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► To cite this version:

Elvira Périac, Sébastien Gand, Jean-Claude Sardas. Individual roles to achieve knowledge integration in Mergers and Acquisitions: Completing the Knowledge Broker concept with Knowledge Developer's roles. EGOS, Jul 2012, Helsinki, Finland. hal-00818093

HAL Id: hal-00818093

<https://minesparis-psl.hal.science/hal-00818093>

Submitted on 26 Apr 2013

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Individual roles to achieve knowledge integration in Mergers and Acquisitions: Completing the Knowledge Broker concept with Knowledge Developer's roles

Sub-theme 35: Designing M&As and Organization through M&As

Elvira Periac, CGS – Mines Paris Tech, elvira.periac@mines-paristech.fr

Sébastien Gand, CGS – Mines Paris Tech, sebastien.gand@mines-paristech.fr

Jean-Claude Sardas, CGS – Mines Paris Tech, sardas@mines-paristech.fr

Abstract

Among researches on knowledge issues in M&As, there has been a stream underlining the importance of knowledge integration process (i.e process of transfer or combination - within or between firms -, resulting in the production of a new/renewed form of knowledge) in post merger phases. In these researches, Knowledge integration appears as a key issue for the success of M&As.

Our paper aims at contributing to understand knowledge integration processes in M&As, and more precisely, the way specific individual roles intervene in these processes: their action, their abilities and their specificities.

Based on an empirical study of a merger between 3 French public administrations, we propose a framework to analyze individual roles in knowledge integration processes in M&As. Based on the concept of Knowledge Broker, we specify the existing view by proposing two sub-categories of individual roles: first, Knowledge Mediators who achieve knowledge integration both by mediating knowledge between actors to lead them to produce new/renewed knowledge and by producing a new/renewed knowledge themselves; second, Knowledge Developers who achieve knowledge integration by combining themselves several areas of knowledge to produce a new/renewed knowledge out of any action of mediation between actors or specific position in a network.

Such a framework contributes to a better understanding of two issues for knowledge integration in M&As literature: the importance of the human factor and the diversity of the mechanisms to achieve knowledge integration.

Introduction

Knowledge issues in M&As have been the focus of many researches in the last decades. Among knowledge issues, the focus of our study is on Knowledge Integration process, defined as a process of transfer or combination (within or between firms), resulting in the production of a new/renewed form of knowledge. A stream of M&As research has already paid attention to knowledge integration processes, especially in the post merger phases: for instance, Empson (Empson, 2001) or Junni (Junni, 2011) focused on the importance of the human factor for the success of knowledge integration after mergers, Bresman et al. (Bresman, Birkinshaw, & Nobel, 1999) specified the mechanisms to achieve knowledge integration through intensive social interactions following the merger and Enkel et al. (Enkel, Back, & Von Krogh, 2007) studied an organizational form that particularly supports knowledge integration in M&As post merger phases.

Thereby, these researches gave prominence to the idea that knowledge integration is a key issue for M&As, “*a critical success factor for a successful merger or an acquisition*” (Rumyantseva, Gurgul, & Enkel, 2002).

Our paper aims at contributing to understand knowledge integration processes in M&As, and more precisely, the way specific individual roles intervene in these processes: their action, their abilities and their specificities.

The importance of some individual roles in Knowledge integration processes has already been studied in a few researches through the concept of “Broker” or “Knowledge Broker”. Positioning this question within the specific context of knowledge integration in M&As, we would like to address the following research question: **How can individual roles contribute to achieve knowledge integration in the post merger phase of an M&A?**

We first review the literature on issues on knowledge integration and identify specific individual roles as a key issue in the achievement of mergers. This topic has been mainly investigated through the notion of "Knowledge Broker". We argue that existing works are not univocal in defining the notion and they may relate to different empirical situations. We then rely on this notion but keep open the fact that one issue is the lack of convergence between definitions. We then draw on an empirical study of a merger between three French public administrations to investigate our research

question. In spite of the particularities of mergers in the context of public organizations, we underline the similar issues for both sectors and, thus, present the interest of a cross discussion between public and private mergers on knowledge issues.

Through contrasting individual cases and situations, we elaborate **a framework to analyze individual roles in knowledge integration processes in M&As, that distinguish between two categories of Knowledge Brokers: Knowledge Mediators and Knowledge Developers.**

1. The importance of Knowledge Integration for successful M&As

1.1. The knowledge issue in organizations

The knowledge based view of the firm regards knowledge as an essential resource (Eisenhardt & Santos, 2002; Grant, 1996; Nonaka, 1994), considering the firm as a “*repository of knowledge and a knowledge-creating entity*” (Capasso, Dagnino, & Lanza, 2005, p3).

In academic research, knowledge appears as a complex notion. Eisenhardt and Santos (2002) remind that in western epistemology, knowledge was perceived as a “*justified true belief*” i.e an “*unambiguous, reducible, easily transferable construct*”. But they also underline how academic research gave rise to a much complex approach of knowledge. Three main issues on knowledge are particularly interesting to note for the purpose of our study.

First, a conception of knowledge based on the **distinction between tacit and explicit knowledge** emerged (Nonaka, 1994; Polanyi, 1962), where tacit knowledge is considered as linked to the individual and very difficult to articulate. It is worth noticing that this representation has been challenged, for example by Tsoukas (Tsoukas, 1998) who considered that the distinction was not relevant as tacit knowledge can be articulated and that explicit knowledge is always grounded in tacit knowledge.

Then, another stream of research questioned the **relation between individual and organizational knowledge**. For example, in their study on the role of knowledge in the success of acquisitions in the high-tech sector, Ranft and Lord (Ranft & Lord, 2000) consider knowledge not only as tacit but also as socially complex and argue

that if a part of a firm's knowledge is contained within individuals, another part resides in the “*relationships among individuals, or in a firm’s more general social and organizational fabric, rather than in any particular person*” (p 298). In this view, knowledge as a firm intangible resource should be considered as a system, interrelated and interdependent, including human, organizational and physical capital (Leonard-Barton, 1995), as socially complex, embedded in a context (Badaracco, 1991). Nonaka and Takeuchi’s work may also be related to this question insofar as they focus on the dynamics between individual and organizational knowledge (Nonaka & Takeuchi, 1995)

In this conception of knowledge, knowledge is viewed as **a process rather than a stable entity**. This was explicit in a stream of research that insisted on the processual and situated view of knowledge (Blackler, 1995; Kogut & Zander, 1996) Following this stream, in this paper we consider knowledge as a process, i.e a knowledge that is constantly produced, renewed and/or created.

1.2. “Knowledge integration” as a crucial criterion for M&As success

Among the knowledge issue in organizations a stream of research on the specific notion of *knowledge integration has developed*. We first define this notion of knowledge integration and then focus on how it has been studied in the specific context of M&As.

1.2.1. *Knowledge integration, knowledge transfer*

Considering that, in a knowledge based view of the firm, knowledge processes are the source of sustained competitive advantage and superior performance (Grant, 1996), Eisenhardt and Santos (Eisenhardt & Santos, 2002) identify knowledge integration as one of these knowledge processes. Eisenhardt and Santos define it as “*how specialized knowledge is integrated from different sources to generate new knowledge or to apply that knowledge to the creation of new product and services*”. In their empirical research about knowledge in virtual teams, Alavi et Tiwana (Alavi & Tiwana, 2002) define the process of knowledge integration as “*the synthesis of individual specialized knowledge into situation-specific systemic knowledge*”. In these definitions, the main features of this notion appear: a combination based on existing and specialized forms of knowledge, the emergence of a new form of knowledge, and a dynamic functioning as a system.

Eisenhardt and Santos clearly distinguish between “knowledge integration” and “knowledge transfer”. They consider the latter as another knowledge process. Knowledge transfer consists in a transfer of knowledge from a sender to a recipient of knowledge. Based on several empirical studies, Eisenhardt and Santos expose that the transfer can be internal to the firm or external, in cases of alliances or acquisitions. In this distinction, the main difference is that, for Eisenhardt and Santos, there is a creation of knowledge from different existing pieces of knowledge in the process of knowledge integration, whereas there is just a transfer of existing knowledge from one place to another in the knowledge transfer.

Bresman, Birkinshaw and Nobel (Bresman et al., 1999) propose a different view. To them, “*no definite distinction between transfer of knowledge and creation of new knowledge exists*” as “*recipients would normally be obliged to devote substantial resources to assimilate, adapt and improve upon original technology. Modification and further development are thus very often an integrated part of the transfer*” [Zander, 1991, cited by (Bresman et al., 1999)].

Besides this debate on the definition of knowledge integration/knowledge transfer, there is no consensus on the use of terms in the literature. Bresman and al. highlight that what they call “knowledge transfer” is sometimes called “knowledge creation” or “knowledge learning”. Furthermore, the term “knowledge integration” is not used by the authors in the empirical researches cited by Eisenhardt and Santos on the phenomenon they characterize with this term.

In this paper, we only use the term “knowledge integration”. But, following Bresman and al.’s (1999) position, we draw the attention on the fact that we consider Knowledge Integration in a large view that encompass what could be called “knowledge transfer” in some researches. Under the label “knowledge integration”, we consider **knowledge processes (within or between firms) of transfer or combination that result in the production of a renewed form of knowledge**. In this view, a knowledge transfer that implies a modification/adaptation/transformation of the recipient’s own knowledge is part of our notion of “knowledge integration”.

1.2.2. A focus on knowledge integration in M&As

In corporate M&As literature, Post-M&As phases (Haspeslagh & Jemison, 1991) are considered critical since their management constitutes the greatest impediment in making M&A work (Birkinshaw, Bresman, & Håkanson, 2000; Larsson & Finkelstein, 1999). A stream of M&As research has paid particular attention to knowledge transfer/integration issues in the post-merger phases, with different focuses.

One focus is on the nature of knowledge that is transferred or integrated. Bresman et al. (1999) identified two different phases of transfer depending on the type of knowledge that is transferred: In the first place, as few relationships exist, only codified and explicit knowledge is transferred whereas the development of relationships opens to the transfer of tacit forms of knowledge. A second focus is on the importance of the human factor to acquire a new knowledge through transfers: Ranft and Lord (Ranft & Lord, 2000) underline the necessity to retain human capital during the post-merger phase in order to achieve knowledge transfer; Empson (Empson, 2001) or Junni (Junni, 2011) study more specifically the motivations of the actors to transfer their knowledge and to become acquainted with new knowledge. A third focus is on the mechanisms to achieve knowledge integration. For example, Bresman and al. (1999) highlight the role of social interaction such as intensive communication, with many visits and meetings, especially for the transfer of tacit knowledge; Rummyantseva et al. (Rummyantseva et al., 2002) focus on the creation of the appropriate conditions to foster knowledge transfer (communication, visits and meetings but also, time and firm size); Enkel et al. (Enkel et al., 2007) study an organizational form that supports the knowledge creation and sharing, in particular in M&A's post integration phases : the "knowledge network". A fourth focus is on the barriers that hinder knowledge integration. Probst and Knaese (1999 cited by Rummyantseva et al., 2002) highlighted the "knowledge risk" as a failure factor for knowledge integration during mergers and acquisitions, i.e the risk resulting from uncertainty of the acquired knowledge asset, mistrust of the employees towards the merger, problem of scope caused by the same employees abilities etc. Furthermore, Boss and al.'s (Boss, Mcconkie, & Ringer, 1991) studied how the new merged organization managed to overcome barriers to knowledge integration.

These studies have in common to consider knowledge integration as a key issue for M&As, "*a critical success factor for a successful merger or an acquisition*"

(Rumyantseva et al., 2002, p8). Also, they all study knowledge integration from an empirical point of view with an underlying question: how does knowledge integration work? What are the factors, components, processes and mechanisms to achieve this knowledge creation from a micro level point of view?

2. The individual role: a key issue to achieve knowledge integration

One important key factor of success is the role of certain individuals in the process of knowledge integration. It has so far been studied in a few works through the concept of “broker” or “Knowledge Broker”.

We first present the concept of “broker” or “Knowledge Broker” as it was developed in the literature. We highlight ambiguities around the notion and raise research issues to develop this perspective.

The concept of « Broker » was first elaborated in order to respond to the notion of “structural hole”, that is to say of “*a gap in the flow of information between subgroups in a larger network*” (Burt, 1992, cited by Hargadon & Sutton, 1997, p.716). In this view, the “Brokers” are the “*actors filling these gaps who benefit by transferring resources from groups where they are plentiful to groups where they are dear*” (Marsden, 1992; Gould and Fernandez, 1989 ; Burt, 1992 ; cited by Hargadon & Sutton, 1997). In another paper, Gould and Fernandez (1994) define brokerage as “*a relation in which one actor mediates the flow of resources or information between two other actors who are not directly linked*” and identify 5 different categories of brokers, according to their role among the other actors. Some studies use a more specific term, “Knowledge Broker”, to designate cases where the resource that is mediated is knowledge (Cappetta & Cillo, 2008; Chataway, Brusoni, Cacciatori, Hanlin, & Orsenigo, 2007). In all these researches, the value added of the broker (or Knowledge Broker) is to create relations between other actors.

Nonetheless, it is worth noticing that some researches shed light on the transformations of the role of broker they first define and thus, present a substantially different definition of the concept. For example, Hargadon and Sutton (1997) point out that, in their empirical study, the transformation and combination of ideas and resources occurs predominantly through individual action within and not between such actors. For them, “*brokers create new value (and new knowledge) by adapting*

and recombining existing technical solutions in creating specific forms of new products and processes". Studying the brokerage role of an institution in charge of enhancing vaccine production for neglected diseases, Chataway and al. (2007) show how it went from a pure role of facilitation of the relationships between actors to a more directive and personally productive role¹. Thus, they constitute an alternative definition of the Broker as an individual who not only relate actors to foster their production, but also produces new/renewed knowledge by himself.

Considering these analyses, the "**Knowledge Broker**" framework in its different definitions appears as fruitful to study individual roles in knowledge integration processes. First, because knowledge integration processes designate situations where individuals deal with flux of information or knowledge, similar to those described for Knowledge Brokers. Second because, as the interrogations of Hargadon and Sutton (1997) and Chataway et al. (Chataway et al., 2007) suggest, an important issue for Knowledge Broker is the creation of new knowledge.

The variety of definitions and explorations of this concept in literature demonstrate the value of questioning the roles of individuals in the process of knowledge integration, as there is no obvious and unequivocal answer.

It also highlights the necessity of further researches to clarify and to develop the concept of Knowledge Broker, and thus to elaborate a framework to analyze how individual roles may contribute to knowledge integration processes in M&As.

We then will investigate the role of specific individuals in the process of a merger in the public sector. In our study, we analyze our cases through the concept of Knowledge Broker and determine how relevant it is for our findings. By this way, we propose to specify and develop the concept, on the basis of our results, and thus to contribute to elaborate a framework to analyze individual roles in knowledge integration processes.

¹ It created a new institution centered on one of its goal and provide to the actors implied in this institution a new knowledge produced on the base of old knowledge linked to new evidence of its effectiveness in animals

3. Mergers in the public sector: a specific point of view?

In the last decades, several academic researches have investigated mergers in public administrations. On the whole, such researches exposed a large diversity of cases of mergers in the public sector. For instance, Hood, Huby and Dunsire (1985) studied mergers in UK central administration, Kitchener and Gask (2003) focused on a specific sector and studied a merger in the UK health sector, Steiner (2003) analyzed mergers on a very local level (between Swiss municipalities).

Are mergers in the public sector very specific cases in M&As research? To what extent a cross discussion between public and corporate cases might be conducted?

Considering the reasons triggering mergers in the public sector and the processes to conduct them, the cross discussion seems fruitful.

These reasons have been detailed. In a case of merging between two organizations in a new department of a defense department agency in the USA (Mac Bride, 2006), the main reason is the necessity to “*realize cost savings from divisions that were delivering similar services to the same customers*”. In a case of merging of two county probation departments (Boss et al., 1991), one of the reason is the political will to maximize both efficiency and effectiveness of public agencies. In both cases, the processes of integration described are very similar to those observed in corporate M&As. In these two examples, we are in the cases that Cole and Eymeri-Douzans (Cole & Eymeri-Douzans, 2010) define with the term “*more or less NPM²-driven reforms*”. For them, many mergers realized since 1980 are part of administrative reforms that almost all governments of developed countries have adopted and that are explicitly oriented at decreasing the costs of public services and increasing the quality of public services. For them, NPM can be read as a means of applying logics and methods of the private sector to improve public sector. Then, a cross discussion between cases of mergers in the public and in the private sector is not only coherent but also stimulating insofar as it allows comparison of processes of mergers made for similar reasons but in different contexts.

Moreover, in a research on the case of a merging of two major administrations in Norway, the employment and the national insurance administrations (Fimreite & Lægreid, 2009), the authors analyze that the merger is not only a question of cost

² New Public Management

savings but also a “*government initiative to increase the capacity of the political administrative system to address ‘wicked problems’ cutting across existing policy areas and to improve vertical and horizontal coordination in the fields of policy and implementation*”. The idea they develop is that some complex social issues need another form of organization than the classical one in public administration, and that administrative mergers are also a response to that need. Thereby, besides economic reasons, the cause of mergers in the public sector may also be an adaptation to the purpose of their activity.

Thus, we consider that Mergers in the public sector can be compared to corporate mergers insofar as some of the reasons why they are achieved are closed to those of corporate mergers and that the processes of integration of the structures are similar (Boss et al., 1991; Mac Bride, 2006). We also argue that the study of administrative mergers is stimulating for M&As research in general as they draw the attention on cases where mergers are realized in order to give a better response to the issues they address which is also interesting from a business point of view.

As a consequence, although our study takes into account the specificity of a case of merger in a public administration, it also considers that a cross discussion between public and corporate merger can be fruitful on this base.

4. Method: exploratory individual case studies in a process of merger between 3 public administrations

Our research was conducted in a Public Administration (anonymized as PubAdmi) that results from the merger between 3 different organizations, with long histories (30 to 150 years of existence) and strong organizational identities. PubAdmi was designed to deal with new public policies that imply an integrated approach of issues that were previously addressed in separated sectors. Thereby, the aim of the merger was to be able to produce outcomes (services, document etc.) that integrate several technical expertise, skills, practices etc. in order to offer an adequate answer to the new political issue.

Considering the issue of knowledge integration in public administration as under-investigated so far, an exploratory research seemed appropriated.

As the integration was considered as a tricky issue, PubAdmi's executives wished to engage on an exploratory research to better understand the process of integration (Adler, Shani, & Styrhe, 2004). Some members of PubAdmi considered that some individuals in PubAdmi had developed what they called "integrative approaches". We incorporated this in our research design and structured the exploration by interviewing such individuals that were considered as developing "integrative approaches", even if that notion of "integrative approach" was not precisely defined. To complete these interviews, we analyzed documents produced in PubAdmi (syntheses from dedicated work groups on "integration", internal reports, notices). More specifically, we also examined documents produced by the interviewed people and considered as outputs of the "integrative approach".

Between March and July 2011, we interviewed 7 individuals (pointed out by a dedicated task group in PubAdmi as developing "integrative approaches") in a semi-directive way. We asked each person to tell us about their work history, work practices and understanding of their job. For some of them, we asked them to comment on their own documents. 2 of the interviewed persons described 2 of their positions. Thereby, we constituted 9 different exploratory cases (Yin, 2003).

In our study, a "case" is constituted of a process of knowledge integration and of an individual role, key in the achievement of that process. Thereby, it is worth noticing that one individual may have one role in a case and another role in another case: the role is not a characteristic of an individual but is defined by both the mission attributed to an individual and the way s/he adapts and behaves in this specific situation.

For our study, we selected only the cases in which we estimate that there is an actual process of knowledge integration, as defined previously. We retrieved 6 of the 9 cases on this criterion.

Case	Individual
Case 1	Individual A
Case 2	Individual B
Case 3 Case 5	Individual C
Case 4	Individual D
Case 6	Individual F

5. Findings

In the following cases, knowledge integration is related to the merger:

- Either because the integration of knowledge results from knowledge that was distributed in the different merging organizations,
- Or because, within a formerly stand-alone administration, the merger and the will to have “integrated” policies results in a restructuring of work practices that were previously considered separately.

Having selected only the cases in which we observed knowledge integration processes, we present 6 case-studies in this section (6 out of the 9 cases gathered). For each of these 6 cases, we first briefly describe them by specifying the work practices developed by each individual and thus why there is knowledge integration.

Description of the 6 case studies: work practices, knowledge integration

Case 1:

Work practices: Individual (A) is responsible for the production of a strategic document for a territory in which the aim is to determine its strategic axes of development. Individual (A) does not work with a specific team but with a network of correspondents, inside and outside of PubAdmi. She says: *“I see my job as a creation of links between the different skills »* Concretely, her mission unfolds in three parts: to collect data from different services inside and outside PubAdmi; to identify the different actors on a territory, to create relationships between them, to organize the consensus for her strategy; to write the strategy and have it approved. *“It does not require a specialist in each area, it is not the purpose. It requires someone who knows where to find the necessary skills. This is how I see my job [...] I am not the one with the technical skill”*

Therefore, even if there is no specific team, the work practice implies a large network around the individual and the output is the result of a common work.

Knowledge integration: Individual (A) produces a strategic document that focuses on a new issue that encompasses different topics initially addressed in different units of the merged organization. It combines different knowledge in order to create a new global strategic vision of a territory. Because of that combination of existing knowledge to produce a new/renewed knowledge on a territory, it has the characteristics of a case of knowledge integration, directly linked to the merger.

Case 2:

Work practices: Individual (B) is in charge of the creation of relationships and development of synergies between the different services of a new unit of PubAdmi. She also has to enhance the development of unit's projects consistent with the new objectives of PubAdmi. She says *“The mission that I permanently have in mind is to know what each service is working on, so that I can create links between them[...]To me, the main objective is to know the structure in order to be able to create the*

necessary links and synergies”. The new unit arises from the merger of different units of the former organizations; thereby, the different services of the unit do not have common work practices and are used to working in their sector without including other concerned sectors. Individual (B) has a transversal function, positioned under the direct supervision of the General Manager unit. Thereby, she is entitled to address to any project of any service of the unit. Therefore, she works with a large number of persons within the unit and outside. Nonetheless, there is no codified pattern for the intervention of individual (B) in the unit projects and no specific team organized. As in case 1, in case 2 the process implies a large network of people from inside and outside PubAdmi, but not in the organized form of a team.

Knowledge integration: In this case, there is knowledge integration insofar as the individual (B) transfers knowledge of one unit to another unit of PubAdmi in order that the recipient becomes acquainted with the new knowledge and utilizes it in its work practices. Thus, there is production of a new/renewed knowledge by the recipients of the knowledge transfer.

Case 3

Work practices: In Case 3, an individual (C) is in charge of a research program. He has to establish the specifications of the research program in relation with a scientific committee (academic specialists of different fields) and a public policy committee (public actors). The research program seeks to respond to a public policy developed by the new merged organization. Therefore, the individual (C), with the help of the scientific committee, has to raise any issue that should be included in the research program to propose a global view on the identified public concern. As he says: *“Concretely, I don’t have the ability to achieve by myself all that I just described. I have the ability to understand it, and I think that is what is expected from me”*. He also has to ensure that the scientific program is consistent with the public policy needs in order to justify the public financing.

Individual (C) closely works with the scientific committee in a codified work process to ensure the discussion and evaluation of all the propositions.

Knowledge integration: In this case, knowledge integration lies in the process of identifying the different areas of knowledge in a public concern and, on this base, of writing specifications that bring to light these different areas of knowledge and gather them in a single question.

Case 4

Work practices: Individual (D) contributes to a notice about the implementation of a new infrastructure. Her contribution to the notice results from the crossing of two very different areas of knowledge. Individual (D) is able to work on each area of knowledge because of her specific professional background: she was a student and occupied a few positions related to the “K1” area of knowledge, then she changed job 12 years ago and got acquainted with the “K2” area of knowledge through professional training and personal reading. This is why she is competent in both areas. Individual (D) writes her contribution on her own, based on his/her sufficient knowledge in the two required areas. Otherwise, she appeals to different experts individually to complete her knowledge when insufficient. She produces a recommendation, positive or negative about the infrastructure project.

Knowledge integration: In this case, there is knowledge integration because there is a combination of two existing specialized knowledge to create a new knowledge. Why can we consider it as a new knowledge and not two different knowledge developed by one single person? Individual (D) does not utilize both areas of knowledge separately; she actually combines them to give a recommendation that could not have been elaborate without this combination. For instance, on one case, the recommendation should be negative from the K1 point of view and positive from the K2 point of view. In this case, if the recommendations were given by two different persons, the final recommendation would be negative because of a strong impediment in K1. Here, Individual (D) is able to conceive an alternative proposition in K2 which interest is not for K2 directly, but is to be acceptable from the K1 point of view. To sum up, the ability to combine both areas of knowledge leads to conceive new solutions that would not emerge if each area of knowledge was isolated. This is why there is knowledge integration in this case.

Case 5

Work practices: In case 5, Individual C describes another position than the one he occupied in case 3. In this position, he is in charge of the production of a document that defines the criteria for a global evaluation of projects, including different fields of knowledge. He analyzes scientific researches, mainly in political philosophy, economics and ecology and produces a general note characterizing a pattern of evaluation that could be relevant in those 3 areas. Individual C has to produce the document within a year and, at the moment we met him, had no team or even correspondents to work with.

Knowledge integration: The final document has to respond to the new global objectives of the merged organizations; this is why it synthesizes the different areas of knowledge to produce new criterion of evaluation. This combination of existing specialized knowledge to produce a new form of knowledge is characteristic of a knowledge integration process.

Case 6

Work practices: Individual (E) is in charge of writing recommendations to authorize or forbid the implementation of new infrastructures. His recommendation is based on the evaluation of all the possible environmental impacts of the future infrastructures. Individual (E) has to organize into a hierarchy, to prioritize those impacts and, above all, to anticipate the multiple interactions between different areas of issues. Furthermore, he makes a counter-proposition on the project to improve it, based on his analyze enriched with his experience of best practices observed on the large number of evaluated projects.

Knowledge integration: In this case, knowledge integration unfolds in two parts. First is the evaluation of the combination of all the different impacts in different areas and the elaboration of a new global knowledge on the project. Then, the process of response to the project management may also be considered a knowledge transfer

that renews the knowledge base of the project management. In that sense, it is also another knowledge integration process.

6. Discussion

6.1. Two different Knowledge Brokers to achieve knowledge integration: Knowledge Mediators and Knowledge Developers

The 6 cases we described reveal a distinction. On the one hand, Individuals in cases 1,2 and 3 correspond to the definition of Knowledge Brokers given by Hargadon & Sutton, (1997), i.e not only actors who mediate the flow of resources or information between others actors (Fernandez & Gould, 1994) but also actors who produce new/renewed knowledge by themselves. But, on the other hand, individuals in cases 4, 5 and 6 cannot be considered as Knowledge Brokers according to this definition. Though, they clearly play individual key roles to achieve knowledge integration and produce new/renewed knowledge through knowledge integration processes, their role is not to link other actors so as to enhance these actors' own production.

The existing framework of Knowledge Broker in the academic literature that we presented previously describes two categories of Knowledge Brokers: one that is only a mediator between actors (Fernandez & Gould, 1994; Burt, 1992 cited by Hargadon & Sutton, 1997) and the other that is not only this mediator but also a producer of new/renewed knowledge by himself (Hargadon & Sutton, 1997). Yet, in our study, we do not observe the first one, but we do observe the second one (cases 1, 2 and 3). An interesting point is that we also observe another phenomenon in cases 4, 5 and 6): an individual role that produces new/renewed knowledge through combination of existing areas of knowledge s/he masters but does not utilize mediation between actors or a specific position in a network to do so. We consider that both of the forms we observe are Knowledge Brokers as they present some essential characteristics. But we distinguish between two categories of Knowledge Brokers: Knowledge Mediator (cases 1, 2 and 3) and Knowledge Developer (cases 4, 5 and 6).

Based on these observations, we propose an enriched framework to analyze the contribution of individual roles to knowledge integration processes.

First, we analyze the role we observed to characterize why they can be considered either Knowledge Mediator or Knowledge Developer. Then we elaborate the framework and specify several dimensions of Knowledge Mediator and Knowledge Developer based on our results.

6.1.1. Two different roles: Knowledge Mediators and Knowledge Developers

The Knowledge Mediator: Individuals A, B and C in cases 1, 2 and 3

Individual (A)'s work practice clearly corresponds to the definition of a Knowledge Broker according to Hargadon & Sutton (1997): s/he intervenes in a network inside and outside Pub Admi, transfers knowledge from one actor to another through the creation of relationships between them. Furthermore, she is also more than a facilitator as she produces a strategic document based on these exchanges.

Individual (B) fills gaps between units who ignore the work and knowledge of others units. This is why she can be considered as a Knowledge Broker. As for Individual (A), she also appears as more than a facilitator as she writes notes and synthesis about projects that cross different areas of knowledge and, thereby, contributes to the elaboration of the new form of knowledge.

As she says, Individual (C)'s role is to lead the scientific group, to stimulate the debate, to raise questions so that each member gives his best as an expert; thereby, Individual(C)'s role is not to be an expert but a coordinator, which is very clear in his quote. Thereby, Individual (C) acts in this situation as a Knowledge Broker. Nonetheless, as in cases 1 and 2, in case 3, the individual role is also more than a facilitator. As he is in charge of writing the specifications for the research program, he participates in the elaboration of a new form of knowledge as he conceives and writes a new global view of an issue.

These descriptions correspond to the definitions of Knowledge Broker as a mediator between actors and encompass the extension of this role to more than a mere facilitator: for a part of his/her role, s/he is also a producer of renewed knowledge.

Another role, the “Knowledge Developers”: Individuals D, C and E in cases 4, 5 and 6

In cases 4, 5, and 6 individuals (D), (C) and (E) do not interact between actors of different subgroups and are not in a key position in a network. Nonetheless, as presented in the findings, they clearly achieve knowledge integration by creating connections between different areas of knowledge and thus producing new/renewed knowledge.

In case 4, the individual (D) create connections between two areas of knowledge s/he masters in order to give a recommendation to authorize or forbid the infrastructure. In case 5, the Individual C creates connections between philosophy, economy and ecology to elaborate new criteria of evaluation. In case 6, the individual (E) create connections between the different environmental impacts of an infrastructure project in order to elaborate a global view on this project and to suggest some specific improvements to the project management.

To sum up, the main difference between the two activities is that the Knowledge Mediator (Individuals A, B and C respectively in cases 1, 2, and 3) connect different actors so that the actors create new/renewed knowledge through these connections and also produce new/renewed knowledge themselves thanks to their specific position, whereas the Knowledge Developers (Individuals D, C and E) achieve the connection between different areas of knowledge by themselves, without even using a mediation between actors or a specific position in a network, and produce directly the new/renewed form of knowledge.

As a consequence, we propose a typology to understand how individual roles may contribute to achieve knowledge integration in the post merger phase of an M&A. This typology is built on the distinction of the two categories of individual role we identified, Knowledge Mediator and Knowledge Developer. Analyzing our results, we highlight that these types bring out two main areas in which these types of role differ: the nature of the knowledge and the process (work process and cognitive process).

6.1.2. A framework on individual roles to achieve knowledge integration

The nature of the knowledge

The Knowledge Mediators (Individuals A, B and C) describe their knowledge as follows.

First, this knowledge consists in a capacity to identify and to understand globally a wide range of topics, rather than a real expertise on each area: Individuals C and B are good examples of this kind of knowledge.

The Knowledge Developers present a different sort of knowledge. The knowledge they develop on the topics they address is more in-depth. Contrary to the Knowledge Mediator, their role is not just to understand the topic but to deliver a double or a triple expertise. This difference is visible in the background of some of the different brokers. Knowledge Mediators tend to have a generalist background (engineer for Individual B, agronomist for Individual A) that makes them able to understand a wide range of subjects in a general area whereas Knowledge Developers tends to have a degree or a professional training specialty in the two or three areas they address: for instance, Individual D has a degree in the K1 area of knowledge and professional training plus experience in the K2 area of knowledge, Individual E has a general background of engineer but also a master degree in geography that specialize him.

Knowledge Mediators utilize a generalist, wide ranging knowledge whereas Knowledge Developers mobilize a more specialized knowledge. Nonetheless, as we saw in the findings, all of them achieve knowledge integration. Based on our results, we argue that knowledge integration may be achieved at least in two different ways and thus necessitate two different types of knowledge: either one individual achieve the process on his own, or several individuals are necessary with one individual to coordinate and connect them. In the first case, the process utilizes a specialized form of knowledge whereas in the second case, a generalist form of knowledge is necessary.

On this issue, Individual C is interesting as he acts in two cases and, thus successively in two different roles (Knowledge Mediator in case 3 and Knowledge Developer in case 5). Based on the same background (a Master degree in ecology and a Master degree in public affairs), he mobilizes them quite differently in case 3

and in case 5. In case 3, he mobilizes many of the areas of knowledge he was trained for (public administration, biology, sociology, engineering etc.) in order to cross the issues and identify their connections. In case 5, he focuses on 3 of these areas and deepens each of them through readings and personal researches.

Beyond the question of the nature of knowledge is the issue of the mechanism to mobilize the knowledge. Thereby, complementary to the nature of the knowledge mobilized by the two categories, Knowledge Mediator and Knowledge Developer, it seems necessary to study the work processes and cognitive processes through which an individual achieve knowledge integration and the difference between Knowledge Mediator and Knowledge Developer from this point of view.

The work and cognitive processes

The Knowledge Mediator's work process consists in creating connections between actors where they did not exist. For instance, in case 1 (Individual A), the network of actors does not even exist before the intervention of the Knowledge Mediator. Her role is precisely to raise an issue, identify the actors on this issue, contact them and make them reach a consensus from which s/he can write the document of strategic development. In case 2 (Individual B), the actors know each other (as they belong mostly to the same organization) but they are used to working by sector instead of collaborating. Individual B's role is to create this collaboration. In case 3, there are work processes that are made to create connection (scientific committees meetings for example). Individual C's role in case 3 is essentially to stimulate and question this scientific committee and then, to write specifications for a project on this basis.

In all these cases of Knowledge Mediators, the work process to produce knowledge integration is mainly **collective**, even if a part of it is individual (writing of synthesis, notes etc.).

In terms of cognitive process, the **Knowledge Mediators** mainly have to **identify similarities, common points, divergences** and to create links and discussions on these issues among the different actors.

On the contrary, **Knowledge developers'** work process is mainly **individual** even if a part of it might be collective (consultation of experts). In terms of cognitive processes, Knowledge Developers mainly have to **structure a logical reasoning**.

As we saw in the findings, the work practices of individuals D, C and E are mostly individual: they produce their outcome (notice, recommendation etc.) on their own, only with the help of some experts when required.

Furthermore, to conceive their outcome, they conduct a logical reasoning that is the value added of their work. Depending on each case, the reasoning consists in compensating or in prioritizing between different components. For instance, as we saw previously with Individual D, she structures a system of compensation between the K1 and K2 areas of knowledge, creating a solution in K2 that compensate for a problem in K1.

As a result, our study leads to a typology that specifies two different individual contributions to the same process of knowledge integration.

	Knowledge Brokers	
	Knowledge Mediator	Knowledge Developer
Nature of knowledge	Generalist	Specialized
Cognitive process	Identifying connections	Structuring a logical reasoning
Work process	Mainly collective	Mainly individual

This typology leads to a better understanding of the contribution of Knowledge Brokers in knowledge integration processes as it clarifies the content of these roles: the ability they mobilize (nature of the knowledge), the way they mobilize it (cognitive process) and the way they organize their production (work process).

6.2. The role of Knowledge Mediators and Developers in a merger

In their study of the merging of two major administrations in Norway, Fimreite & Laegreid (Fimreite & Læg Reid, 2009) argued that some complex social issues required another form of organization than the classical one in administration, vertical and sectoral.

The cases presented in our study correspond to this need, since all the Knowledge Mediators and the Knowledge Developers achieve knowledge integration in order to provide new and relevant answers to new political issues.

Thus, our study highlights the importance of individual roles to achieve this type of knowledge integration and explain their functioning. We contribute to two streams of literature on knowledge integration in M&As:

- As we underline the key roles of individuals in Knowledge integration processes, we contribute to the stream of research on the importance of the human factor for Knowledge integration in M&As (Empson, 2001; Junni, 2011; Ranft & Lord, 2000) with a new point of view: the specific skills (nature of knowledge, cognitive capacity) these individuals have to master in order to achieve their mission
- As we identify at least two types of work processes, we contribute to the literature on the mechanisms to achieve Knowledge integration (Business, 1999; Enkel et al., 2007; Rummyantseva et al., 2002) by drawing the attention on the diversity of mechanisms to achieve knowledge integration and the meaning of this diversity: to respond to different needs in Knowledge integration processes.

Conclusion and perspectives:

Our study underlines the importance of the individual roles to achieve knowledge integration in M&As and clarifies the content of these roles through a proposition of framework that enrich and deepens the existing concept of Knowledge Broker.

Based on our empirical study, we argue that there are 2 subcategories among the Knowledge Brokers that produce new/renewed knowledge:

- Knowledge Mediators that both mediate knowledge between actors to lead them to produce new/renewed knowledge and produce a new/renewed knowledge themselves

- Knowledge Developers that produce new/renewed knowledge through the combination of their own knowledge in different area, out of any mediation between actors or specific position in a network.

It is worth noticing that we do not observe in any of our cases the other subcategory, described in academic literature, the Knowledge Broker that create links between actors but does not produce any new/renewed knowledge himself.

We acknowledge several limits to our exploratory research.

First, the analysis is based on only 6 cases. Even if these cases are very informative, it would be necessary to complete them with further interviews to refine our analysis both on the 2 categories described in this paper and on the third category described in the literature but absent in our empirical study.

Second, the importance of individual roles has a wide range of implications that we did not study here but that would deserve further researches. If individuals are essential to achieve knowledge integration, then, a study of their role implies to adopt adapted point of view.

As we consider the nature of the knowledge and the processes to produce their outcomes, we considered only the cognitive dimension of the individual role. But cognitive issues may not be the sole factor that may hinder a relevant integration through individual roles. Sardas and al. (Sardas, Dalmasso, & Lefebvre, 2011) developed a model on the Dynamic Global Identity of the Actor (DGIA) in which they identify 4 dimensions of the individual dynamic :

- the cognitive dimension (what the individual knows that makes him able to achieve his/her mission),
- the physiological dimension (the physical ability of the individual to achieve his/her mission)
- the strategic dimension (the material and human support to the individual to achieve his mission),
- the subjective dimension (the meaning of his/her mission for the individual)

In order to have a coherent dynamic for the individual, it is necessary to ensure that none of these dimensions is in a deadlock. Thereby, complementary to our study on the cognitive dimension of these individual roles, it would be necessary to enlighten

the complete dynamic that makes an individual capable of contributing to the achievement of knowledge integration.

For instance, with a view to developing our understanding of the subjective dimension, there are several essential issues to address. Empson (Empson, 2001) or Junni (Junni, 2011) have already explored the motivations of the individual to ensure knowledge integration processes. The question of the position of these individuals in the organization is also a major one: should these roles be permanent or transitory? Should they be formal or informal ones? How to ensure their legitimacy? The question of their material and human support is essential too: how to ensure their access to information or knowledge? How to create the necessary relations with other actors?

Thereby, further researches would be necessary for a complete understanding of the individual roles, not only on the knowledge issue but also on relational and subjective issues.

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