

Passion and expertise

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Abstract

Most research in the area of knowledge acquisition and transfer has focused on cognitive, (inter-) personal, organizational, social, cultural factors that have an impact on knowledge initiatives, overlooking the significant role emotional factors such as passion play in this process. The paper argues that experts' degree of passion for, and attachment to, their expertise knowledge facilitates increase in knowledge acquisition and its transfer. To the extent that passion is an intrinsic motive, and since it is not amenable to management control and intervention, attempts at managing it may be counter-productive.

Introduction

In understanding the knowledge transfer process (henceforth KTP) and the factors that impact knowledge management outcomes, researchers in the area have emphasized different contextual aspects that have a bearing on the success or failure of knowledge transfer. Most important of these are: properties of the cognising unit (transmitter and recipient of knowledge), properties of the relationships between the parties involved in the knowledge transfer, and properties of the knowledge itself (Argote et al 2003). It is conventionally held that each of these dimensions impacts the knowledge transfer process. For instance, it is assumed that the extent to which knowledge is tacit or explicit (Nonaka 1994; Nonaka and Takeuchi 1995), causally ambiguous or unambiguous (Szulanski (1996), internal or external (Menon and Pfeffer 2003), complex, diverse, etc, plays a crucial role in the transfer process. In addition to the ability of individuals to absorb knowledge (Cohen and Levinthal 1990), their motivation and opportunity may also be a predictor of knowledge transfer outcomes. The organisational, social context provides individuals with opportunities that have a bearing on the process and outcome of KTP.

Although a significant body of research has flourished in the area of knowledge transfer, our knowledge of KTP is still limited (Argote et al 2003). Given the paucity of research providing empirical evidence of the association between informal social relations and knowledge transfer, more research is needed to establish the importance of informal networks in the process of transferring knowledge. In addition to social networks, other organisational features (such as the degree of centralisation or decentralisation) are expected to affect knowledge management outcomes (Sorenson 2003; Chang and Harrington 2003). Cultural factors, learning orientation of an organisation, and its values are also predicted to impact knowledge transfer outcomes (Weber and Camerer 2003). Towards increasing our understanding of the knowledge transfer process and context, the present paper seeks to add another contextual feature that has an impact on the KTP.

Namely, we argue that the (emotional) relationship between the transmitter (or the source) of knowledge and knowledge will have an impact the knowledge transfer process. More specifically, we want to show that the degree to which experts identify themselves in terms of their expertise, and are attached to that expertise, will be a facilitator in the KTP. In other words, experts' degree of passion for and attachment to their expertise facilitates the KTP. The more passionate experts are about their expertise, the more likely they are to be willing to transfer and share it with other members. From this perspective, KTP is not only a psychological, cognitive, social process, but it is also an emotional process.

Our empirical site is the oil exploration industry and the knowledge to be transferred involves the ability to interpret computer-based images representing geological structures of various layers of the earth with a view to identifying oilfields. Individual experts have developed a tacit form of know-how over time that enables them to recognise and see underlying patterns in these images that indicate the presence or absence of an oilfield.

Because mistakes in this industry would cost hundreds of millions of dollars the company's continued expansion and survival are dependent on the timely transfer of expertise to younger generations, as described subsequently in this paper.

The argument in this paper will unfold in the following way. The next section provides a brief account of extant literature on knowledge transfer, pointing out the significance of the relationship between expertise and experts. How experts view their expertise and the degree of their devotion to their field of expertise is shown to play a significant role in the transfer process (Section 3). Section 4 will be devoted to a presentation of empirical material that constitutes the basis of our analysis and interpretation (in Section 5).

Finally, conclusions and theoretical as well as practical, implications are drawn.

1. Transfer of expertise knowledge

Research in the area of knowledge transfer has identified a set of factors that impact knowledge stickiness (Szulanski 1996), that is, the difficulty of transferring knowledge.

As noted above, some of the factors that impact the KTP involve the nature of knowledge itself, the characteristics of cognizing units (source and recipient), and the social relationship between them and the organizational context (Argote et al, 2003). In these terms, absorptive capacity (Cohen and Levinthal 1990), which is a property of the recipient unit, has proven to be central given its relation to an individual's prior knowledge and their experience. Experience is found to shape individuals' abilities to absorb, learn and transfer knowledge. By associating new ideas with prior knowledge, individuals can more easily internalise new knowledge (Argote and Ophir 2002; Ingram 2002; Schulz 2002). For instance, it is assumed that somewhat diverse experiences appear to be more beneficial for learning than either identical experiences or very different experiences (Schilling et al 2003). How does the extent to which an organisation is a specialist or generalist affects its ability to learn from experience. According to Ingram and Baum (1997), specialists that concentrate in a small number of geographic areas are more likely to learn from their own experience than generalists operating over a larger area. Specialists are more likely to learn from diverse experiences than generalists.

Sorenson (2003) finds that vertically integrated firms learn more from their experience in turbulent environments than their non-integrated counterparts.

With regard to the characteristics of the social relationships in which the teacher and learner are embedded, researchers have for instance pointed out that an arduous relationship between teacher and learner increases knowledge stickiness (Szulanski 1996). By contrast, a trust-based relationship will tend to facilitate the transfer and flow of knowledge among individuals (Collins 1985). Two approaches can be discerned (Argote et al 2003): 1) the nature of the dyadic relation between teacher and learner, such as intensity of the connection, communication, or contact frequency and 2) social similarity (Uzzi and Lancaster 2003; Song et al 2003). According to Uzzi (1997) strong ties involve a relationship that supports the transfer and sharing of knowledge. A spirit of cooperation and reciprocity generates a knowledge-sharing context. Work contexts can help generate social relationships that leverage individuals' ability and chances to learn, share and retain knowledge. In this connection, research has identified two approaches.

The first one, the dyadic relation, is concerned with understanding how the closeness or strength of relationships between the source of knowledge, teacher or expert and learner or novice are crucial for the effectiveness of knowledge management practices. As Uzzi (1997) suggests, strong ties create relation-specific heuristics that facilitate the transfer of knowledge. By the same token, Hansen (1999) indicates that strong ties enable the transfer of complex knowledge.

However, despite these new insights, Argote et al (2003) note that there is a need to further investigate how the degree of asymmetric relations between individuals affects the learning outcomes. Topics relating to other features of the relation that are potential subjects for exploration involve the degree of trust between the parties. For example, McEvily et al (2003) reveal that the level of trust affects the degree of knowledge disclosure, screening and sharing between two parties. Trust is meant to reduce the degree of concerns about knowledge appropriation and misuse (Argote et al 2003).

Moreover, trust is posed to increase the veracity of knowledge, thereby facilitating its acceptance by the members involved.

1.1 - Extrinsic vs. intrinsic motives and knowledge transfer

No doubt, organizational and cultural aspects also play a crucial role in KTP. For instance, rewards and incentives can impact knowledge management outcomes, for it is presumed that individuals are less likely to transfer and share knowledge if they are not rewarded for the knowledge transfer (Menon and Pfeffer 2003). This calculative behaviour has been couched in terms of extrinsic motives (such as monetary rewards), which is at the heart of economic theory. The economic approach is at odds with the behavioural view of organization, which emphasizes intrinsic motivation. Intrinsic motivation questions the old mantra to “run a business as if it were a set of markets”.

Intrinsic motivation is presumed to lower transaction costs and foster trust and social capital (Osterloh and Frey 2000). Whereas extrinsic rewards (the hallmark of market mechanism) can take the form of recognition, increased responsibility, advancement, better supervisory relations, better peer relations, increased pay, or job security (Dermer, 1975), intrinsic motivation involves the undertaking of an activity for the immediate satisfaction of one's needs (Osterloh & Frey, 2000). Intrinsic motivation ‘is valued for its own sake and appears to be self-sustained’ (Deci 1975, p.105, quoted by Osterloh et al. 2002, p. 64). Intrinsic motivation can be directed 1) to the activity's flow - for example reading a book, 2) to a self-defined goal - for example climbing a mountain, or 3) to the obligations of personal and social norms of their own sake - e.g. benevolence, identity, norms of distributive fairness and procedural fairness (Osterloh and Frey 2002). Intrinsic motivation is fostered by commitment to the work itself, which must be both satisfactory and fulfilling to the employees (Dermer, 1975). Therefore, the ideal incentive system is in the meaningful work content itself (Osterloh and Frey, 2000).

One of the pivotal features of markets is to exploit the advantages of price mechanisms by making transparent the exchanges between actors or departments and the rewarding systems. This economic view has come under criticism by proponents of the resourcebased view of the firm who contend that firms do indeed opt for non-market coordination mechanisms when these are perceived superior to market mechanisms (Rumelt et al 1991). And rather than emphasizing a strategy based on ‘governance structure’, adherents of the resource-based view maintain that knowledge is the most strategically important resource. In this regard, the literature makes a distinction between explicit and tacit knowledge (Polanyi 1966; Nonaka 1994) - a distinction which is crucial because of the transferability and appropriability of explicit knowledge, as opposed to tacit knowledge which is acquired through learning-by-doing, difficult to transfer, to trade and valorise.

Because it is elusive, hard to pin down and difficult to imitate, it is regarded as a source of competitive advantage. To the extent that it is difficult to measure and value an individual's contribution in terms of tacit knowledge and reward them accordingly, the question of what motivates individuals to share and transfer their tacit knowledge has become relevant.

An understanding of motivation in intrinsic and extrinsic terms focuses on the relationship of the psychological disposition of the individual and the nature of the tasks under consideration. In their study of expertise knowledge transfer Osterloh and Frey (2002) found that there is a relationship among the form of motives, organizational forms, and the form of knowledge (whether tacit or explicit) to be transferred. In a nutshell, experts working independently would tend to value their hard-won expertise very dearly and would be extrinsically motivated. By contrast, experts working in teams would tend to view their expertise as dispersed and shared, thus their motivation is likely to be intrinsic. It is thus claimed that intrinsic motivation is necessary in connection with creative tasks, whereas extrinsic motivation is sufficient when individuals tend to produce stereotyped, repeated tasks that already exist (Amabile 1996; Osterloh and Frey 2000). In the same vein, it is suggested that “intrinsic motivation enables the generation and transfer of tacit knowledge under conditions in which extrinsic motivation fails” (Osterloh and Frey 2000: 540). What assumptions make intrinsic motivation more suitable for the transfer of tacit knowledge?

1.2 - Expertise knowledge

Although there is no consensus on the meaning of expert and expertise (Huber 1999), research in psychology frames experts in terms of intrinsic characteristics: persons with special knowledge or capabilities. From the sociological perspective, experts stand for specific qualifications and status, with individual differences being irrelevant (Mieg 2001). From this social perspective, Agnew, Ford and Hayes (1997) suggest that the minimum criterion for expertise is to have a reasonably large group of people consider the individual an expert.

However, research has mainly focused on psychological, cognitive features of experts. Studies of chess masters indicate simple intelligence has no significant correlation with chess mastery (Hulin et al 1990). Rather, there are more complex factors at work, relating to how players store information, perceive problems and generate solutions (Ceci & Liker, 1986; Chase et al., 1973; Taylor, 1975). However, one finding in these studies is that, as expertise increases, mental representations become more abstract (Hinds et al 2001). Gauthier & Tarr (1997) concluded that the downward shift in the level at which an object is first identified has become one of the behavioral hallmarks of perceptual expertise. Hence, for Hinds, Patterson & Pfeffer (2001), abstraction and articulation of knowledge are significant features of expertise: "Experts can be expected to use more abstract concepts and demonstrate a more advanced understanding of the domain when articulating their knowledge" (page 1234).

Yet these two features are not sufficient to define expertise. According to Ericsson & Lehman, one of the necessary, though not sufficient, requirements for acquiring expertise is extensive, deliberate practice (Ericsson & Lehman 1996). Deliberate practice is defined "as the individualized training activities especially designed by a coach or teacher to improve specific aspects of an individual's performance through repetition and successive refinement" (Ericsson & Lehman 1996: page 278-279). It is not the capabilities of persons which enable people to become experts, but it is the extended intense practice which causes physiological, anatomical, and even neurological adaptations in the body (Ericsson & Lehman 1996). Not surprisingly, additional research has shown that deliberate practice can be moderated by inherent enjoyment in the activity to predict the acquisition of expertise (Ericsson & Lehmann, 1996; Sloboda et al. 1996).

In addition to abstraction and articulation of knowledge, experience is another major feature of expertise. The term "expert" is derived from the Latin root "expertus" which is an adjective denoting experience in and with something (Smith, 1991). In their study of the difference between expert and novice, Tanaka, Curran & Sheinberg (2005) consider that: "an obvious difference between experts and novices is that experts have greater exposure to objects from their domain of expertise than do novices" (page 145). Hinds, Patterson & Pfeffer (2001) consider experts to be those with both knowledge and experience in applying this knowledge to a variety of problems within the domain.

Hence, expertise comes with experience and with the acquisition of tacit knowledge in the domain (Polanyi 1966). Expertise involves using one's abilities to acquire, store, and utilize at least two kinds of knowledge: explicit knowledge of a domain and implicit or tacit knowledge of a field (see Sternberg et al., 1999).

Expertise knowledge is tacit and, for experts learn-by-doing (Greeno & Simon 1998). For Mieg (2001: p. 2), "Experts in the literal sense are experimentalists: they know from active, reflexive experience". It is therefore conventionally held that a minimum of ten years of experience is necessary for becoming expert. In the psychology literature, it is called "the ten year rule of preparation" (Ericsson & Lehman 1996: page 278). Foley & Hart (1999: page 234) sum the different definitions of an expert in the following way: "someone who has attained a high level of performance in the domain as a result of years of experience".

1.3 - Passion and expertise

While most studies of expertise have lionised psychological and cognitive features of experts, emotional aspects have been absent from the discussion. When passion is mentioned, it is depicted as an uncontrollable force that leads to undesired consequences.

It is often associated with envy, vengeance, violence and even madness (see Foucault 1977). It is left out from the economic and management accounts, in favour of a form of extrinsically-based reward system which makes it easier for them to control employees' performance (Osterloh and Frey 2000). It is feared that passionate experts may be propelled by the immediate satisfaction they derive from the performance of their tasks without much regard for the long-term goals set up by the company. In this connection, Hirschman (1977) shows how uncontrolled passions are generally checked by economic interests.

However, in this paper we argue that passion is a key feature of experts. Experts are characterised by a constant search for the unknown and passion sustains their efforts in times of failure and pushes them to strive beyond present understanding. This is the domain of emotional involvement that explains an individual's determination to explore uncharted intellectual territories and probe for new perspectives with the type of enthusiasm and commitment that lie at the heart of passion for understanding the dynamics of human behavior.

The pursuit of expertise and intellectual challenge is an adventure that is driven by curiosity about discovering new ways of learning, doing, and being (Durkheim 1884).

Curiosity about discovering and learning new things is a permanent, recurrent and insatiable thirst for learning (Durkheim 1884). If curiosity motivates the search for the unknown, passion translates curiosity into action (Hegel 1830). In like manner, for Kant (1797), curiosity - as an insatiable desire to learn - is not enough, for passion for knowledge is necessary in order to mobilize one's energies, requiring as its means enduring commitment to one's intellectual and professional progress.

The first suggestion of this paper is that expertise is a form of tacit knowledge that is acquired through years of practice. As such, it requires, for its sustenance, a fairly high degree of emotional investment on the part of the individual. The second suggestion is that individuals' attachment to their expertise is a predictor of its transfer. Notably, the more passionate experts are, the more intent they are on transferring their expertise to younger generations. In the next section, we will first make a depiction of the empirical context. At a second step, we show how experts and non experts view expertise. At a third step, we show how the experts under consideration link their perceptions of what it means to be an expert with their willingness to transfer that expertise to novices.

2. Oil explore: a case illustration

As noted above, our empirical site involved an oil company, fictitiously referred to as Oil Explore. The empirical material was elicited from 20 interviewees at Oil Explore. We interviewed 7 geo-science experts (with more than 15 years of experience), 3 specialists (senior researchers, future experts, more than 10 years of experience) and 10 novices (less than 3 years of experience). The informants have different nationalities: French, Algerian, Angolan, English, Iranian, Lebanese, Dutch, Nigerian, Norwegian, Russian, and Spanish. Interview times ranged from 50 to 120 minutes: average time was 60 minutes and the total interview time was 20 hours. During these interactions with the experts we focused our

questions on how they define and relate to their field of expertise and what motivates them to readily and willingly transfer their expertise to younger generations. In order to know about the perspective of the novices, our questions to them revolved around the transfer process and, according to them, the requirements for an effective knowledge transfer process.

Oil Explore is one of the four largest oil companies in the world. With operations in more than 130 countries, it engages in all aspects of petroleum industry, including “upstream” (oil & gas exploration, development & production) and “downstream” operations (refining, marketing, trading and shipping of crude oil and petroleum products). Oil Explore also produces chemicals (petrochemicals and fertilizers), chlorochemicals, intermediates, performance polymers and specialty chemicals for the industrial and consumer products. The company employs 112,877 people and its sales are approximately 194 billion dollars. The net income was about 17 billion dollars for 2005 and 66% of the net income comes from the “upstream” oil and gas exploration.

There is an increasing demand for Oil Explore's products, especially from emerging markets such as China and Brazil. For the next thirty years or so, demand is expected to grow by more than 30%. The price of oil and gas is increasing, essentially due to the growing demand and the geopolitical instability. Significant production and reserves are located in politically, economically and socially unstable areas, including South America, Middle East and Africa. In the short term, the main challenge is to extract and produce as much as possible. In the long run, the profitability will depend on cost-effective discoveries and the development of new reserves. The strategy of the company is “organic growth” and its competitive advantage is based on the ability of its geoscientists to discover new reserves in as efficient a manner as possible. As a consequence, the company is very dependent on the long-term knowledge of its experts; the knowledge that is internally accumulated through years of experience. The life cycle of this expertise is fairly stable over a time span of about 30 years or even more. Within the strategic geosciences department, where the study takes place, geo-physicians, geologists and reservoirs engineers are knowledge workers. Their work can be described in the following way: First, geo-physicians develop models for describing the reservoir (i.e. descriptive study). Second, geologists analyse why and how the reservoir is formed the way it is (i.e. explanatory studies). Finally, the reservoir engineers estimate the richness of the reservoir, i.e. predictive studies. If the wrong decision is taken - such as digging a well that proves unproductive - the company will incur a loss of around \$140 million.

Given the high stakes involved in these decisions - decisions which can only be informed by expertise knowledge – transfer of expertise is a central issue in the company. Add to this the fact that more than 30% of those “priceless” experts will retire in the next 5 years.

In this field, expertise is acquired through decades of practice and learning by doing. In the face of imminent mass retirement, the company is undertaking a number of training programs. Training does not solve the whole problem given that the knowledge in question is tacit and thus cannot be easily transferred to newly recruited novices overnight. To these ends, the department under consideration organizes work processes in project-based and cross-age teams. In their concerted efforts to transfer knowledge to newly-minted engineers and scientists, experts are taking a leading role, assuming the responsibility for teaching, transferring their expertise and guiding the novices.

2.1 - Passionate experts

Experts are recognized as experts and given that status by their peers, and not necessarily recognized as such by the company – partly because the company does not want to make them salient for fear they will be identified and sighted by competitors. In defining what they mean by expertise the interviewees say that: “Expertise is a body of know-how that is accumulated during years and years of experience. Even if the company organizes some formal training sessions and programs, this kind of expertise can only be learned through interactions and joint efforts between novices and experts. An expert is supposed to have treated so many cases involving the interpretation of seismic images that he will not take much

time to suggest the solution". The suggestion is that speed in making the adequate interpretation of a given image is a crucial feature defining what an expert is.

The claim is that experts have seen so many images before that they automatically reach the right solution in a swift fashion. Novices seem to appreciate this speedy help from experts.

Another feature emphasized by the interviewees is that curiosity is one of the prerequisites for becoming a true expert. NK summarizes his understanding of what an expert is: "When you are an expert, in general it is because you invested many years into your work, and for that you need to be curious about learning new things the whole time.

To become an expert, curiosity is necessary because it enables you to develop an inquisitive and investigative mind." AM, one of the informants we interviewed, describes why he has chosen to be a geo-scientist in the following way: "I had this 'sweat' taste for discovery and exploration: I always wanted to find the solutions that others couldn't... I just like discovering." One is motivated in his work as long as they are curious about his field of study. FO supports this view point: "The willingness to exert one's self and the curiosity towards one's job are requirements for becoming an expert. Of course, we should not forget social recognition and job satisfaction as further factors that determined my decision." VM defines job satisfaction in terms of satisfaction of his curiosity to learn: "I take pleasure in learning in order to satisfy my curiosity; if I cannot satisfy my curiosity to learn I am not happy with doing my job." GM who is a geo-statistician, what motivates him in his work is "curiosity to learn, to understand and to think, it is an inner drive that sustains [his] thirst for learning." AK adds, "When I was a kid I liked to disassemble my toys because I was so curious about what was inside them and how they worked... this is why I became an engineer." GM said more or less the same thing: "My wife is often complaining that I cannot take my mind off my work, because even when we are on holiday, such as when climbing a mountain, I would stop and examine the stones and rocks that look unfamiliar to me." For PJ, a former research director, and currently in charge of the geo-science training department, "the ideal expert has more than curiosity. S/he also needs to be passionate about the objects of their knowledge.

Because this form of knowledge can only be learned by doing and through many years, one needs curiosity, enthusiasm, passion and humor." GM adds, "A true geologist has a certain relation, a physical, but not a sexual one, with stones: s/he would touch it, feel it, smell it and sometimes lick it in order to come closer to it."

2.2 - The passion for learning implies a passion for transferring that learning

So far in this discussion three key elements seem to emerge. First is the cognitive dimension of expertise. It is a form of knowledge that is tacit and can only be learned through doing. Second is the social aspect: experts define expertise in terms of their ability to share it with, and transfer it to others. Transfer of expertise is linked to the very essence that constitutes expertise. DB, specialist in uncertainty assessment supports this view point: "To have expertise without transferring it, is nonsense." Because expertise is an attribute bestowed on experts by others it can only manifest itself in social acts of sharing and helping others solve concrete problems. Without sharing and transferring, an expert would not be recognized as such. This is the emotional horizon of expertise. In this sense, expertise is related to the emotional commitment experts invest in their knowledge.

They regard enthusiasm, curiosity and passion as intrinsically-bounded elements of expertise. Becoming an expert is a lengthy and painstaking process which cannot be actualized without emotional investment and passion.

When we asked the experts about how they view process of transferring their knowledge to younger colleagues we were surprised to learn that for them transferring knowledge is a process of learning, or rather co-learning. For NK there is no distinction between knowledge transfer and knowledge creation:

“You are neither a source only, nor just a recipient, you are both, that is, a knowledge creator...it is when you are discussing with somebody you are engaged more in a process of knowledge creation process rather just a transfer process...you cannot learn alone, it makes no sense.” MS seconds that view: “When you work with someone else, you always learn something.”

For this reason, they even claim that knowledge transfer requires curiosity, enthusiasm and passion. As contended by MS, curiosity has an impact on the acquisition of knowledge, but also on the transfer of knowledge: “What motivates experts is this permanent thirst for learning, this willingness to learn but also to share.” AM adds that “If you are curious, if you like to discover, to share your knowledge with others it enables you to discover new knowledge.” Even though experts see transferring knowledge as part of their daily tasks, they do recognize that the novices often beat experts as learners.

In other words, they described the process of transferring their knowledge along the same lines as the processes that define obtaining the knowledge. As noted by MB, being an expert is “a constant search for the unknown; you are compelled to learn new things every day, and since being an expert means that you spend most of your time transferring and sharing your knowledge, you are bound to learn from these exchanges with others.”

The practice of being an expert implies working with others and it is from those practices that experts learn. To the extent experts learn while interacting and exchanging ideas with others, their passion to learn is their passion to transfer their knowledge. For JLB you need “enthusiasm to touch people where they are sensitive... it goes beyond the rationality, it is not related to cognition, although it deals sometimes with how certain technologies function.”

Over and above the cognitive, social, and emotional features framing expertise, our informants see their expertise as an institution in its own right. As noted above, the informants view the transfer of expertise as a key element of being an expert, as one of the expert’s daily tasks, AM says that: “I consider transferring knowledge fundamental to the sustenance and survival of our profession; and if we fail to transfer it, we would not measure up to our profession.” In a sense, by transferring their knowledge, experts believe that they expand the field of their expertise. AM says that “the fact that I am not going to stay here for long, I want to see my expertise transferred back to my company, I do not want it to go to waste. Since it is my profession and since it will not have much utility for me personally, I want to pass it over to other generations who can sustain it and develop it. The worst scenario I can imagine is to see it wither away after I leave this company.” NK elaborates on this point by saying that “when you are passionate about something, you want to make it concrete and objectified so it will lead its own life.”

When a departing “expert transfers his knowledge, he takes part, at a small or big scale, in the process of enriching his field of expertise” (NK). FC sees this feeling of contributing to this stock of collective knowledge as “a very strong motivator for transferring his knowledge.” AM even goes as far as saying that “because my expertise doesn’t belong to me, I am lucky to possess it, because I have stayed in this profession all my life, gathered everything I wanted to know during these years, and therefore it would be a big loss if this know-how would disappear after I retire.”

What seems to emerge from our interviews with these departing experts regarding knowledge transfer is that they are intent on seeing their expertise live on and be transmitted to younger generations. Although they see that rewards and incentives are crucial, they regard the transfer of their expertise as part of their daily practices. They have invested so much in this expertise that they want it to live its own life. Although our informants emphasize the significance of learning by doing (the cognitive side of expertise), they also put a premium on emotional drives (enthusiasm and passion) as motive for transferring it. Of course enthusiasm and passion are not enough, expertise has to be proven, manifested through practicing it, and manifested through sharing it with others. Sharing is the social aspect of expertise.

3. Discussions and implications

In our theoretical elaboration we argued for the case of passion in acquiring and transferring expertise. Similarly, our exploratory interviews suggest that expertise and passion are intrinsically-bound and that the passion that motivates experts to acquire their expertise serves as a motive for them to transfer it and to see it expand after they retire.

By integrating the conceptual framework underlying this paper with the interview findings it is possible to explore some propositions.

3.1 - Propositions

In what follows, we develop three types of propositions. First, we begin with propositions related to the nature of expertise itself. Second, we proceed to emotional features pertinent to expertise. Finally, we turn to the question involving the tension between economic, extrinsic, exchange value-based motives, and intrinsic, learning-driven motives.

3.2 - Expertise, dialogue and speed

Theorists in knowledge management usually make a distinction between knowledge acquisition and knowledge transfer. Our study tends to suggest that expertise is relational; that is, it is a quality that is bestowed upon someone who discloses during problem solving interactions with peers. Such interactions are not only opportunities for experts to transfer their knowledge, but also occasions for them to learn from each particular case they encounter. As Agnew, Ford and Hayes (1997) suggest, the minimum criterion for expertise is to have a reasonably large group of people consider the individual an expert.

Thus, proving expertise means that its disclosure and transfer are sine qua non. Because it is made manifest through discussion, expertise is a dialogical, not a monological, form of knowledge. It is nurtured and fostered in dialogues among groups rather than an individual, intellectual pursuit. Assuming its dialogical nature, expertise is a form of knowledge where learning and transferring knowledge are parallel; the two processes are conflated.

This discussion enables us to put forward the first proposition: *Expertise knowledge is dialogical in the sense that it involves an interplay of learning and transferring knowledge.*

If experts are also learners, what distinguishes them from novices? From the interviews, it seems to emerge that respondents have placed great emphasis on the speed with which experts can come to a solution and help them in their work. Speedy problem-solving abilities seem to be a factor that distinguishes experts from non-experts. According to informants, experts in the past have dealt with many cases and solved many problems.

As a result, when they now encounter a problem they immediately recognize the solution, and without wasting time, they are able to jump to the conclusion and reach a decision intuitively and swiftly, whereas a novice would get stuck in the details attempting to proceed rationally. When they turn to experts for help, novices expect prompt suggestions and solutions to their questions and inquiries. Expertise is not only to be revealed, shared and transferred but should be disclosed and shared in a quick and timely fashion.

Thus, our second proposition is: *a key feature of expertise is that it is made manifest in a speedy and timely fashion.*

3.3 - Passion, space and time

As noted above, our interviewees have emphasized the key role of passion, enthusiasm, and personal investment. Because becoming an expert is a process that evolves over a long period of time, it requires passion to sustain it and animate it. Beyond the relation between expertise and temporality, the informants converge on the idea that this commitment to an expert's field of expertise spans the confines of the workplace. In their eyes, being an expert is something they carry with them to their private homes or to the place they visit on holiday, such as when they are on an excursion climbing a mountain, or during the weekends. Experts' motives are constantly in operation, whether at work or in their leisure time. Hence, these motives driving the individuals operate beyond the formal boundaries of the workplace and outside working times.

Proposition 3: *Because of their timelessness and space-lessness experts may not be amenable to the control of market mechanisms.*

3.4 - From instrumentality to finality

In such spheres, the dominant logic is not exchange value; experts' activities are not understood in terms of the logic of 'in order to obtain a price' for their work. It is not prices that propel them to pursue intellectual challenges. The motives underlying their commitment are not governed by the logic of instrumentality. Their commitment is not a means to an end, but is an end in itself. This is the logic of finality, rather than instrumentality. This is a regime governed by prizes, rather than prices. Whereas prices speak the language of instrumentality, for exchange value, prizes belong to the realm of finality - performing an activity for the pleasure of performing it. When activities are conducted for the mere satisfaction of performing them, the nature of the social order becomes different than when it is purely based on self-regarding interests. In this context, the social order is defined by continuity of those activities. This is what explains the interviewees' insistence on seeing their expertise persist over time and survive. Hence proposition 4 reads as follows:

Proposition 4: *When expertise is viewed as finality, experts develop a vested interest in its continuation (through its transfer) over time.*

Concluding remarks and limitations

If being an expert presupposes emotional commitment and investment beyond the formal requirement of their tasks as prescribed by their employment contract, and if the expert's attachment to his/her body of knowledge is so strong that they identify themselves with it, what are the implications for knowledge acquisition and transfer theories? In general, orthodox views on knowledge management rule out of court passion and emotional intervention. This study points out the centrality of passion to the process of knowledge acquisition and transfer. Passion functions as an internal motive to acquire and to transfer knowledge. Through passion, knowledge shifts from the personal to the social sphere through dialogue and discussion.

This view of expertise as a socially shared resource seems to run counter to the motto of running a company as if it were a market, although, as in this case, intrinsic motives are in line with organizational goals. How can we repress the role of passion when it is both the drive behind learning and the transfer of that learning? What would happen if companies attempted to interfere with or control passion in order to bring it into lines with market mechanisms? The paper has not examined the balance between extrinsic and intrinsic motives and how these are to be managed. This issue places managers in a difficult position, forcing them to consider two opposite trends. On the one hand, they are to encourage intrinsic motives, especially in connection with creative work. On the other hand, they need to translate such intrinsic motives into extrinsic motives in order to make them amenable to the control of market mechanisms. Attempts at controlling intrinsic motives through external interventions (such as through monetary rewards) may have the opposite effects (called crowding-out effects) (Osterloh and Frey 2000).

Limitations of this study

Research on knowledge acquisition and transfer has been on the rise for the past decade. With regard to the transfer of expertise as a specific form of knowledge, research has not concerned itself with the emotional aspects that define its acquisition and transfer. It is in this sense that the present paper opens a new way of linking expertise and its transfer, suggesting that passion is a driving force for pursuing and transferring expertise and safeguarding its continuity. The economic and social cognitive perspectives tend to leave passion out of account. This contribution is encapsulated in propositions linking passion and transfer of expertise. While these propositions are derived from interview findings, we are fully aware of their tentative, rather than definite, nature. One of the limitations of our study is that it builds on interview material generated from one case study. Further research may test these propositions against data gathered using other available techniques. Finally the paper has not addressed the issue of how management intervention (such as the use of reward systems) may affect experts' passion in acquiring and transferring knowledge. Hence future research is encouraged to examine these areas.

References

- Agnew, N M, Ford, K M and J P Hayes (1997)** 'Expertise in context: *Personally constructed, socially selected, and reality-relevant?*' In P J Feltovich, K M Ford, and R R Hoffman (Eds.), *Expertise in Context*, pp 219-244. Menlo Park, CA: AAAI Press.
- Almeida, P., B. Kogut. (1999).** Localization of knowledge and the mobility of engineers in regional networks. *Management Science*. 45 p. 905-917.
- Amabile T. M. (1996),** *Creativity in Context*. Boulder, Colorado : Westview Press.
- Argote, Linda and Ron Ophir, (2002),** "Intraorganizational learning". In J.A.C. Baum (ed.) *Companion to organizations*. Oxford, UK: Blackwell, pp 181-207
- Argote, L., McEvily, B. & Reagans, R. (2003).** Managing Knowledge in Organizations: An Integrative Framework and Review of Emerging Themes. *Management Science*, Vol. 49, No. 4, pp. 571-582.
- Brett, J. F., D. VandeWalle. (1999).** Goal orientation and goal content as predictors of performance in a training program. *J. Appl. Psych.* 84(6) 863-873.
- Burgess, D. (2005).** What Motivates Employees to Transfer Knowledge Outside Their Work Unit? *Journal of Business Communication*, Vol. 42, No. 4, pp. 324-348.
- Burns, R. (1995).** *The Adult Learner at Work*. Business and Professional Publishing Co., Sydney, Australia.
- Ceci, S. J., & Liker, J. (1986).** Academic and nonacademic intelligence: an experimental separation. In R. Sternberg, & R. Wagner (Eds.), *Practical Intelligence: Nature and Origins of Competence in the Everyday World*
- Chang, M., J. E. Harrington Jr (2003).** Multimarket Competition, Consumer Search, and the Organizational Structure of Multiunit Firms, *Management Science*, Vol. 49, No. 4, pp. 541-552.
- Chase, W. G., & Simon, H. A. (1973).** The mind's eye in chess In W. G. Chase (Ed.), *Visual Information Processing*: 215-281. New York: Academic Press.
- Cohen, W.M. & Levinthal, D.A. (1990).** Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, Vol. 35, No. 1, pp. 128-152.
- Collins, H. (1985).** *Changing order*. London: Sage.
- Deci, E.L. (1975).** *Intrinsic Motivation*. Plenum Press, New York, US.
- Dermer, J. (1975).** The Interrelationship of Intrinsic and Extrinsic Motivation. *Academy of Management Journal*, Vol. 18, No. 1, pp.125-129.
- Durkheim Émile, (1884),** « Cours de philosophie fait au Lycée de Sens. Paris. » Manuscrit écrit. *Bibliothèque de la Sorbonne, Manuscrit 2351*. Notes prises en 1883-84 par le philosophe français, André Lalande.
- Ericsson, K. A., & Lehmann, A. C. (1996),** Expert and exceptional performance: evidence on maximal adaptations on task constraints. *Annual Review of Psychology*, 47: 273-305
- Foley, M., & Hart, A. (1992).** Expert Novice Differences and Knowledge Elicitation. In R. R. Hoffman (Ed.), *The Psychology of Expertise: Cognitive Research and Empirical AI*: 233-269. Mahwah NJ: Springer-Verlag.
- Foucault M (1965),** *Madness and Civilization: A History of Insanity in the Age of Reason* trans. by R. Howard, London: Tavistock,
- Gauthier, I., & Tarr, M.J. (1997).** Becoming a 'Greeble' expert: Exploring the face recognition mechanism. *Vision Research*, 37, 1673-1682.
- Gray Peter H., Meister Darren B. (2004)** Knowledge Sourcing Effectiveness *Management Science*, Vol. 50, No. 6, June 2004, pp. 821-834
- Greeno, J. S., & Simon, H. A. (1988)** Problem solving and reasoning. In R. C. Atkinson (Ed.), *Steven's handbook of experimental psychology*, 2nd ed.: 589-639. New York: Wiley.
- Harasim, L. (1989).** On-line education: A new domain. R. Mason, A. Kaye, eds. *Mindweave: Communication, Computers, and Distance Education*. Pergamon Press, Oxford, U.K., 50-62.
- Hansen, M.T. (1999).** The Search-Transfer Problem: The Role of Weak Ties in Sharing Knowledge across Organization Subunits. *Administrative Science Quarterly*, Vol. 44, No. 1, pp. 82-111.
- Hegel Georg W. F. (1830),** *La Raison dans l'Histoire* 10 / 18, éd. Broché (13 février 2003), Paris France
- Hinds Pamela J., Patterson Michael, and Pfeffer Jeffrey (2001)** "Bothered by Abstraction: The Effect of Expertise on Knowledge Transfer and Subsequent Novice Performance", *Journal of Applied Psychology*, 2001, Vol. 86, No. 6, 1232-1243
- Hirschman A., (1977).** *The Passions and the Interests. Political Arguments for Capitalism before its Triumph*, Princeton, Princeton University Press.
- Houle, C. O. (1961).** *The Inquiring Mind*. The University of Wisconsin
- Huber B. (1999)** - Experts in organizations: *the power of expertise - Academy of business and administrative science conference*, <http://www.sba.muohio.edu/abas/1999/huberbe.pdf>
- Hulin CL, Henry RA, Noon SL. (1990).** Adding a dimension: time as a factor in the generalizability of predictive relationships. *Psychol. Bull.* 107:328-40
-

- Ingram Paul, Baum Joel A. C. (1997)**, Chain Affiliation and the Failure of Manhattan Hotels, 1898-1980, *Administrative Science Quarterly*, Vol. 42, No. 1, pp. 68-102
-
- Ingram, Paul, (2002)**, "Inter-organizational learning". In J.A.C. Baum (ed.) *The Blackwell Companion to Organizations*. Oxford, England/New York Blackwell
-
- Kant Emmanuel (1797)**, *Anthropologie du point de vue pragmatique*, Traduction Michel Foucault, Paris, Vrin, 1970 (2^e ed.)
-
- Knowles, M. S. (1980)**. *The Modern Practice of Adult Education*. Adult Education, New York.
-
- McEvily, B., A. Zaheer. (1999)**. Bridging ties: A source of firm heterogeneity in competitive capabilities. *Strategic Management J.* 20 1133–1156.
-
- Menon, T. & Pfeffer, J. (2003)**. Valuing Internal vs. External knowledge: Explaining the Preference for Outsiders. *Management Science*, Vol.49, No.4, pp. 497-513.
-
- Mieg Harald A. (2001)**, *The Social Psychology of Expertise: Case Studies in Research, Professional Domains, and Expert Roles*, ed Lawrence Earlbaum Associates
-
- Nonaka, I. (1994)**. A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, Vol. 5, No. 1, pp. 14-37.
-
- Nonaka, I. & Takeuchi, H. (1995)**. *The Knowledge-Creating Company*. Oxford University Press, NY.
-
- Nonaka, I., Toyama, R. & Nagata, A. (2000)**. A Firm as a Knowledge-creating Entity: A New Perspective on the Theory of the Firm. *Industrial and Corporate Change*, Vol. 9, pp. 1-20.
-
- Nonaka I., Toyama R. (2003)** The knowledge-creating theory revisited: knowledge creation as a synthesizing process, *Knowledge Management Research & Practice*, 1, 2–10
-
- Osterloh, M. & Frey, B.S. (2000)**. Motivation, Knowledge Transfer, and Organizational Forms. *Organization Science*, Vol. 11, No. 5, pp. 538-550.
-
- Osterloh, M., Frost, J. & Frey, B. (2002)**. The Dynamics of Motivation in Organizational Forms. *International Journal of the Economics of Business*, Vol. 9, No. 1, pp. 61- 77.
-
- Polanyi, M. (1966)**. *The tacit dimension*. New York: Doubleday.
-
- Rumelt, Richard P. (1984)**: « Towards a Strategic Theory of the Firm », in R. Lamb (ed.): "*Competitive Strategic Management*", Prentice-Hall, Englewood Cliffs, NJ, pp. 556-570
-
- Schilling MA, Vidal P, Ployhart RE, Marangoni A (2003)** Learning by Doing Something Else: Variation, Relatedness, and the Learning Curve - *Management Science*, vol 49 n°1, p.39-56
-
- Schulz M. (2002)** "Organizational learning" - Companion to Organizations, Oxford, UK: Blackwell,
-
- Song, J., P. Almeida, G. Wu. (2003)** Learning by hiring: When is mobility more likely to facilitate inter-firm knowledge transfer?, *Management Science*. 49(4) p.351–365.
-
- Sorenson, O. (2003)**. Interdependence and adaptability: Organizational learning and the long-term effect of integration. *Management Science*, 49: 446-463
-
- Sloboda, J. A., Davidson, J. W., Howe, M. J. A., & Moore, D. G. (1996)**, The role of practice in the development of performing musicians. *British Journal of Psychology*
-
- Smith, J. A. 1991**. The idea brokers. *Think tanks and the rise of the new policy elite*. New York: Free press.
-
- Sternberg, R. J. & Horvath, J.A. (1999)**. *Tacit Knowledge in Professional Practice researcher and practitioner perspectives*, ed Lawrence Earlbaum Associates
-
- Szulanski, G. (1996)**. Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm. *Strategic Management Journal*, Vol. 17, Winter 96 special issue, pp. 27-43.
-
- Tanaka James W., Curran Tim, and Sheinberg David L. (2005)**, "The Training and Transfer of Real-World Perceptual Expertise", *Psychological Science*, Vol. 16 - Number 2, p. 145-151
-
- Taylor, I. A. (1975)**, A retrospective view of creativity investigation. In I. A. Taylor, & J. W Getzels (Eds.), *Perspectives in Creativity*: 1-36. Chicago: Aldine
-
- Uzzi, B. (1997)**, Social structure and competition in networks: The paradox of embeddedness. *Admin. Sci. Quart.* 42
-
- Uzzi, B., R. Lancaster. (2003)**. The role of relationships in inter-firm knowledge transfer and learning: The case of corporate debt markets. *Management Science*. 49(4) 383–399.
-
- Weber, R. A., C. F. Camerer (2003)**. Cultural conflict and merger failure: An experimental approach, *Management Science*, Vol. 49, No. 4, pp. 400-415.
-