HT2 – Quality Director). Judging by the interview statements here, knowledge codification involves a great deal of practice standardization and incorporation of knowledge into standardized practices or routines in such a way as to *obviate* knowledge sharing in the first place.

To the extent that knowledge sharing extended beyond mere reporting, this was restricted to the top executive level, where substantive cross-site knowledge sharing does take place and can be quite intensive. This process, though regular, is informal: *It is probably more on a person-to-person need's basis. We have a meeting usually once a week. We try to discuss things with the supervisors and everybody, and we try to discuss the different things that come up in the management meeting here* (HT2 – Managing Director). In sum, the global MNCs in this sample featured an overlay of formal and informal components in the knowledge-sharing function: formal reporting and data sharing through IT systems on the one hand and informal knowledge sharing among top managers on the other.

4.3. Group 3: Industrial Materials 1 and 2

Both industrial materials firms relied heavily on inorganic growth. The multidomestic character of these firms involved many acquired subunits clinging to legacies of autonomy and a focus on their own national and regional markets. *We are decentralized and the decision-making power is very much at the local levels. As you can see our home office is extremely small and I have never actually been to the headquarters* (IM1 – Sales Manager). However, to the extent that a heritage of autonomy and local innovation among MNC units was perceived as being challenged by the parent, these MNCs largely conformed to the trend toward more global integration in federative MNCs cited by Brock and Birkinshaw (2004). *Whether we accept it or not: One of the key drivers of our business is still globalization, even if most of our people say that this is a local business and we need to act locally from the local units* (IM1 – General Manager).

The knowledge-sharing function bifurcated into two main practices: (1) benchmarking and (2) transfer of best practice, consisting primarily of process know-how. This entailed an overlay of two disparate components, one dominated by technical, codified knowledge (benchmarking), the other by much more personalized knowledge (transfer of best practice in process know-how). The benchmarking consisted of comparative performance statistics compiled in a database by headquarters staff. *We implemented a benchmark database, where the different plants are compared to each other* (IM2 – Member of Executive Board). In theory, such a database is supposed to promote sharing of best practice, not just measurement. *People believe that [the company] is managed by financial targets and if you are not able to reach these targets, you have to bear the consequences of being jeopardized. Thus, we need to remove those fears, need to convince them that we are counting on them and that we are not just looking for results and that we need to use their know-how in order to be better than our competitors* (IM2 – CEO). Nonetheless, many subsidiaries were concerned about how such a system might be used, as reflected in the statement that: *The weakest 10 subsidiaries will be closed* (IM2 – General Manager). The compilation of a benchmark database had progressed further in Industrial Materials 2; in Industrial Materials 1, headquarters was struggling to build such a database: *The question is more, how do you get all that information structured in a way so that you can easily pull it down?* (IM1 – Executive Vice President).

The sharing of best practice in both firms was largely delegated to the functions. The primary mechanism was formal (function-specific) communities of practice, as encapsulated in the following statement: *The networks are to be found in R&D, IT, Human Resources. It is in manufacturing excellence where we promote networks and those networks have a formal face-to-face meeting at least once a year and then there are video and phone conferences probably on a monthly basis more or less. And then in the area of purchasing as well of course* (IM1 – Executive Vice President). Nonetheless, organizing the sharing of best practice remained an unsolved challenge: *I think where we can gain a lot is in sharing the best practice. We really have to spend time to see the other lines, their way of acting. But... it is not yet organized the way it should be* (IM2 – Operations Manager). *I think we could learn much more from each other if we could have good rotation* (IM1 – General Manager).

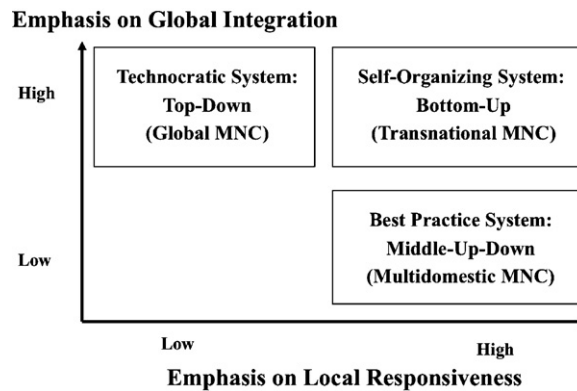


Fig. 1. Knowledge sharing and contextualization patterns observed.

Put differently, the knowledge-sharing practices in these firms were somewhat decentralized but not self-organizing. One could say that self-organization was the unsolved challenge: *We have numerous people in the company who are incredibly knowledgeable, but their knowledge is only accessible if you pick up the phone and call them* (IM1 – CEO). Such statements broadly suggest that these firms were struggling with development of cross-site knowledge sharing.

5. Discussion

The preceding synopses registered completely disparate worlds of MNC knowledge sharing. It remains to derive a limited typology of MNC knowledge-sharing practices, to show how even with all its limitations such a typology helps illuminate a number of unresolved research questions, and finally to ascertain certain common features and axes of variation among these different worlds of MNC knowledge sharing.

Based on the preceding synopses, Fig. 1 distils three basic types of MNC knowledge sharing. While making no pretense of completeness and doubtless of limited generalizability, such a typology is intended as inspiration for more complete ones and as a demonstration of why such typologies can be analytically useful. Abstracting from the sample, Fig. 1 postulates – non-exhaustively – three knowledge-sharing practice types: self-organizing knowledge sharing, technocratic knowledge sharing, and best practice knowledge sharing. With regard to MNC types (global, transnational, multidomestic), the results posit a link between MNC type and knowledge-sharing practices, though the predictive value is modest. We assume this causality goes from MNC knowledge-sharing type (self-organizing, technocratic, best practice) to the organizational/business context (transnational, global, multidomestic) in which such practices are most likely to be found. Clearly, the sample is too small to predict knowledge-sharing practice (self-organizing, technocratic, best practice) from MNC type or business context, a point meriting emphasis so as to avoid misunderstanding.

Yet for all its limitations, this typology sheds new light on knowledge management issues debated in MNC research. This list of different knowledge-sharing “worlds,” however incomplete, helps attenuate the simmering conflict between two fairly different conceptions of the very phenomenon of MNC knowledge sharing, as summarized in the important article by Noorderhaven and Harzing (2009).

As these authors point out, “sender–receiver” and “social learning” theories of MNC cross-site knowledge sharing co-exist uncomfortably within prior research. Latent conflict is inherent in the different theories employed to analyze cross-site knowledge sharing.

Sender–receiver theories depart from the premise that the challenge of MNC knowledge sharing resides in transferring knowledge from one MNC unit to another (Ambos & Ambos, 2009; Carlile, 2004; Jensen & Szulanski, 2004; Minbaeva, 2008). This is done by engineering the requisite channels of communication and lubricating their operation with the proper tools and motivational context. Often rooted in information-processing theory (Egelhoff, 1991), sender–receiver theories assume that knowledge is something that “flows” as opposed to being something that “emerges.” In this “hydraulic” conception, social interaction is clearly important but serves mainly as a channel and/or lubricant. Sender–receiver theories usually imply also that important knowledge resides in an explicit or at least potentially explicit form (i.e. “convertible” from tacit to explicit) somewhere in the organization; only then can it easily “flow” to another MNC unit.

In contrast, social learning theories of MNC knowledge-sharing emphasize much more the tacit dimension and the extent to which knowledge-sharing activities result ultimately in the emergence of new knowledge as opposed to just the transfer of existing knowledge (Noorderhaven & Harzing, 2009; Tsoukas, 2003). In this view, “knowledge is socially constructed through collaborative efforts with common objectives or by dialectically opposing different perspectives in dialogue interaction” (Plaskoff, 2003: 163, cited in Noorderhaven & Harzing, 2009). Critiquing the “flow” metaphor of the sender–receiver view, advocates of social learning theory emphasize the contextual embeddedness of knowledge in practices and in communities of practice outside of which knowledge often has little meaning. In such a framework, it is not especially meaningful to try to isolate and measure the specific knowledge resources and knowledge-transfer contributions of

particular senders, receivers, and communication channels. Social learning theory inherently militates for a more holistic view of how knowledge sharing emerges and leads to new knowledge generation.

The industry case studies presented above and the limited typology of Fig. 1 do more than just illustrate the relevance of this (latent) debate. They reveal that these two differing schools of thought are each more relevant to some MNC business contexts than to others. The sender–receiver theory is especially relevant to the “technocratic” high-tech MNCs (HT1, HT2), in which unilateral flows of knowledge predominate and in which large flows of data predominate over any attempts to generate new knowledge in cross-site knowledge-sharing practices. Though the absence of more multilateral knowledge-sharing efforts was deplored by some interviewees, there was no evidence that these firms saw this as any kind of a strategic necessity in their business content of high global integration and little local differentiation. Although the exact degree of generalizability cannot be ascertained, it would seem that in at least some MNC business contexts the need for social learning is slight and “hydraulic” metaphors of knowledge sharing and associated knowledge “flows” are perfectly adequate.

In contrast, social learning theories appear somewhat useful for understanding the cross-site knowledge practices reported in the business contexts of Management Consultancies (MC1, MC2) and Industrial Materials (IM1, IM2), albeit not in lieu of, but simply in addition to sender–receiver conceptions. Revealingly, the social learning processes differ between the two industries. In the self-organizing management consultancies, the generation of new knowledge on current projects (“learning”) is important and works in conjunction with the recycling of knowledge from old projects. Moreover, such learning works on a selective dyadic (sender–receiver) basis rather than a collective one. “Social learning” takes the form of project-by-project decentralized self-organized learning by current project teams (receivers) from older ones (senders). In short, the “learning” aspect of social learning predominates over the “social” aspect, while the sender–receiver metaphor remains applicable.

In the industrial materials industry, in contrast, the “social” aspect of social learning arguably predominates over the “learning” aspect. The sharing of best practice within corporate functions is clearly designed to be collective rather than dyadic. While the sharing of best practice clearly does not preclude the generation of new practice and new knowledge, the very concept of best practice implies that certain knowledge “flows” will and should occur. Here as well, the “hydraulic” metaphor remains at least partly applicable. At the same time, unilateralism in the direction of such flows was not implied by sharing by best practice among the industrial materials firms, in definite contrast to the knowledge-sharing practices reported by the high-tech firms.

In short, even our limited typology reveals both the relevance of the debate between sender–receiver and social learning theories of knowledge sharing and an obvious means for attenuating this conflict and avoiding unnecessary confusion: by distinguishing among different kinds of MNCs, be it at the level of knowledge-sharing type, organizational type, business context, or industry. The contribution of knowledge-sharing typologies to this debate is the same as that of typologies to all grand theories: to help segment the population into distinct sub-populations for which different theories apply in different ways. While Fig. 1 is little more than an initial exploration of patterned differences among MNC knowledge-sharing practices, it arguably points in the right direction of distinguishing qualitatively different knowledge-sharing configurations rather than trying to subsume all MNCs to a unitary theory of knowledge management.

A typology-based approach may be useful in framing the issue of cross-site knowledge sharing for practitioners as well. The upshot of our exploration into differing “worlds” of MNC cross-site knowledge sharing is that practitioners do not only face challenges in how to make MNC knowledge transfer “better” or “worse.” They must confront a wide array of choices about what kind of knowledge-sharing practice to attempt to set up in the first place. Indeed, to speak of “MNC knowledge sharing” as a unified phenomenon may be as misleading as speaking of “MNC production”.

To be sure, this conclusion is consistent with the tenets of contingency theory and the need to adapt the firm’s knowledge-management systems to the firm’s particular context (Ambos & Ambos, 2009). In a special issue of the *Academy of Management Executive* devoted to the global transfer of management knowledge, the issue editors similarly concluded that, despite some valuable lessons to be drawn, “there can be no best thing as a single universal best practice in the cross-cultural transfer of management knowledge” and that in the issue’s various studies “there is no firm which stands as an unequivocal benchmark for other corporations regarding the global transfer of management knowledge” (Fink & Holden, 2005: 8).

Yet the present study suggests slightly more drastic conclusions than this concerning the feasible scope of firm knowledge-sharing practice. The sampled MNCs chose very selective channels for cross-site knowledge sharing. There is ample reason to think this limited bandwidth is not just a relic in our sample but inherent in one of the basic challenges facing MNCs mentioned at the outset of this paper: the discrepancy between the limited time and limited information processing ability of managers on the one hand and the sheer superabundance of information in MNCs that can potentially be shared on the other. It is this discrepancy, in part, that makes organizational “forgetting” and “unlearning” into a recent topic of interest. As Zahra, Abdelgawad, and Tsang (2011) explain in their paper on learning and unlearning in emerging MNCs: “Unlearning can free up these firms’ organizational memory and, thus, create opportunities to explore new concepts.” This implies, obviously, that organizational memory is limited and that MNC efforts at knowledge sharing are subject to limitations of bounded rationality.

With an eye to elucidating the issue of bounded rationality, we conclude our analysis by presenting some inductively derived tools for examining differences between MNC knowledge-sharing “worlds.” Table 4 posits a phenomenon of knowledge “contextualization.” Knowledge contextualization involves the foregrounding of selective knowledge within the firm and encompasses three basic dimensions: the types of knowledge defined by the organizational context of the MNC as relevant, the tools of knowledge transfer deployed by the organization, and the organizational *locus and direction* of

Table 4

Three types of knowledge-sharing systems and three dimensions of knowledge contextualization.

	Types of knowledge defined as relevant	Tools of knowledge transfer across the organization	Locus and flow of knowledge sharing
Self-Organizing Systems (MC1 & MC2)	Prior project-based experience and learning Personalized knowledge within temporary project groups; formal data and presentations across the organization	Formal knowledge management systems (pointers to expertise) and informal personal networks	Project groups: bottom-up
Technocratic Systems (HT1 & HT2)	Product-specific technological data Formal operational and performance data; personal strategic knowledge of top managers	Data-sharing through formal IT systems and personal exchanges among top managers	Headquarters: top-down
Best Practice Systems (IM1 & IM2)	Best practice in global comparison Performance statistics (benchmarking) across the organization; process innovations & procedures across functional areas	Formal benchmarking and function-based communities of practice	Divisional/functional managers: middle-up-down

knowledge contextualization and sharing. These dimensions define the factors that delimited the narrow range of cross-site knowledge that was shared and the narrow channels for sharing this knowledge: knowledge sharing was confined to specific types of knowledge earmarked as of special importance (first dimension), conducted using pre-defined channels and tools (second dimension), and managed by pre-defined actors and direction of flow (third dimension).

Especially the locus and direction (third dimension) of knowledge shared varied markedly by MNC group. The process of personalized skill sharing in the management consultancies is of the bottom-up type that one would expect of self-organizing knowledge sharing. Reporting and standardization of the high-tech firms (technocratic knowledge sharing) is much more top-down using IT systems to transfer technical data. In the industrial materials firms (featuring best practice knowledge sharing), the flow of knowledge could be characterized as a variation of the middle-up-down pattern (Nonaka, 1988): divisional/functional (middle) managers endeavored to share best practice in accordance with benchmarking information organized by top management so as to eventually trickle down to improvement of daily operations (lower management).

The place where knowledge sharing specifically emerged in the firms' cross-site knowledge-sharing practices – the organizational locus of knowledge sharing – likewise varied markedly and was heavily related to these firms' mode of organization. This locus for the management consultancies (self-organizing) was in the project groups. The organizational locus of knowledge sharing in the (technocratic) high-tech firms was headquarters. In the industrial materials firms (best practice transfer) the cross-site knowledge sharing of best practice was organized largely around corporate functions.

Table 4 underlines that highly specialized knowledge-sharing practices varied considerably across the firms represented in the sample to an extent varying by MNC type but obviously also including an additional level of (presumably industry-specific) idiosyncrasy and knowledge contextualization. These three dimensions of knowledge contextualization (Table 4) highlight organizational factors that appear to determine which specific knowledge within the MNCs are foregrounded for knowledge-sharing purposes, where and by whom.

6. Conclusion

Far from giving any pre-set definition of knowledge, this research registered the heterogeneous ways in which the firms conceived of knowledge and of knowledge sharing in terms relevant to their own practice. This enabled us to perceive different knowledge-sharing “worlds,” as we have put the matter. The studied firms all engaged in the cross-site sharing of highly selective knowledge in highly specialized ways, with the cross-site sharing of knowledge confined to narrow organizational channels.

The three different MNC knowledge-sharing worlds were summarized as “self-organizing,” “technocratic” and “best practice” systems. Since the typology (Table 4) derived from our small firm sample is presumably not an exhaustive one, developing a more extensive typology to provide more global coverage of the different kinds of knowledge-sharing worlds encountered in MNCs would be a next logical step. It remains further to determine whether a definite correlation exists between basic MNC types (e.g. global, multidomestic, transnational) and specific categories of knowledge-sharing worlds.

On a more specialized note, the effects of technological change on knowledge-sharing patterns were suggested to be highly disparate among different business settings (Sahaym, Steensma, and Schilling, 2007). Implicit in the burgeoning research on MNC knowledge management is the assumption that technological advances enables and leads to a greater intensity of intra-firm knowledge sharing. While this may be true of business areas like consulting, in others – such as the high-tech products covered in our sample – advances in technology may facilitate greater centralized control over a firm's global operations and therefore *reduce* the need to share knowledge across MNC units. Such a scenario is consistent with the finding that while the investment in IT systems for facilitating data exchange in these MNCs was high, the effort to implement a system for encouraging the exchange of personalized knowledge was low. Another valuable question for further exploration, then, is to the extent to which the basic value of cross-site knowledge sharing may actually be fairly

limited in MNC business contexts where markets and products are highly standardized across borders. This forms part of the larger question as to whether cross-site knowledge sharing in MNCs always “pays” (Mahnke, Pedersen, and Venzin, 2009).

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