SECI and inter-organizational and intercultural knowledge transfer: a case-study of controversies around a project of co-operation between France and China in the health sector

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Abstract

Purpose – *The purpose of this paper is to study the obstacles to knowledge transfer between organizations belonging to different cultures by making use of the socialization–externalization – combination – internalization (SECI) model. The contribution made by this paper is in the use of the SECI model for studying this type of issue. Although it recognizes the epistemological duality between tacit and explicit knowledge, the traditional literature had not adopted this theoretical structure. The explanation for this is an excessively simplistic interpretation of the SECI model in its 1995 version together with a lack of knowledge about Nonaka's more recent works – Nonaka* et al. *(2008).*

Design/methodology/approach – *The authors use a comparative case study opposing a failure and a success, and rely on Latour controversies to account for the context and contradictions. One of the authors worked for five years as a mediator in these projects and adopted the reflective practitioner posture of Schön.*

Findings – *Using the SECI model is relevant for studying this question. The results obtained converge with the literature and mark the SECI's first stage – socialization – as an operation of major importance. The authors show that the failure in knowledge transfer is due to a deficit of socialization, as the lack of prolonged situations of co-presence of the actors, i.e. the lack of shared context, impedes knowledge conversion.*

Research limitations/implications – *To go further, conditions of the socialization context must be better specified and developed. Second, cases in other areas than the health sector to observe the circulation of knowledge could be developed.*

Practical implications – *The findings suggest ways for managers to fight against knowledge transfer barriers in multicultural contexts, relying on the socialization process.*

Social implications – *Accounting for the problem of knowledge transfer in a multicultural context through the SECI model, which focusses on the interaction between tacit and explicit knowledge, opens a fruitful line of reflexion. It would organize trips for French managers in China with a strong intercultural dimension.*

Originality/value – *Accounting for the problem of knowledge transfer in a multi culural context through the SECI model, which focusses on the interaction between tacit and explicit knowledge, opens a fruitful line of reflexion.*

Keywords *Controversy, Cultural difference, Knowledge transfer, SECI, Shared mutual context*

Paper type *Case study*

1. Introduction

A certain number of studies have shown cultural differences can be a major obstacle to the transfer of knowledge (Bhagat *et al.*, 2002; Javidan *et al.*, 2005; Sarala and Vaara, 2010; Reiche, 2011; Li *et al.*, 2014); other studies, while acknowledging the cultural factor as an obstacle to knowledge circulation, have highlighted that differentiations of an

organizational nature are still more important obstacles (Magnier-Watanabe and Senoo, 2010). The aim of this paper is to give an explanation of the obstacles to knowledge circulation in the context of a project of co-operation between various private and public partners between two countries with profoundly different cultures. We are working on a case study in the health sector between France and China. May the cultural differences between the two countries and the differences in organizational logic underlying the private and public sectors constitute barriers to the circulation of knowledge? And to which kinds of knowledge? And how can these barriers be avoided? Although it recognizes Polanyi's (1966) epistemological duality between tacit and explicit knowledge, the literature on the issue of the transfer of knowledge in different cultural contexts has made use of various theoretical frameworks such as knowledge base theory, organizational learning, network theory and the theory of social capital (Li *et al.*, 2014), but has neglected the work of Nonaka, even though the latter has put this selfsame duality at the heart of his theory. We exploit the socialization – externalization – combination – internalization (SECI) model to study the process of knowledge conversion inside this project. In Nonaka and Takeuchi's (1995) basic model, a Japanese enterprise with an established organizational intention was the pivot for the circulation of knowledge between the actors in the projects. It was admitted that the actors had the same culture and were part of the same organizational logic. Thus, the knowledge conversions were unaffected by problems owing to differences of a cultural and/or organizational nature. These various elements of context as well as possibilities of contradiction inside the firm would be reintroduced in subsequent studies (Nonaka *et al.*, 2008). In a first stage, the context was introduced in his model with the notion of Ba (Nonaka and Konno, 1998) and then the notion of ecosystem (Nonaka *et al.*, 2008). In the basic model, it was also admitted that there was an organizational intention that allowed the circulation of knowledge to be oriented. Subsequently, Nonaka would propose introducing contradictions within the dynamic of the theory of the firm (Nonaka and Toyama, 2002).

We propose to introduce the context and contradictions based on the controversies in the meaning of Latour (2005) understood as a basis for collective action. The various frontiers between a private logic and a public logic, between the culture of France and of China, and the expectations of multiple partners are constitutive parts of the controversies. We studied the positive and negative issues of these controversies to discuss what forms a barrier to the circulation of knowledge and to the various modes of knowledge conversion: socialization, externalization, combination and internalization. With a reflective practitioner's point of view (Schön, 1983), we take a fresh look at the modalities of a partnership in which one of the authors participated for five years as a mediator. The case study is a private – public co-operation project between France and China in the health sector.

In a first stage, we return to Nonaka's basic model and the successive additions the author made to reintroduce context and contradictions in the circulation of knowledge. We evoke studies that make apparent the cultural difference and the gaps between private and public logics in the circulation of knowledge. In a second stage, we give an account of the progress of this project of collaboration between France and China between private and public actors in the health sector on the basis of Latour's (2005) notion of controversies. We use the SECI model to account for the circulation of knowledge within two controversies. The first is a failure, the second a success. To conclude, we discuss the results obtained and extract a finding from this comparative case study.

2. The obstacles to the circulation of knowledge in the projects

Before dealing with the question of the obstacles preventing the circulation of knowledge, we have to specify the theoretical framework through which we reach an understanding of how the knowledge circulates. We decided to use Nonaka's concept of knowledge conversion. In a first stage, we return to Nonaka's basic model and the successive additions this author made to reintroduce the context and contradictions into knowledge circulation. In a second stage, we refer to the studies that bring to light the cultural

difference and gaps between private and public logics as obstacles to the circulation of knowledge.

2.1 The circulation of knowledge in innovative projects: the SECI model

Since 1994, Nonaka (1994) has been constructing a theory on the creation of organizational knowledge that should be capable of accounting for the process of innovation in businesses. The point of departure of Nonaka's research programme is to account for the new project management methods that Japanese enterprises have developed since the 1980s and on which their success is founded (Imai *et al.*, 1985). Thanks to these new project methods, they are able to develop new products on a permanent basis. To account for certain Japanese companies' (Honda, Canon, Matsushita, Sharp, Nissan, Kao, Mitsubishi, NEC, Fuji-Xerox, etc.) capacity for continuous innovation Nonaka was obliged to construct a theory of knowledge in organizations (Nonaka, 1991, 1994; Nonaka and Takeuchi, 1995). Indeed, the capacity to generate knowledge and make it circulate appears to be fundamental for the success of an innovation project. Owing to the situation of uncertainty – geographically, historically and economically – in which the country has been immerged for several centuries, a certain Japanese knowledge management culture exists. Based on this culture, Japanese businesses have been able to develop a knowledge creation dynamic within enterprises that amounts to a real school in the field of knowledge management (Fayard, 2003). This would lead Nonaka to ask questions as to what the nature of a piece of knowledge is, and how it is possible to create and make knowledge circulate inside projects. We intend to call upon this theory of organizational knowledge creation[1].

2.1.1 The organizational knowledge creation model of Nonaka. Nonaka constructed an organizational knowledge creation theory (Nonaka, 1994) that breaks with the information paradigm (Newel and Simon, 1972) which tends to assimilate knowledge to information. Nonaka wished to develop a theory of the organization of knowledge creation which could cast light on organizational creativity, learning, innovation and change (Nonaka and Von Krogh, 2009). Considering knowledge management from the point of view of knowledge creation has to be considered to be an important research result (Argote *et al.*, 2003). This theory has developed two concepts:

1. "tacit knowledge" based on the works of Polanyi; and
2. "knowledge conversion" – the SECI model in organization science.

This theory rests on two postulates (Nonaka and Von Krogh, 2009, p. 1):

1. the notions of tacit knowledge and of explicit knowledge are distinguished conceptually along a continuum; and
2. the knowledge conversion process theoretically and empirically explains the interactions between tacit and explicit knowledge.

Thus, this theory is based on the distinction-articulation between two types of knowledge: tacit knowledge and explicit knowledge which constitutes the key of the dynamic of knowledge creation inside organizations.

2.1.2 The SECI model. To deal with this question of the nature of knowledge, Nonaka would make use of the work of Polanyi who on the epistemological level is led to distinguish: explicit knowledge and tacit knowledge (Nonaka and Takeuchi, 1995). Explicit knowledge is expressed in the form of a language including grammatical propositions, mathematical expressions, technical specifications and books. This type of knowledge can be transmitted easily and in a formal fashion. This knowledge is objective. This is the knowledge with which the occident is chiefly concerned. Tacit knowledge is difficult to formulate in formal language but, nonetheless, is more important than the other. It is a personal knowledge incrusted in the individual's experience and involves intangible factors such as personal beliefs, projects and value systems. This knowledge is subjective. Tacit

knowledge is the fundamental source of the competitive force of Japanese businesses. On the ontological level, knowledge can have an existence on the level of an individual, a group, an organization or between organizations.

Nonaka deals with the issue of the creation and circulation of knowledge within innovative projects by making use of his model of knowledge conversion: the SECI model. In the SECI spiral:

> [. . .] the tacit knowledge possessed by individuals is externalized and thereby transformed into explicit knowledge so it can be shared with others and enriched by their individual viewpoints to become new knowledge. It is then internalized once more by a larger number of individuals as a new, richer, subjective knowledge that becomes the basis for starting another new cycle of knowledge creation (Nonaka *et al.*, 2008, p. 18).

The SECI is a process model:

> It starts with socialization of individuals, moving to externalization within groups, combination in organizations, and then back to internalization in individuals. The important point is that individuals, groups, and organizations are themselves transforming in the knowledge-creating process since they themselves are collections of processes (Nonaka *et al.*, 2008, p. 19).

The link between the various stages runs deep. Each stage contains the following one in embryo. The manifestation of the socialization produces in embryo the externalization of the explicit knowledge which itself entails the combination with other explicit knowledge before it is internalized in the individuals (Fayard, 2006). The creation of organizational knowledge is a never-ending, perpetually updated process (Nonaka *et al.*, 2008, p. 25). The model of knowledge conversion found in Nonaka's work constitutes a permanent organizational routine as concerns knowledge creation which takes the form of a spiral. The dynamic of interaction between subjective and objective processes is what enables knowledge to be created:

> Knowledge emerges from the actors' subjectivity embedded in a context and is objectivized through a social process. Knowledge is created through the synthesis of thought and action in interactions not just within the organization, but also beyond the frontiers of the organization (Nonaka *et al.*, 2008, p. 18).

Nonaka and Takeuchi (1995) would present – in their reference model – the conditions that enable organizational knowledge to be created:

- organizational intention;
- the autonomy of the individuals;
- creative chaos;
- redundancy; and
- the variety required.

Here we are dealing with a case in which the principal actors are Japanese and in which the organizational intention is unambiguously established by the enterprise. This organizational intention is what will orient the organizational knowledge creation spiral. The actors have, in fact, the same culture and are in the same organizational logic. Thus, the knowledge conversion process is unaffected by problems relating to differences of a cultural and organizational nature. These various contextual elements as well as possibilities for contradiction in the firm would be reintroduced in subsequent works (Nonaka *et al.*, 2008). The context would be progressively reintroduced by Nonaka[2].

2.1.3 The reintroduction of the context and the contradictions. In a first stage, the context is introduced into his model with the notion of Ba (Nonaka and Konno, 1998). Nonaka would propose explaining the fundamental conditions governing the creation of knowledge by introducing the notion of Ba (Nonaka, Konno, 1998). This term is used to specify the "context" more precisely in which the actors may be in the position to generate knowledge.

This notion was implicit in the basic model, as the actors were all Japanese and the model's authors were Japanese themselves. This notion of Ba would become the context shared between the actors, which is indispensable for their interactions to produce knowledge. It is a complex notion that was developed by the Japanese philosopher Shimizu (1995) based on the works of Nishida (1970, 1990). Nonaka would propose various definitions of Ba. Initially, he defined Ba as "a shared space, context, meaning in motion". Ba is conceptualized as "a shared context in motion, can transcend time, space, and organization boundaries to create knowledge" (Nonaka and Toyama, 2003). We define "Ba" as a shared context in motion, in which knowledge is shared, created, and utilized (Nonaka, Toyama, 2003, p. 6). He would re-examine the four forms of knowledge in the light of this notion of Ba. He came to distinguish:

- in the socialization phase, Originating Ba, having an existential dimension and taking the form of a face-to-face contact;
- in the externalization phase, Interacting Ba, having a reflective dimension and taking the form of a peer-to-peer interaction;
- in the combination phase, Cyber Ba, having a systemic dimension and taking the form of inter-group interaction; and
- in the internalization phase, Exercising Ba, having a synthetic dimension and taking the form of practice on site.

In the basic model, it is also admitted that there is an established organizational intention that makes it possible to orient the circulation of knowledge. Subsequently, Nonaka would propose introducing contradictions inside the dynamics of the theory of the firm (Nonaka and Toyama, 2002). Finally, Nonaka would introduce the enterprise's environment in his model with the notion of ecosystem of knowledge (Nonaka and Toyama, 2005). He wanted to take into account the evolution of the relations of enterprises with all the partners having an impact on the enterprise, and the clients and suppliers. To construct this notion of a knowledge ecosystem, he relied on the notion of the extended enterprise (Prahalad and Ramaswamy, 2000, p. 81) and on Teece's (2007) notion of the business ecosystem.

In introducing Ba as the dynamic of a shared context, an essential condition for knowledge conversion, we introduce here the cultural difference between France and China – the difference between a private logic and a public logic as an obstacle to constructing a shared context and so as obstacles to the circulation of knowledge between different partners.

2.2 The cultural and organizational obstacles to the circulation of knowledge

2.2.1 The cultural obstacles to knowledge circulation between France and China.

2.2.1.1 An important cultural difference between France and China. Hofstede (1991) defines culture as all the manners of thinking, feeling, and acting of the members of a group. The author proposes explaining a country's national culture by referring to five dimensions. The first dimension refers to the nature of the relationship between an individual and the group; it can be centred more or less on the individual or the collectivity. The second is the hierarchal distance which represents the extent to which the inequalities of power between the individuals are accepted. The third is the control of uncertainty which measures the degree of tolerance a culture can accept when faced with the anxiety future events produce. The fourth is the culture's masculine (competition) or feminine character (compromise). Finally, the last dimension is the time horizon of the actors' behaviour: short- or long-term. For each of these dimensions, Hofstede (1991) has constructed indicators that make it possible to assess the cultural distance between two countries. The respective scores of China and France show an important difference in culture (Figure A1) (Table I). France is a country with an individualistic culture (score 71), whereas China is rather collectivist (score 20). France finds it hard to tolerate uncertainty (score 86), which is not the

Table I Index of national culture of France and China

National cultural dimensions	*France*	*China*
Individualism vs collectivism	71	20
Power distance	68	80
Uncertainty avoidance	86	30
Masculinity vs femininity	43	66
Long-term orientation	63	87

Source: Hofstede (1991)

case for China (score 30). France is a feminine country (score 43), and China masculine (score 66). France has a short- to long-term vision of the future (score 63), whereas China is more turned towards the long-term (score 87).

2.2.1.2 The influence of this cultural difference on knowledge. We propose to study the works on the effect of cultural difference on the transfer of knowledge as based on Hofstede's (1991) five cultural dimensions:

1. *Individualism vs Collectivism*: According to the studies of Bhagat *et al.* (2002), the countries with an individualistic culture stress knowledge that is explicit and independent of the context, whereas the countries having a collective culture stress tacit context-bound knowledge (Table II).
2. *Power distance*: If the hierarchical distance is small, the knowledge circulates easily between the bottom and the top, which is not the case when the hierarchical distance is large (Hofstede, 1991; Bhagat *et al.* 2002).
3. *Uncertainty avoidance*: The countries that accept uncertainty, like China, are familiar with the ambiguous character of knowledge. The transfer of tacit knowledge requires a large capacity to tolerate ambiguity (Szulanski, 1996). In this way, a country like China would have a greater capacity to transfer tacit knowledge than a country like France that cannot bear uncertainty (Bhagat *et al.*, 2002).
4. *Masculinity vs Femininity*: The masculine or feminine character of a culture has a direct influence on the success of the transfer of the knowledge (Lucas, 2006). Masculine cultures concentrate on ambition, interest and competition. For them, "the best one wins". On the other hand, feminine cultures concentrate on compromise and negotiation (Hofstede, 1991; Lucas, 2006).
5. *Long-term orientation*: Knowledge transfer is possible with the Chinese if they see the potential for establishing a long-term relationship; in the inverse case, it is of no interest (Chen, 2012, p. 113).

In conclusion, everything opposes the culture of France to that of China, and this has an important influence on the difficulties of transferring knowledge as we have just seen. As many studies show, for countries that are opposed culturally on the individual or collective dimension and also on that of power distance, there are many problems with transferring

Table II Relative emphasis of different facets of knowledge by people in individualist and collectivist cultures

Dimensions of knowledge individualist cultures	*Individualist cultures*	*Collectivist cultures*
Simple versus complex	No distinct preferences for handling either simple or complex knowledge	
Tacit versus explicit	Explicit	Tacit
Independent versus systemic	Independent	Systemic

Source: Bhagat *et al.* (2002, p. 209)

knowledge (Li *et al.*, 2014). The Chinese are centred on tacit knowledge and France on explicit knowledge.

2.2.2 The organizational obstacles to the circulation of knowledge. The partners are of two natures – public actors and private actors who follow different logics: a logic of public service and a logic of profit. The question of the production and circulation of knowledge between the two sectors has been the subject of an abundant literature. This theme has been treated by economists around the issue of knowledge as common or private property (Cassier, 2000; Cassier and Foray, 2001). A literature has developed to deal with the issue of the obstacles preventing knowledge from passing between the public and private fields (Boyne, 2002). In addition, there is a convergence between the public and private sector – which diminishes the obstacles to the transfers of knowledge (Lawton and Rose, 1994). Health is a special sector, as it is a field in which research can easily be made to bear fruit. The actors circulate easily between the public and private spheres (Magnier-Watanabe and Senoo, 2010).

3. Controversies description at the heart of the cooperation project

We work on a case study (Yin, 2009), in grounded theory perspective (Glaser and Strauss, 1967). This is a collective action, i.e. a private – public co-operation project, between France and China in the health sector, during five years. From a reflective practitioner's point of view (Schön, 1983), we take a fresh look at the modalities of a partnership in which one of the authors participated for five years as a mediator. This reflexivity is also based on different materials that have been produced during this collective action (notes, official documents, audio recordings, etc.). We have listed our fieldwork data and materials in Figure A1 (Table III). We produce a narrative of this collective action by mobilizing the theoretical framework proposed by Latour (2005).

We will borrow the approach of Bruno Latour to present the course of the collective action of cooperation. In his 2005 work, Latour clearly presented his methodology for describing a collective effort, which strikes us as being particularly relevant. It amounts to a theoretical framework that allows the singularity of the collective action to express itself. Latour follows the footsteps of Gabriel Tarde with regard to the nature of social issues. He seeks to apprehend social issues as a type of connection between elements that are not themselves social and, more precisely, "as a very peculiar movement of re-association and reassembling" (Latour, 2005, p. 7). It amounts to setting as an objective the monitoring of

Table III Field materials

Material no.	*Material description*
Archive 1	The project report by Y 11/2006
Archive 2	The email exchange by T 04/2007
Archive 3	The mission report of China by J 06/2007
Archive 4	The mission report of China by C 06/2007
Archive 5	The email exchange between the French 05/2008
Archive 6	The email exchange to J 06/2008
Archive 7	The mission report of China by T 06/2008
Archive 8	The email exchange to T 07/2008
Archive 9	The email exchange to T 02/2008
Archive 10	The email exchange with French diplomats in China April-June 2008
Archive 11	The file of the European funding May 2008
Archive 12	The mission report of China by T 06/2008
Archive 13	The call meeting note 10/2008
Archive 14	The consortium agreement 03/2009
Archive 15	The PowerPoint program presentation 03/009
Archive 16	The letter of intent to H 03/2009
Archive 17	The letter of intent to X 03/2009
Archive 18	The exchange mail of two parties 05/2009
Archive 19	The signed subcontracts 06/2009
Archive 20	The exchange mail of two parties 06/2009

"The purpose of this article is to study the obstacles to knowledge transfer between organizations belonging to different cultures by making use of the SECI model."

associations between human and non-human elements that provide a certain consistency or togetherness within the framework of a collective effort. It is the forms of socio-technical combinations that allow for an explanation of collective practices. These forms or methods of combination are never static. Therefore, great care must be taken in describing the story of these connections, paying particular attention to those human and non-human actors that actually have an effect. In the next section, we present collective action by identifying the human actors and the non-human actors (i.e. the objects and locations) that play an important role in this story. We also describe the controversies capable of explaining the socio-technical combinations that allowed for the "construction" of this collective effort. We have modified the names of places and the project's actors.

We investigate this collective action taking the form of a project of collaboration between private and public sectors between France and China in the health sector between 2007 and 2011. To describe this project, we follow the plot proposed by Latour (2005) by identifying the human and non-human agents that play an essential role in this collective action. In a first stage, this means identifying the agents who really do something in this story and, in a second stage, highlighting the links that are weaved between these various entities through the story of the controversies. In the description of this story, we position a succession of organizational knowledge spirals based on the four phases identified by Nonaka: socialization, externalization, combination and internalization.

3.1 The human and non-human agents

3.1.1 The human agents. We identified nine human agents who play essential agents in this collective action. The agents on the French side are Y, C, J and P.

- Y is a young Polytechnic Engineer, as well as a Doctor in Mathematics, who on returning to his native town CF, in 2000, founded a private enterprise S in the form of a limited company, specialized in the field of computing in the scientific sector. The company comprises about ten employees and has specialized in the health sector. The company is based on the campus GM where other French actors are located. His integration in the local networks would play an important role in the partnership possibilities with public and scientific contacts. He is the leader in this collaboration project between France and China.
- C, aged 50 years, is originally a doctor and was born in CF. After studying pharmacology, he became research director at a large French pharmaceutical firm. He joined the University of CF to become professor. He directs a clinical research centre (CIC – *Clinic Investigation Centre*) for testing new medicines with a score of co-workers. The research centre is based on the campus GM.
- J, Parisian in origin and about 50 years old, had his entire university career at CF on the campus GM. Today, he is Professor at the University of CF, a specialist in "hereditary cancer". He is Scientific Director of a Centre Anti-Cancer (CAC) on the campus GM, comprising some 20 researchers.
- P is about 40 years old from the town CF. He has a PhD in Pharmacy, and has become Senior Lecturer at University CF. As Vice-President of this university, he is the head of the service for applying the research at this university (V). He has invested financially in the collaboration projects between the university and enterprises. He directs a

six-person team based on the campus GM. He is the facilitator and is in charge of the interfaces between private and public logics.

Y, J, C and P know one another very well and often work together. All four work on the campus of GM – which makes setting up projects easy.

On the Chinese side: on the one hand, G, Z and P are three contacts for the first controversy who live in northern China, and on the other, H, W and X are three contacts for the second controversy who live in southern China.

G is 50 years old. He studied Medicine at University N but obtained his PhD in Radiology in Japan. Today, he has become Professor of Radiology at University N. He is the Chief Executive of the University Hospital of N.

Z, aged 40 years, is Associate Professor of University N. He is Cardiologist and the Head of the University Hospital of N's Scientific Department. He is G's right-hand man. He would act as the intermediary between the French partners and G.

P is 40 years old. He is Professor of Gynaecology at University N. He is in charge of the international relations of the University of N. He liaises with the Vice-Chancellor of University N for the project. P and Z work 50 km from each other.

As for southern China, three principal agents can be identified.

H, 40 years old, gave his thesis in Pharmacy at University S. He is Professor of Pharmacy and Dean of the Faculty of Medicine of S. He directs a centre of clinical trials at University S. He is quite familiar with the pharmaceutical industry of the province of GD.

W is 50 years old. He gave his thesis in Medicine at University S. He is Professor of Oncology at University S. He is Deputy Director of the Centre Anti-Cancer (CACS) of S but has his director's entire confidence. He has good relations with the Ministry of Health in China. W and H have known each other for more than 20 years: they received a part of their professional education together.

X is 40 years old. As the Head of the Breast Cancer Department, he is one of W's colleagues inside the CACS. He worked in scientific research in the USA for 10 years and has taken out many patents in his discipline.

Finally, we must present T who is a young holder of a master's degree in Finance in France. She is bilingual and comes from northern China. She lived in China for about 20 years and worked with a multinational company. She has lived in CF for six years. She would be recruited by Y to act as a mediator between the French and Chinese actors.

3.1.2 The non-human agents. On the French side, one place would play an essential role – the campus GM where all the French agents are based. Y and P are in the same building. C and Y are in two neighbouring buildings at 5 minutes' walking distance. Other places would have an important function in the project such as the reception room of the town-hall of CF where Y met T and proposed that they should work together and the meeting room of the Regional Council in which Y and T presented the project for the first time to the northern China elected representatives. Owing to the proximity between the actors they promote, the Chinese university campuses would play a role in both northern and southern China. Finally, Claude's laboratory on the campus GM

"It may be wondered whether the SECI is suitable for studying the role of cultural differences in the circulation of knowledge, given that this model is Japanese through and through."

> **"The cultural barrier is an obstacle to the transfer of knowledge and more precisely to knowledge conversion in the meaning of Nonaka."**

would also play an important role with the partners in southern China because it is where all the partners would physically come together for the first time. The computing solutions of Y that he developed for J and C with P's financial support are non-human agents that constitute the very subject of the co-operation: the three tools proposed enable the monitoring of the patients during clinical trials to be managed from start to finish. Numerous documents would take part in the advancement of the project. We have selected two:

1. The first is the proposal J made to the north China partners. This proposal was rejected.
2. The second manifested the agreement between the various parties through the signature of financial contracts concerning clinical trials in southern China.

3.2 Description of the controversies by means of the SECI model

We have identified two controversies that come one after the other within this collective action. For each controversy, we account for the knowledge circulation process by means of the SECI model. One was a failure, the other a success. We try to understand what hindered the knowledge conversion in the first case and favoured, on the contrary, the expansion of the knowledge in the second. The first was concerned with the conditions in which the project was set up and reports on the first meeting between the French and Chinese partners. The French put forward a proposal that the Chinese categorically rejected, as it was based on a one-way conception of the co-operation. A conception that is inacceptable in Chinese culture in which every collaboration agreement has to be strictly balanced. The second controversy was a success because it progressively integrated the cultural barriers on either side between France and China.

3.2.1 Controversy number 1: a one-sided collaboration that cannot succeed. Y had developed a computing solution for testing medical treatments on patients in collaboration with J and C in the framework of a European financial plan. This computing solution consists of three tools – CDE, SGIL and DSE – for recruiting the patients, for collecting and then monitoring their characteristics during clinical trials and establishing results. Y wanted to try to sell these products in China. He took advantage of a journey organized by the French and Chinese ministries of foreign affairs to develop the commercial and technological relations between the two countries. He was one of the hundred young French entrepreneurs chosen to spend a week in China to identify markets in Peking and Shanghai.

3.2.1.1 Spiral number 1: the genesis of the project.

3.2.1.1.1 Socialization: Y leaves on mission to China. Y met representatives of the Chinese pharmaceutical industry, the scientific advisors of the embassy of France in China, and Chinese investors and students. He became aware of the following:

- the absence of relations between France and China to exchange technologies. The Chinese directors of pharmaceutical industries did not know how to market their medical products in Europe. The French could not find an infrastructure of international standards to test their medical products and sell them in China;
- the Chinese population is ageing and suffers from the pathologies of old age such as cancer: there is a real market for health opening up in China; and

- to take part in the Chinese networks, Chinese staff skilled in economics, finance and marketing and perfectly bilingual in Chinese and French would have to be recruited [Archive1].

3.2.1.1.2 Externalization: Y drafts a note following his journey to China. Once back in France, Y drafted a note to sum up what he had discovered during his mission to China. He developed the three points mentioned above [Archive 1].

3.2.1.1.3 Combination: Y drafts a note following his journey to China. Y confronted what he knew about the situation in China with the campus GM's existing health resources and shared his thoughts with C and J. Y convinced C and J to set up a project to transfer technology to China. C could guide the Chinese pharmaceutical companies through the process of having their medical products validated in Europe. He could duplicate the system he had set up in France in China [Archive 1]. As for J, he had developed a hereditary diagnosis for oncology. This technique enables the expression of DNA to be analysed to identify families at risk from cancer. It provides better monitoring for persons at risk, helps cancers to be detected earlier and optimizes treatments. Y suggested that J should set up a hospital partnership to transfer this technology to China.

Y was convinced that to start the project, it was necessary to recruit a Chinese person fluent in French. During the reception by the municipality of C of a municipal delegation from northern China Y met T, who had just finished her master's degree in Finance in France. Being bilingual, she was acting as interpreter at the town hall in discussions with the Chinese. Y presented the project to T and proposed to recruit her. Y arranged a financial packet with P and the municipality of C to finance T's position.

3.2.1.1.4 Internalization: the project has to be proposed in China. Working at the town hall, T had the opportunity of presenting the project to a Chinese delegation from a province in the north of China. T prepared a written version of the project that Y validated and which she translated into Chinese to distribute to the Chinese elected officials. On the big day, Y and T presented the project in French and Chinese in the meeting room of the regional council. The Secretary General of the Chinese Province then declared: "your project is very interesting; come and visit our universities and hospitals and present your project" [Archive 2]. Y and T gave this invitation a favourable reply so as to be able to go and test the reactions of the Chinese on the spot. It was important for C and Y to be part of the mission, but they could not afford to finance their journey. Y called on P as head of the research application cell to finance the mission.

3.2.1.2 Spiral number 2: the aborted discussion with northern China.

3.2.1.2.1 Socialization: J and C leave on mission to northern China. T mobilized the Chinese elected officials they had met in France to organize this journey to China. C and J presented their expertise before a score of Chinese doctors including Z who invited J and C to visit his hospital. They had every chance to meet the contacts they wanted.

3.2.1.2.2 Externalization: C and J draft their reports. J and C drafted their reports to sum up what they had learnt during this stay in China. J identified two main obstacles to this partnership: the Chinese legislation prohibiting human biological samples from being taken out of the country, and he did not feel the Chinese were ready to commit themselves to a win – win approach [Archive 3]. As for C, he learnt that there was a "quite noticeable difference in technical resources and competences between regional and national

"In the light of the cultural differences between France and China it is not surprising that the 'originating ba' is the decisive factor."

structures". It was possible to put in place a clinical trial protocol in China. The Director of the University Hospital of N showed his interest in collaborating [Archive 4].

3.2.1.2.3 Combination: C and J combine the resources of the Chinese and French. C and J found that the University Hospital of N "seems to be a reliable contact" [Archive 3] and "showed a lively interest in collaborating" [Archive 4]. C was not available, and he delegated D, a doctor of the University Hospital, to go to China in his place. J, T and D returned to China in November to assess how the Chinese were performing.

J identified the following three possibilities for collaboration:

1. training in personalized treatment;
2. French organizational expertise in hereditary oncology; and
3. the French multidisciplinary organizational skills [Archive 3].

J acquired some new information: there are many rich families able to pay the costs of a hereditary diagnosis, and Chinese doctors do not know much about hereditary prevention. But Chinese patients can see its advantages [Archive 3].

In his proposal for collaboration, J combined the existing resources of the Chinese and French: the surgical services of the University Hospital of N recruit the patients; the Genomic Department of University N is well-equipped and has the staff qualified to make the hereditary diagnosis; J's team trains the Chinese staff, and Y transfers the information technology platform to the University Hospital of N [Archive 3].

D visited and met doctors and made a complete inventory of the functionalities of the University Hospital of N. Thanks to this assessment, C had an overall view of the University Hospital of N [Archive 4].

3.2.1.2.3 Internalization: G refuses the French proposal. J invited the Chinese to France. P cancelled this invitation twice without any explicit reason. The French analysed the cause as stemming from an unfavourable political context between the two countries in 2008 [Archive 5]. J maintained his June mission to China. A discussion was held with G. At first, G proposed buying the technology used by the CAC but without collaborating with the French. J explained to G that he would not succeed in using the equipment by himself [Archive 6]. If the French proposal was advantageous, G would like to come. J could not guarantee that the European subsidies would be paid. G put pressure on J to get a contract in July. J could not get the response of the European Commission. He sent the contract without The European subsidy. G refused the contract:

> I cannot understand why the CAC bills for the discussion time. This is not correct. When you come to China we pay for your accommodation and when we come to France we have to pay for everything!

G did not want to go on co-operating with the French:

> [. . .] your proposal is not correct; the two parties are not treated in the same way. Your technology is not unique; what makes it interesting is its software, but we are not prepared to pay for an annual licence [Archive 8].

3.2.2 Controversy number 2: multiple adjustments that allowed the success of the project with southern China.

3.2.2.1 Spiral number 3: the French decide to collaborate with southern China.
3.2.2.1.1 Socialization: the French meet the Chinese from southern China. T met a Chinese national governor who advised to "go to Peking, Shanghai, and Canton to make a reconnaissance on a national level" [Archive 9]. She transmitted this message to Y and P. Y proposed asking for a European subsidy to support this action. Y, P and J decided to prospect these three towns. T contacted the French consulates in these important cities. They travelled to BEI, HAI and ZHOU. But the discussions in ZHOU proved to be the most constructive. They discovered that the two other cities were saturated with co-operation projects [Archive 7]. On the other hand, they had to arrive in Canton with a precise project

[Archive 10]. The French drew up a partnership proposal: training for the Chinese in the European standards and implanting a clinical trial infrastructure to European standards in China. This proposal was put to H, the Dean of the Faculty of Pharmacy. He was interested by the project [Archive 11]. But they had to wait for the arrival of the new director, X, before going further [Archive 12].

3.2.2.1.2 Externalization: R analyses the situation and T drafts her report. T drafted the report by integrating the previous points of view and distributed it to the French [Archive 12].

3.2.2.1.3 Combination: the French analyse the failure of the first experience and change their strategy.

Analysing the failure with northern China, the French understood a one-sided transfer is unacceptable for the Chinese who feel they are in the position of "losers". They thought about making proposals for co-developing the information system, sharing intellectual property and creating a joint venture (JV) to market the results of their mutual research.

3.2.2.1.4 Internalization: the French decide to choose the southern group and contact it. C, T and H had a telephone meeting in September. They agreed on H coming to France in March and C going to China in June [Archive 13]. X had just taken up his post. J invited him to come to France in March.

3.2.2.2 Spiral number 4: the southern Chinese come to France and the two parties sign the co-operation agreement.

3.2.2.2.1 Socialization: the southern Chinese come to France. H came with W for a week in France. The French organized a press conference and a diner reception at the town hall. H was satisfied with the quality of the welcome given by the French. H and W presented their structures to J and C. Subsequently, they visited the French structures for two days in J and C's company. During the weekend, Y invited H and W for dinner in his home. The Chinese appreciated this moment of conviviality. Confidence was established on this occasion. X came by himself to France, a few days after H's return. He met J and his director. He went on to spend a whole day visiting J's laboratory. The rest of the stay was organised in the form of collective meetings.

3.2.2.2.2 Externalization: the actors agree on the programme of partnership actions. Y took part in the collective meetings. T permanently accompanied this Chinese delegation to collect their reactions concerning this future partnership. T discovered W and H could get a subsidy from the Chinese State. W would be the one really to decide how to use the fund. W was thinking of buying software for clinical trials. T transmitted this information to Y in real time. Y readjusted his arguments in the light of these new elements.

3.2.2.2.3 Combination: the actors conclude the partnership contracts together. At the collective meetings, C, Y and T presented the collaboration stages. C compared each party's standard operating procedure (SOP) to identify the difficulties facing the collaboration. C would train H and W's staff to standardize the SOPs. Both parties agreed to propose to the Chinese and French pharmaceutical industries to perform clinical trials following common standards [Archive 15].

On the last day, the actors concluded a plan of actions. In June, C sent his assistant to China to compare the SOPs. In August, H and W sent a pharmacist and doctor to France to learn the SOP. In October, Claude's team went to China to train H's and W's teams. In this way, the information system became part of the future contract. In addition, both parties decided to create a JV to meet the needs of their countries' pharmaceutical industries [Archive 16].

X's arrival was useful, as the discussions with J were finalized in partnership actions. J undertook to train X's staff. X would buy the appliances for effecting the hereditary diagnosis. Finally, J would install the information system to help with the analysis [Archive 17].

They agreed to draw up two distinct letters of intention for each of the partnerships [Archives 13 and 14]. The French actors participated in the drafting and transmitted the

documents to H, W and X who informed their managements. In May, the French signed the consortium agreement, grouping together the French entities who appointed Y as unique representative and signatory [Archive 14].

Y, H and W decided to sign the convention on 1 June. H received it and found the document complicated and the time limit too short. He proposed signing a memorandum.

Y and T returned to China to conclude the contracts. Y proposed the contents of the contract and discussed with H and W, who made their remarks and validated the technical part. W confirmed his subsidy had arrived and incorporated 200,000 dollars to finance the information system in this contract.

Y met X and ZH, the head of research and the right hand of the scientific manager of the CACS. X could not take the decision. ZH intervened and acted as the intermediary with the management. ZH insisted that a contract should be signed in the name of his director. The two parties decided to sign on 30 June when J would come to China [Archive 18].

The lawyer of University S wanted the forum for arbitration to be ZHOU, the law to be Chinese and the versions to be in English and Chinese. M, the lawyer of University CF, proposed Parisian arbitration and French law. L, M's Chinese assistant, convinced the University S to adopt HK as the forum and Swiss law, and only sign an English version [Archive 18].

M demanded the inclusion of the existing expertise that ZH wanted to list to avoid having to sign an amendment at a later date. The University S asked the contract to be signed in the name of the faculty of pharmacy. H wanted to replace the creation of a common company with a platform. The French accepted – on the condition that H be empowered by his chairman on the day. The French were unhappy with these last changes, and Y found it difficult to manage such a tense situation. The Chinese finally agreed to accept the notion of intellectual property in the text. On 30 June, the Managing Director of the CACS and J signed the two sub-contracts [Archive 19]. On the other hand, H did not have the power to sign the framework contract. It was finally signed in September in the name of the University S [Archive 20].

3.2.2.2.4 Internalization: the contract is put into effect with the arrival of the Chinese in France. C welcomed a doctor from W's team and a pharmacist from H's in his laboratory in the CIC between 2009 and 2010, and, in parallel, J welcomed a cancer surgeon and a doctoral student from X's team in his laboratory in the CAC. This collaboration continued with the perspective of implementing the collaboration.

4. Conclusion

The results of this comparative case study are very clear. The failure of the first controversy between French and Chinese partners was due to a deficit of "socialization". This absence of a prolonged situation of mutual presence of the various actors is what led the project for co-operation with northern China into a dead end. Y went once by himself to China for a week. J and C spent two days in China for their meetings with their Chinese opposite numbers. It was impossible to establish an "originating Ba" – a shared mutual context – *in situ*, between the various actors so as to become familiar enough with one another to bring the co-operation project to a successful conclusion. This difficulty in establishing a shared context in such a short time is connected to the cultural differences between France and China. France, as we have shown using the work of Hofstede (1991) and Bhagat *et al.* (2002), appears to be a country that is rather sensitive to explicit knowledge, unlike China which is centred on tacit knowledge. This difference forces the French actors wanting to initiate a co-operation with China to take a long time in exchanges and meetings with their opposite numbers. Moreover, the French actors had to meet their contacts in China. In addition, the French actors were able to experience the "masculine" dimension of a

negotiation with Chinese when the latter could not accept being in the position of a "loser". This deficit of understanding of Chinese culture during the socialization phase resulted in the failure of the first controversy with northern China. This underestimation of the tacit knowledge the French need to acquire in the socialization phase led them to propose something unacceptable to their Chinese counterparts. But for the French partners, this failure was to serve as a lesson about Chinese culture. This experience would not be wasted, as it would be used by the French partners to build a constructive dialogue that would lead to a success with southern China. Thus, the stages of externalization and combination are long and complicated. This is due not only to the multiplicity of partners but also to the fact that the Chinese are obliged to refer to their hierarchy to take decisions, and finally, they make no concessions in negotiation: they cannot be losers. But with the tacit knowledge acquired throughout the interactions, these situations can be untangled.

Our results converge with the literature. The cultural barrier is an obstacle to the transfer of knowledge and more precisely to knowledge conversion in the meaning of Nonaka. We have shown that Nonaka's model can be used to come to grips with this question, by posing the cultural and organizational obstacles as barriers to the creation of a shared context: a "Ba". In the light of the cultural differences between France and China, it is not surprising that the "originating Ba" is the decisive factor.

The issues relating to the public or private nature of the various partners do not seem to be obstacles to the circulation of knowledge. We are in a sector in which the results of public research can easily be applied by the private sector. Researchers circulate between the private and the public. This is the case of Claude who worked for a private laboratory for 10 years and then joined the university. X has registered many patents – which demonstrates the practical value of his research. Finally, the role of P should be noted, who had the important role of being the administrative and financial go-between in setting up the projects combining public and private partners. The cultural obstacle is more important than issues arising from differences between private and public logics. This should be related to the studies showing the convergence in the health sector between these two organizational logics (Cassier and Foray, 2001; Magnier-Watanabe and Senoo, 2010).

Notes

1. Here we recall Nonaka and Takeuchi's basic model (1995) be exploiting subsequent works such as the study "Managing Flow" (Nonaka *et al.*, 2008) and also the article written with Nonaka and Von Krogh (2009) in Organization Science, in which the notions of "tacit knowledge" and "knowledge conversion" are defined more precisely.

2. In the seminal work of Nonaka (1995) and Takeuchi discuss this issue in chapter 7 "Global Organizational Knowledge Creation". The authors recognise their basic model is constructed in a great ethnic and cultural homogeneity – that of Japan, and that adjustments are necessary in the context of a global economy. They see this cultural diversity as a potential to increase the variety the enterprise needs and as a source of competitive advantage.

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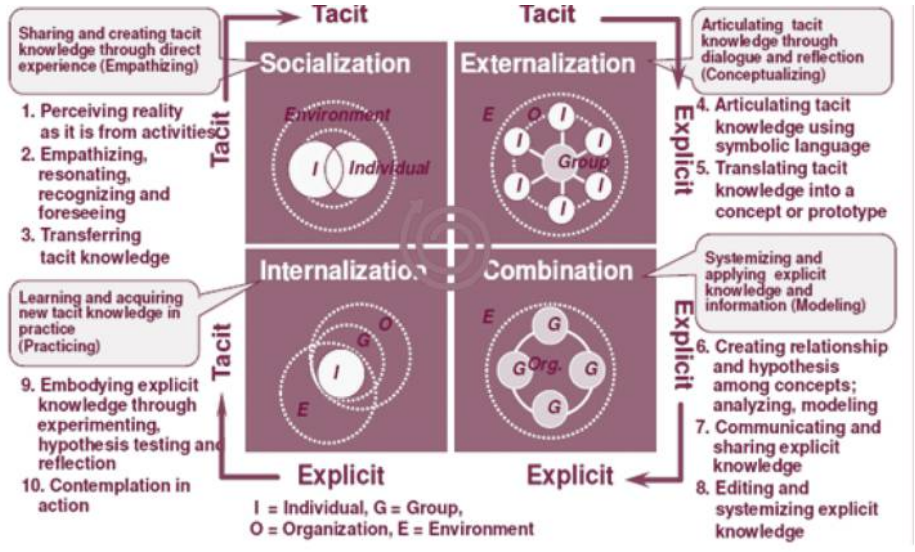
Appendix

Figure A1 The knowledge-creating process: SECI model



Source: Nonaka *et al.*, 2008, *p.* 19

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