Knowledge Dynamics Analysis in Negotiations

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Abstract: The purpose of this paper is to present some research results we obtained in analysing knowledge dynamics during negotiation processes. For knowledge dynamics we use the semantic spectrum currently used in thermodynamics, through a metaphorical interface. In our view knowledge dynamics means complex transformations from one form of knowledge into another form of knowledge. In our research we considered the dyad containing cognitive knowledge and emotional knowledge, in the Nonaka's oneness perspective. Cognitive knowledge is represented by the explicit or the rational knowledge. Emotional knowledge is represented by the result of processing our sensory information and integrating it into the non-rational mind. Similar to energy, knowledge can be found in organizations and society in different forms: explicit knowledge, implicit knowledge, tacit knowledge, emotional knowledge, spiritual knowledge, symbolic knowledge. Our hypothesis is that one form of knowledge can be transformed into another form in a given Ba. Our research focused on iterative transformations of cognitive knowledge into emotional knowledge and of emotional knowledge into cognitive knowledge during negotiation processes. We designed and performed 28 experiments of simulated negotiations between an experienced negotiator and different individuals without any training in negotiations. The duration of each experiment was about 20 minutes. We videotaped all of these experiments obtaining about 9 hours of recorded negotiations. There were basically two types of negotiations: a) a typical trade negotiation, and b) a typical salary negotiation. Based on a well designed script, the experienced negotiator sent different cognitive and emotional messages to the would be employee, who has been asked to answer using both written and verbal answers. In the same time we recorded his expressions that reflected the emotional answer. By analysing the induced messages and the cognitive and emotional answers for each participant we got interesting results concerning the knowledge dynamics in the negotiation processes.

Keywords: cognitive knowledge, emotional knowledge, knowledge dynamics, microexpressions, negotiations

1. Introduction

Psychologists demonstrated through their experiments in the last decades that our mind integrates two modes of thinking (Kahneman, 2011, pp. 20-21): "

- "System 1 operates automatically and quickly, with little or no effort and no sense of voluntary control.
- System 2 allocates attention to the effortful mental activities that demand it, including complex computations. The operations of system 2 are often associated with the subjective experience of agency, choice and concentration."

Although we think of ourselves that we use in the decision making process system 2, the dominant role is played by system 1. According to Hill (2008, p.2), "*Breakthrough in brain science have revealed that people are primarily emotional decision makers.*" Thus, emotional knowledge and emotional intelligence play an essential role in business decision processes. Emotional knowledge and cognitive knowledge interact continuously in our mind. This interaction becomes very complex in conflictual situations, as is the case of negotiations.

An increasingly popular topic in current research is the way knowledge dynamics influences the course of negotiation and its related interactions. Negotiation is a form of social knowledge exchange that displays opposing motives of cooperating and competing against one another. Most negotiators seek to reach an agreement with the other party; they also strive for an agreement that serves their own goals as much as possible. This dual concern is reflected in a process that consists of both bargaining and problem solving. Negotiation can be defined (Butt & Choi, 2010, p. 124) as "*the joint decision-making process by which interdependent individuals with divergent interests agree on how to allocate scarse resources. Thus, negotiation constitutes a social, interpersonal process, making power and emotions integral components of this social interaction*." A good deal of research and practice literature focuses on ways to perform these activities effectively. However, negotiators are human beings with emotions, values, beliefs and different thinking models. Emotions are emotional knowledge generators and they play a significant role in communication and decision making in any negotiation process (Anderson & Kumar, 2006; Gatchalian, 1998; Kopelman et al., 2006; Overbeck et al., 2010).In earlier studies, emotions were viewed as factors that obstruct performance, preventing

successful coordination. In recent years we have learned that the facial expression of thoughts and cognitive knowledge can both help and impede negotiation progress. Facial expressions of cognitive knowledge and emotional knowledge may convey useful information about preferences; they can also signal dislike or hateful intentions. Whether the emotions move a negotiation forward or backward—or improve/threaten a relationship — depends on a variety of processes and the parties' awareness. In this article we present some results we obtained in researching knowledge dynamics during a negotiation process.

2. The role of emotions in negotiation

The study of cognitive emotions has been neglected in a literature that emphasizes strategy and knowledge processing. Concepts that would seem to have substantial emotional content have been described mostly in terms of strategy. Examples are motives, trust, and identity. Motives have been construed in terms of relative and absolute or joint gains (De Dreu et al., 2000; Hopmann, 1995). Trust has been defined as calculus, knowledge and identification (Irmer 2003), and identity has been treated as constituent-based representative role obligations (Druckman, 1994; Wall, 1975; Bartunek et al., 1975). Because of these emphases, progress in developing theories or frameworks for understanding the role of cognitive emotions in negotiation has been slow.

Although there are many definitions for the concept of "emotions", we may consider as an operational definition that formulated by Uljin et al. (2005, p. 105): "*Emotions are affective states of high intensity that are accompanied by physiological arousal. These states vary in terms of frequency, duration, and intensity, but unlike moods, are of transient duration.*" A major characteristic of emotions is that they have a direct and immediate impact on negotiators behaviour. The contribute in creating a stimulating or inhibitor psychological climate for negotiators. Emotions generate emotional knowledge and processing emotional knowledge is done by emotional intelligence. Thus, in any negotian emotional knowledge and intelligence go together in a very complex and interactive way (Mueller & Curhan, 2006; Riggio & Reichard, 2008). The model of emotional intelligence developed by Peter Salovey and his colleagues is multi-dimensional and includes four major components: perceiving, facilitating, understanding, and managing emotion. "*Perciving emotion involves one's ability to detect and identify emotions in oneself and others. Facilitating emotion involves one's ability to use emotions productively in the context of various cognitive processes including creativity, problem solving, and reasoning. Understanding emotion concerns one's intelligence about the emotional system – more specifically, one's understanding of the emotional lexicon and how emotions combine, progress, or transition from one to onother. Finally, managing emotion, often called emotion regulation or coping, involves one's ability to regulate emotions in the self and among others in adaptive ways*." (Mueller & Curhan, 2006, p. 111).

Several earlier studies on negotiation have called attention to the importance of such emotional expressions as happiness and anger. Both these emotions can be socially-induced, leading to reciprocated expressions (McIntosh 1996). "*A general finding is that induced positive emotions and good mood increase cooperative tactics and enhance the quality of agreements*." (Kopelman et al., 2006, p. 83). Positive feelings have beneficial effects on the negotiation process, especially in creating a good relationship in the future and are less effective in obtaining immediate results. Even when the feelings are induced in the simplest ways, negotiators indicate that they have increased confidence in their judgments, more creative approaches to solving problems, expect more favorable outcomes, and offer more concessions (Baron, 1990; Carnevale & Isen, 1986; Kopelman et al., 2006). However, when positive emotion is induced as flattery, negotiators may become wary of the flatterer's intentions. Similarly, anger can have positive or negative effects on negotiation. Displays of anger can be beneficial if used to signal how strongly one feels about an issue, about the fairness of proposed distributions or procedures, or about possible consequences of continuing intransigence. The key is to distinguish between anger directed at the task and at the other person (Jehn, 1994). Anger is helpful for powerful negotiators. "*They feel more focused and assertive, and claim more value, the effects are intrapersonal, insofar as the powerful negotiator responds to his or her own emotional state and not to the emotional state of the counterpart. On the other hand, effects of emotions are generally not intrapersonal for low-power negotiators: these negotiators do not respond to their own emotions but can be affected by those of a powerful counterpart*." (Overbeck et al., 2010, p. 126). Negotiators who display negative emotions can be very effective at the bargening table due to the willingness of the counterparts to make larger concessions and to exit an unpleasant social situation (Kopelman et al., 2006). On the overall, both positive and negative emotions determine

negotiators behaviour and condition their perceptions of trustworthiness of each other (Anderson & Kumar, 2006; Ulijn et al., 2005).

Recent research has shown that power and affect interact in order to shape negotiators' outcomes and behaviors (Olekalns & Smith, 2007; Van Kleef et al., 2006). "*A critical mechanism through which power shapes the negotiation process may involve emotion because how negotiators feel and make their counterparts feel is significantly dependent on their relative power or status in a given situation. Although emotions have found to be a significant determinant of the negotiation process, the same emotion may assume different roles in accordance with the negotiator's power*." (Butt & Choi, 2010, p. 125).The expression of emotional knowledge serves important social functions and assists in the coordination of social action. For individuals, emotional expression facilitates survival; for groups, it facilitates social bonding and collaboration (Keltner et al., 2006; Shiota et al., 2004). Emotional expression is likely to play a role in the development of relationships between negotiators. (e.g. Druckman, 1998; Olekalns & Smith, 2007). The expression of positive emotions has been identified as critical in forming and maintaining social bonds (Shiota et al., 2004). Dunn and Schweitzer (2005) point to the relationship between positive emotions and perceived trustworthiness. Furthermore, negotiators who displayed positive emotion in an interactive dispute simulation were more likely to include in their agreements provisions for future business relationships that increase joint outcomes (Kopelman et al., 2006). Emotions influence information processing (Clore et al., 2009). The search for information during bargaining depends for its effectiveness on skilled problem solving and judgments of authenticity. Problem solving is a cognitive activity that improves with practice (Kressel et al., 2004). Judgments of authenticity involve interpretations of the other's intentions, which are likely to be influenced by emotional expressions (Baron, 1990). Both skills, known as decoding – diagnosing the other's intentions – and encoding – conveying impressions – improve with experience (Kopelman & Thompson, 2006).

According to Nair (2008, p.366), "*Most emotional expressions are thought to occur non-verbally through facial expressions, vocal qualities and body postures. The cognitive component is perceived as an appraisal process; how emotions are experienced as a result of assessing or appraising a situation in a particular way*." Research on nonverbal indicators of deception has explored this connection (Ekman & Friesen, 1974; DePaulo et al., 1980). Honest and deceptive intentions have been shown to be associated with such emotional states as confidence, stress, and interest (Druckman et al., 2002). Each of these states has been found to be indicated by particular facial (and other bodily) expressions. For example, deceivers transmit confidence in defending positions through increased head shaking, rocking movements, and crossed hands; an attempt to evade an issue is accompanied by feelings of stress and is suggested by frequent gazes away from the other person; an intention to be honest is accompanied by feelings of interest or involvement and is manifest in frequent leg movements and increased speaking frequency. These correlation findings point to a connection between emotional states and particular intentions. They also highlight the possibilities for decoding and encoding knowledge dynamics in negotiation and the related types of social exchange. Several recent studies (e.g., O'Connor & Carnevale, 1997; Olekalns & Smith, 2007; Steinel & De Dreu, 2008) have indicated the connection between the emotional expression of both negative and positive emotions and opportunities to deceive in negotiation.

3. Knowledge dynamics

Cognitive science reopens some of the main philosophical questions concerning our mind and our way of understanding reality. Based on newest results obtained by cognitive scientists, Lakoff and Johnson conclude that (1999, p. 3): "The mind is inherently embodied. Thought is mostly unconscious. Abstract concepts are largely metaphorical." That means that our brain and body, as well as our sensory system shape our concepts. Also, that means that metaphors represent much more than just some linguistic models. They represent thinking patterns. A metaphor is based on a , source semantic domain, a target semantic domain, and a transfer process of meanings from the source domain to the target domain. A metaphor allows us to use known semantic structures from the source domain for developing new semantic structures in the target domain. Metaphors provide a perspective on the reality by a cognitive and an emotional approximation. In transferring meanings from the source domain to the target domain, a fundamental role ia played by entailments. "*Entailments are the connotations of the metaphor that transport meaning from the source to the target domain. The metaphorical entailments are characteristics of the source domain that, potentially, can be mapped onto the target domain*." (Andriessen, 2006, p.95). Following this logic of the metaphorical thinking we may conclude that the concept of knowledge can be understood in terms of

the metaphors used to construct it. Thus, knowledge can be understood in terms of an object, in terms of stocks and flows, or in terms of a nonsubstantial field of forces (Andriessen, 2006; Andriessen, 2008; Bratianu & Andriessen, 2008; Davenport & Prusak, 2000; Nonaka & Takeuchi, 1995; Nonaka et al., 2008).

Bratianu and Andriessen (2008) have developed a parallel between knowledge and power, making a comparison between how tacit knowledge becomes explicit knowledge and vice versa and energy transformations that occur in physics. In the metaphor they use, "knowledge as energy", the source domain is the concept of energy, while the target domain is that of knowledge. Tacit knowledge is strongly influenced by individual experiences, which reflect the person's position regarding the cultural environment, like potential energy that depends on one item positioning regarding the gravitational field. Similar to potential energy, the magnitude of tacit knowledge may be modified by enhancing individual experiences. Explicit knowledge, on the other hand, "*can be articulated in formal language using grammar rules, mathematical expressions, specifications and so on. This kind of knowledge can be transmitted in an easy manner and formal* " (Nonaka & Takeuchi, 1995, p. viii). Explicit knowledge is associated with the decision-making process and leads to action. It is a dynamic form of knowledge because by varying decisions, it leads to concrete actions and is similar to kinetic energy generating mechanical work from its variation. Just like potential energy can be transformed into kinetic energy and vice versa, tacit knowledge can also be transformed into explicit knowledge through the externalization process and explicit knowledge can become tacit knowledge through the internalization process. Externalization is a knowledge generation process, while internalization is a learning process at the individual level. However, in negotiations the most used process from the Nonaka's knowledge dynamics model is combination.

Knowledge metaphors evolved from very simple ones, based on the physical object, to complex metaphors based on Newtonian dynamics. *Knowledge is flow* and *Knowledge is power* represent only two of the metaphors most widely used. Nissen contributed significantly in developing and using the *knowledge is flow* metaphor (Nissen, 2006, p. xx): "*To the extent that organizational knowledge does not exist in the form needed for application or at the place and time required to enable work performance, then it must flow from how it exists and where it is located to how it exists and where it is needed. This is the concept of knowledge flows*."Their spectrum is much larger. This metaphor has been constructed on the Nonaka's dyad composed of tacit knowledge and explicit knowledge. The huge success of this type of metaphors can be explained easily by analyzing the semantic spectrum of Newtonian dynamics that contains not only potential energy and kinetic energy in the source domain, but also their reciprocal transformation. There are three important limitations in using the Newtonian dynamics knowledge metaphors: (a) the conservation law; (b) the linearity property; and (c) the dyad formed of tacit and explicit knowledge (Bratianu, 2011). In the source domain operating with fluids or any other objects, there is a law of conservation. This law cannot be extended to the target domain since knowledge is not something to be conserved. Unlike energy, knowledge can be created and destroyed. It cannot remain constant. The second limitation is also important since knowledge is not linear. Therefore, we cannot apply linear operations like summation and multiplication to it. Finally, the dyad composed of tacit knowledge and explicit knowledge does not cover all forms of knowledge existing within an organization.

In order to integrate these findings into the knowledge concept understanding, we have to change the tacit knowledge – explicit knowledge dyad used extensively by Nonaka and his co-workers into a new dyad, cognitive knowledge-emotional knowledge (Bratianu, 2010; Bratianu & Andriessen, 2008; Bratianu & Orzea, 2009).This means changing the paradigm of Newtonian dynamics with the paradigm of thermodynamics, and constructing a new complex knowledge metaphor based on the latter. We would like to emphasize the fact that changing the paradigm is fundamental in understanding the new semantic extensions of knowledge by integrating feelings and emotions.

Emotions have been recognized as an important component of knowledge and decision making (Gladwell, 2005; Hill, 2008).Thus, we may talk about cognitive knowledge and emotional knowledge. Cognitive knowledge represented by thoughts has only one extensive dimension which allows a quantitative approach to knowledge. Emotional knowledge has both an extensive dimension and an intensive dimension. The extensive dimension characterizes the quantitative magnitude of an emotion, while its intensity characterizes the qualitative nature of emotions. Some authors have already used the concept of *emotional temperature* (Hill, 2008) for this intensive dimension. Emotional knowledge is thus a form of knowledge different in nature from cognitive knowledge. Emotional

knowledge is a result of a given emotion, and it is communicated mainly through facial expression, and tone of the voice. Statistics show that 55% of communication comes through facial expressions, 38% of communication gets accomplished by tone of the voice, and only 7% of communication relies on verbal exchange. According to Hill (2008, pp. 22-23), "*Ironically, that's true despite the fact that our initial, gut-level perceptions are largely based on sensory impressions. We feel more quickly than we think. Even the formation of memories is emotionally based. Most of our mental activity also happens beyond our awareness, subconsciously. Mental activity is often initiated by visual, sensory impressions that lead to emotional response which we mostly communicate non-verbally*.".Emotions show primarily on the face not through the body motion. Regardless of race, ethnicity, age or gender, people's faces reveal seven core emotions: surprise, fear, anger, sadness, disgust, contempt, and happiness. Thus, there is a neutral emotion, five negative emotions and only one positive emotion.

4. Research description

The purpose of this research is to present knowledge dynamics in the negotiation process and the direct result is to identify how knowledge can be transformed into another form in a given Ba, a dynamic context able to contribute to the knowledge exchange and transformation (Nonaka & Takeuchi, 1995). In order to grasp the dynamics of knowledge in the negotiation process, the main objective of this research was to study the processes of induction, transformation and transfer of knowledge in the negotiation process.

Our concern is how the strategic display of emotions is processed by the target negotiator. We will not rule out emotions versus cognition and even the strategically displayed emotion perceived by the target negotiator as genuine or invented. Our assumption is that the strategic display of emotions will be perceived and will influence the outcome of negotiations, as a result of transformation of emotional knowledge into cognitive knowledge and vice versa in an interactive way. Thus, we are interested in the knowledge dynamics analysis, rather than just interpreting facial expressions. In this experiment, the strategic display of emotion refers to the emotion expressed intentionally by the experienced negotiator, which is experimentally trained to display three general emotional approaches: displaying positive, negative and neutral emotions. There were 14 persons, i.e. target negotiators or actor negotiators, and two experienced negotiators participating in 28 experiments. In order to analyse the facial microexpressions we videotaped all the experiments. Observation aimed to grasp the emotional response when participants would experience negative or positive emotions displayed by negotiators, for participants' low or high importance objectives. The purpose of this experiment is to see if participants change the perception of priorities for the other parties according to the emotion displayed, and whether they adapt their negotiation strategy. In order to facilitate handling participants' emotions, they will be told that the experiments are designed to discover how a specific negotiation style versus global negotiating style affects the results of negotiations.

The script of the simulated negotiations is based on four significant sequences of knowledge transfer:

- **Sequence 1** – The expert negotiator conveys both cognitive and emotional knowledge to the actor negotiator. Within the actor negotiator the received emotional knowledge is transformed into cognitive knowledge and then integrated with the direct message of cognitive knowledge. The result of this process is transformed into emotional knowledge that is displayed by microexpressions by the actor negotiator. The emotional message is received by the expert negotiator and transformed finally into cognitive knowledge. The anticipated knowledge dynamics transformations did happen in concordance with the logic of the negotiation process and with our expectations.
- **Sequence 2** – The expert negotiator conveys emotional knowledge to the actor negotiator, which is then transformed into cognitive knowledge. Once the answer is formulated, it is transmitted to the expert negotiator both as cognitive and emotional knowledge (through facial microexpressions). This sequence demonstrates the power of emotional knowledge in a negotiation process since it is a communication phase initiated only by an emotional knowledge message sent by the expert negotiator.
- **Sequence 3** – The expert negotiator conveys an emotional knowledge message. The actor negotiator receives this message and transforms the emotional knowledge into the cognitive knowledge necessary for understanding the negotiation progress and decision making. The result of the rational thinking of the actor negotiator is transformed into emotional knowledge and conveyed to the experienced negotiator. Analysing the microexpressions of both negotiators confirm the anticipated knowledge dynamics.

- **Sequence 4** – The expert negotiator sends a cognitive message to the actor negotiator. The result of analysing this message and of the decision making process is transformed into emotional knowledge by the actor negotiator and then conveyed through facial microexpressions to the experienced negotiator. The recorded images of both negotiators demonstrate that our expectations were adequately formulated.

In the followings we present only some aspects of these above experiments, illustrating with some images the recorded microexpressions. We use arrows to indicate the facial expressions of the emotional knowledge messages of some of the actor negotiators. In the first experiment, we recreated a commercial transaction of the type often encountered in the offer-counteroffer practice, with various utility items for participants. Participants were asked to imagine that they are working for a company producing electrical tools used in constructions and that they want to sell a range of such products to a chain of DIY stores. The negotiator they are going to encounter is the buyer of the DIY chain and he has already selected a range of products at the buying price (official price list of the supplier). Participants in this experiment are to negotiate the minimum guaranteed quantities to be purchased and the total trade discount granted to this DIY chain. In the second experiment we recreated a wage bargaining of the offer-counteroffer type with elements of different utility for participants. Participants were asked to imagine that they will meet the Human Resources Manager at one stage of the interview, to negotiate the type of car that the company will buy for them and the additional number of leave days besides the minimum legal number.

Participants were presented with a table that also highlighted the extent to which the results were favorable. In order to stimulate participants' involvement, results were evaluated as the end points obtained were converted into lottery tickets where they could win EUR 5000. Failure to reach an agreement, or lack of concessions from the participants will lead to failure to obtain points for that stage. Participants were told that they had the right to make three successive offers but if they do not reach the minimum that the purchaser is expected, the meeting will end and so the negotiation will fail. The minimum of the other party was not communicated to participants. In each set of offer submissions, participants were answered with positive and negative emotional elements according to a predetermined scenario, but also with preset verbal responses.

5. Individual interpretation of one of the experiments/experiment Code 205

An interesting fact noted from the beginning of experiment 205 is the participant's baseline. He keeps his head slightly tilted in a somehow submissive position; this will affect his negotiation outcomes (Figure 1). When the experienced negotiator communicates the response related to low priority objectives (a response that prepares future concession), the participant displays a microexpression of contempt and anxiety (lips pressed into commissural) - Fig 2. In this case, the participant receives the emotional intention of the other negotiator and turns it into emotional knowledge, displaying a micro-expression of anxiety.

Further, the experienced negotiator communicates the response to this set of requests related to the participant's high-priority objective (response uploaded by negative emotions); the participant first displays a micro-expression to suppress the desire to say something hostile (Figure 4, A), followed by a micro-expression of contempt and anger (lips pressed towards the corner and eyes down, Fig 4, B) and finally a micro-expression of grief (corners of the mouth and eyes left down, Figure 4, C).

In this case, cognitive knowledge (thinking that his request was not accepted) triggered a series of emotions and finally generated a body movement to avoid what was transmitted. In the argumentation made by the participant for this step, he recognized that the set of requests was exaggerated and accompanied this confession with a micro-expression of sadness (Figure 5), which gives it even more authenticity (cognitive knowledge turned into emotional knowledge, manifested by a micro-expression). In Figure 6, the participant was able to display cognitive knowledge (the thought that he does not feel comfortable in the negotiation) in emotional knowledge (micro-expressions of anxiety and discomfort).
After the second set of demands is refused and negotiations continue with the third set of requests, the participant displays one of the most eloquent micro-expressions of these experiments (Figure 3). It is a combination of three emotions:

- Anger (corners of mouth and eyes facing down);
- Suppression of the desire to say something hostile (lips pressed inwards);

- Desire to avoid negotiation (head and eyes moving sideways).

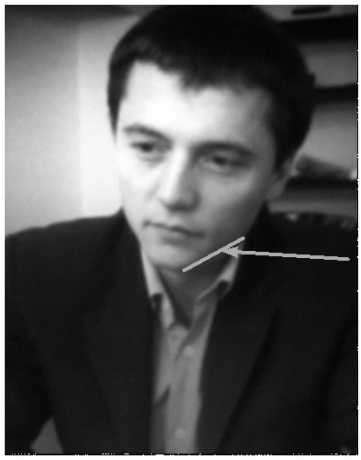


Figure 1: Experiment 205, baselline

Figure 2: Experiment 205, contempt and anxiety

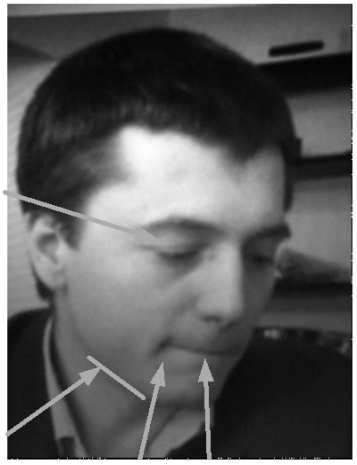
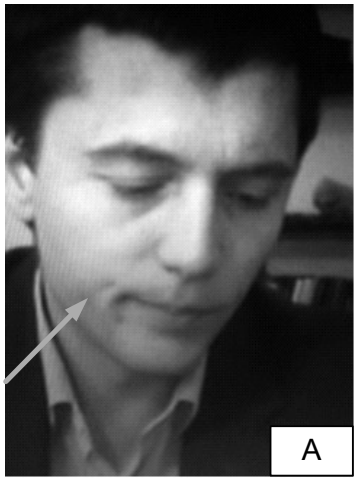


Figure 3: Experiment 205, set of 3 micro-expressions

Figure 4: Experiment 205, restrain, anger and grief

Figure 5: Experiment 205, sadness



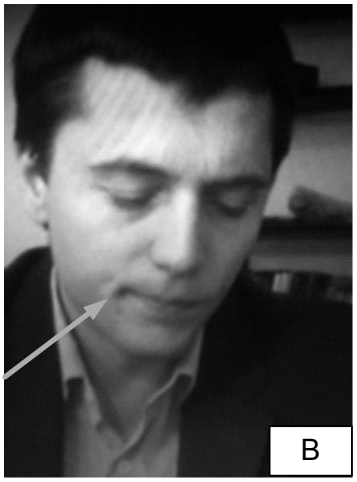


Figure 6: Experiment 205, anxiety and discomfort

Figure 7: Experiment205, anger

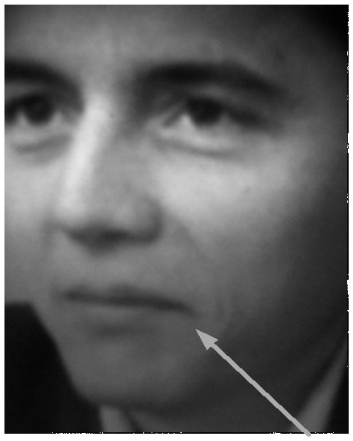


Figure 8: Experiment 205, sadness

Figure 9: Experiment 205, conventional smile

When he learns that the previous demand was refused and a third offer must be presented, a micro-expression of anger is shown by vertical wrinkles on the forehead. This time, cognitive knowledge sent by the other negotiator (denial of the request) turned into the own cognitive knowledge (thinking he has to resort to another concession) and triggered emotional knowledge that he displays (micro-expression of anger, Figure 7).

At the last batch of demands, the participant does not wish to make any concessions on its objectives and even though the experienced negotiator asked for it, when he makes a third set of demands, he accompanies this by a micro-expression of sadness (probably he realizes what he finally obtained). This time, the participant was able to externalize cognitive knowledge (the desire not to make a concession) in emotional knowledge (micro-expression displayed and presented in Figure 8). Finally, after accepting the offer, the participant displays a diplomatic smile, a smile that involves only the mouth, not the eyes (Fig 9).

6. Interpretation of the experiment results

Next, the emotional knowledge intensity transmitted by each participant is assessed when for the high priority objective, the experienced negotiator transmitted positive emotional affect and for the low-priority objective, he transmitted negative emotional affect. The evaluation was performed using a scale of 1-10 (1 for lack of emotional affect and 10 for very strong emotional affect identified at the participant in the recorded video analysis). Note that the assessment of the emotional intensity of affects was performed at key moments of the negotiation, i.e. after transmitting the response to each set of requests / offers of the participant. In the graphs presented below, notations AE OF1, OF2 AE, AE OF3 represent emotional affects identified at the negotiation participant when receiving the answer to the first, second and third offer submitted.

The analysis of figures 10 and 11 reveals that when positive affects were sent to high priority objectives, participants displayed stronger emotional affect for low-priority objectives (for which, according to the scenario, they had received negative emotional affect). It is also clear that the average emotional expression is lower towards the end of the negotiation process because participants are more satisfied with what they feel they will obtain. Positive emotions are expressed only by micro-expressions / gestures of joy, while negative emotions have more ways of expression (anger, disgust, contempt, fear, sadness and their derivatives).

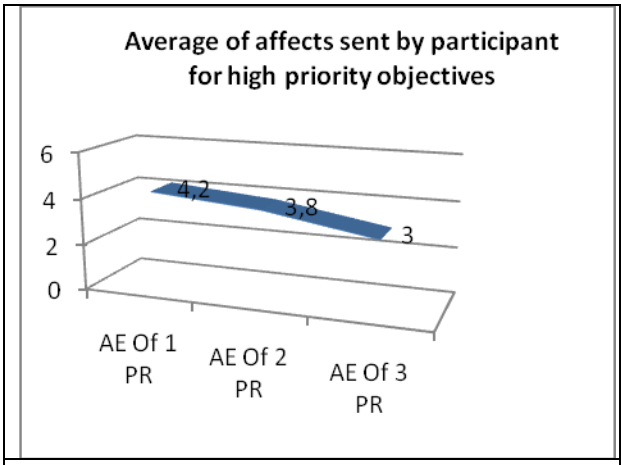


Figure 10: Average of affects sent by the participant for High priority objectives - when positive affect was sent for the main objective

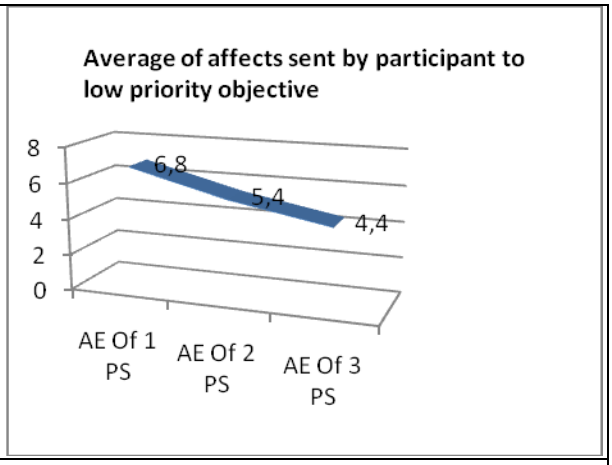


Figure11: Average of affects sent by the participant for low priority objectives - when positive affect was sent for the main objective

After analyzing average affects sent to participants both for high priority objectives and for low priority objectives when they received negative emotional affect for high priority objectives, we may conclude that the participants displayed stronger emotional affect for high priority objectives. Also, we noted that the average emotional expression is higher towards the end of the negotiation process, because participants are dissatisfied with what they feel they will obtain.

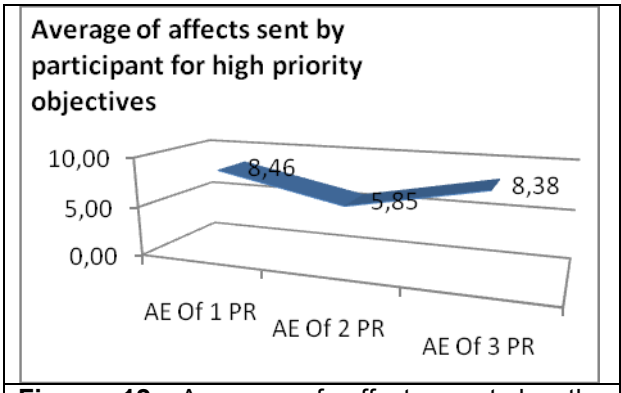


Figure 12: Average of affects sent by the participant for high priority objectives - when negative affect was sent for the main objective

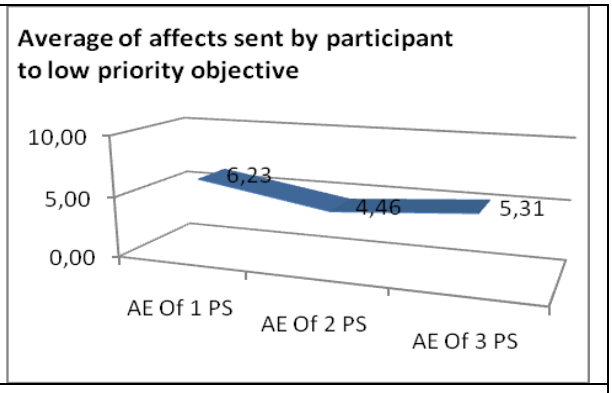


Figure 13: Average of affects sent by the participant to low priority objectives - when negative affect was sent for the main objective

7. Conclusion

At individual level, most of the research has been concentrated on the existence of two broad categories of knowledge: explicit knowledge and tacit knowledge. Explicit knowledge represents that form of knowledge that can be easily described and explained by using any natural and formal language. It is the rational or scientific knowledge accepted in the Western philosophy. This kind of knowledge can be encoded and easily stored in databases and knowledge bases, used in verbal communication and used in writing papers and books. On the other hand, tacit knowledge reflects knowledge acquired through direct experience, individual values, beliefs, ideals, suspicion, and intuition. Due to the intrinsic nature of tacit knowledge, it is difficult to express it in a formal language, assuming encoding and storage efforts. The tacit knowledge - explicit knowledge dyad tends to be increasingly replaced by a new dyad, cognitive knowledge - emotional knowledge. The old dyad can be interpreted as a particular example of the new one, since its domain of definition is included in the new, much broader, cognitive knowledge - emotional knowledge dyad.

Based on the metaphorical analysis between energy and knowledge, the new dyad induces the idea of possible transformations of cognitive knowledge into emotional knowledge, and of the emotional

knowledge into cognitive knowledge. This transformation parallels the transformation of mechanical energy into thremal energy, and of the thermal energy into mechanical energy in some specific natural and technological contexts. This metaphor suggests also the application of the entropy law, that means that in a natural environment a heat flux is always directed from the body with a higher temperature to the body with a lower temperature. In the knowledge field, the flux of knowledge will be oriented from the individual with a higher level of understanding and knowledge toward the individual with a lower level of understanding and knowledge. This new perspective can be used successfully in the applied knowledge management in organizations, as well as in many other fields. We considered for this research the field of negotiations, where the dynamics of cognitive and emotional knowledge plays a very important role in the process convergence toward a final solution.

Negotiations are considered to be conflictual processes by which interdependent individuals with divergent interests agree on how to allocate scarce resources. Thus, negotiations are social processes based on intense communication both verbally and nonverbally. That means that both cognitive knowledge and emotional knowledge are continuously exchanges between the negotiators, and the decision making is based on the capability of each negotiator to interpret the emotional knowledge and to transform it into cognitive knowledge. An experienced negotiator is capable of both reading and interpreting emotional knowledge messages, but a novice negotiator might not be able of identifying facial microexpressions and of interpreting them. For such a negotiator, the cognitive knowledge remains the main vehicle of communication and decision making, which reduces his chances for a successful negotiation. Understanding knowledge dynamics in negotiations is a necessary competence for any negotiator.

In order to analyse the knowledge dynamics processes, we designed an experiment of simulated negotiations, based on a series of alternating sequences of cognitive and emotional messages send by an expert negotiator to a beginner negotiator. Thus, we created the minimal conditions so that one form of knowledge can be transformed into another in a given Ba. We videotaped all the negotiations, and then analysed the facial microexpressions of both negotiators, in order to evaluate the emotional states. Then, we compared these emotional expressions with the cognitive messages sent during the process, and integrate all of them in a continuous dynamics of transformation of cognitive knowledge into emotional knowledge and of emotional knowledge into cognitive knowledge. Also, we tried to identify some key triggers of these transformations such that to get a better understanding of the negotiation flow. Our research opens new perspectives in studying knowledge dynamics in different working contexts and in making knowledge management more powerful.

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