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The Emergence of Collective Competence in a Brazilian Petrochemical Company**

Organizations seek new ways to stimulate collective competences. One possible way this can be done is though self-managing teams. This paper aims to understand the collective competences based on their constitutive elements: interaction, sensemaking and identity. For this study we investigated a Brazilian world-class petrochemical company, recognized by their excellence in working with self-managed teams. Two semi-autonomous teams were studied, distinct in its pattern and performance. The main results point out that the understanding of collective competences is more related to the dynamics and the interaction process itself rather than to the content of this approach and its constitutive elements separately.

Key words: **collective competences, interaction, sensemaking, identity**

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Introduction

The adoption of work groups in organizations, be it by teams, staff, cells, or projects, occurs as a reply to the environment characterized by its complexity and flexibility or as an alternative for the labor organization (Le Boterf 2003; Leonard/Swap 1999; Shonk 1993; Zarifian 2001). In the models of labor organization that praise the collective issue, the focus on responsibility moves from the individual to the group.

In the 1990's, there was an attempt to make a change in management models considering the importance of collective practice. Interaction, communication, and the shaping of multidisciplinary teams with the idea of achieving common goals, became a required practice in organizations. Le Boterf (2003), Zarifian (2001), and Shonk (1993), among others point out the importance of the collective approach to achieve effective organizational results. There is a necessity to develop collective approaches when it comes to competences and, in this way, pursuit a better basis for strategies and organizational sustainability.

The approaches regarding competences usually focus on two basic views: strategic field and core competences or on HR management and managerial competences. Despite of the exhaustive research and papers published about competences, there is still a gap between these two levels, considering the distance between strategy and HR management by competences. Collective competences can be considered a way to stimulate the approximation of these two levels based on interaction of individuals and a collective construction of goals, as well as organizational understanding.

We believe that collective competences based on work teams could be an effective way to contribute to these discussions about managing understanding and, approximating core competences to managerial competences and HR development.

In this paper the comprehension of collective competence is based on some elements, which we call constitutive elements: interaction, sensemaking and identity. Our assumption is that these elements could offer a substantial basis to understand and develop collective competences.

The main question that guides our research is: what does collective competences mean and what are the elements that sustain and stimulate their development in work teams?

The concept of collective competences

In order to understand collective competences, we initially present the authors who discuss collective action in work teams. An important contribution to the theme comes from the Swedish authors influenced by the social-technical approach and by social learning practices.

According to Hansson (1998), "collective competence is the phenomenon of a group or organisation of people's ability to work toward a common task in a sufficient way". It is a context dependent phenomenon and each case of collective, competent action must be considered in relation to the context in which it occurs (Sandberg 1994; Hansson 1998; Frohm 2002).

For Hansson (1998), collective competence is formed by interpersonal and practical competences. Practical competence is described as "the ability to handle the assigned task in a proficient manner;" and interpersonal competence relates to "how proficient the ability to interact with the others in the group is". Thus, Hansson (1998) states that collective competences can be defined in terms of proficient interactive action.

In addition, time and space, according to Hansson (1998), are also key elements in the formation of collective competence. Time is the element that determines experience, the tacit knowledge for practical competence; and space, the dimension of interpersonal competence, where interaction occurs. The development of collective competence is simultaneous to the consciousness of time and space perceived by the group members. "The individuals learn how to interact with each other and to share the actions and flows of processes" (Hansson 1998: 7).

The building of collective competences can be observed as cycles over time. Each cycle corresponds to a level of collective competence. Hansson (1998) identified three levels of collective competences, each one with specific characteristics. The first level of collective competences is described as an exchange of views and characterized by "verbal exchange of meaning between individuals of the team in order to develop the understanding of interaction and the task, thereby making it possible to undertake the task collectively" (ibid. 80). The second level of collective competences is reached when a state of intimate knowledge happens. This state of intimate knowledge is present when a shared understanding of other participants in the group and the task at hand is present. Now verbal exchange is not necessary in the team. The highest level of collective competences is called entity. At this point, the team acts as an entity and "the understanding of the task and of each other is shared to such a degree that we can call it nothing else but an entity" (ibid. 81). The different levels of collective competences suggested by Hansson (1998) are related to the development of the group; the more developed the group is, the more elaborate its collective competences.

It is by establishing shared meaning that individuals develop as a collective group (Hansson 1998; Sandberg 1994). Therefore, this article will discuss the processes for the development of shared meaning and, consequently, for the development of competences based on the key elements: interaction, sensemaking and group identity.

These three elements were selected based on a theoretical review where there is a consensus of the main authors on the importance of these three elements. In this sense, interaction stimulates the collective sensemaking which will contribute to building a group identity.

We have emphasized that the subject is complex and that the understanding of these elements goes beyond a simple conceptual approach, thus it is necessary to understand the dynamics of how these elements manifest themselves and interact.

Interaction

Collective competence can be defined in terms of proficient interactive action (Hansson 1998). It focuses on what happens amongst individuals in action, that is, the exchange of experience, knowledge and perception regarding the object of their action. In a collective context, interaction is described as "something which happens between

the individuals when acting" (Hansson 1998: 66). Interaction is the basis of the processes of shared meaning. It is through interaction that shared meaning is created in the group (Hansson 1998; Sandberg 1994). According to Hansson (1998) individuals interact with the task in all aspects and with the others in the group in order to be able to execute the task and develop practical and interpersonal competences.

We understand shared meaning as a result of a collective construction of sensemaking. Weick (1993) suggests that sensemaking is based on an individual perception of reality. However, in a collective dimension, the sensemaking process needs to be built based on shared understanding and shared meaning structure. In this way, each interaction within a group is an additional element that in the end will create a shared meaning. The shared meaning does not mean the sum of individuals' sensemaking, but something new that emerges from the exchange of perceptions, feelings and purpose.

Sensemaking

Sensemaking processes are central to the development of collective competence. Weick (1993) suggests that the origin of collective competences is in the sensemaking processes of the group, that is, the group's ability to make the action significant (make sense). Likewise, as Hansson points out (1998), "sensemaking constitutes the topic around which other topics are centred. Take-over of roles is to be considered as the process in which sense is taken over. Gestures, symbols and language are the processes in which sense is communicated. Time and space give place and direction to sensemaking, but also constitute its constraints. A spirit of community will be the result of sensemaking, where it will be deepened and elaborated" (1998: 299).

According to Weick (1993), "the basic idea of sensemaking is that reality is an ongoing accomplishment that emerges from efforts to create order and make retrospective sense of what occurs (…). Sensemaking emphasizes that people try to make things rationally accountable to themselves and others" (1993: 635). To the author, when producing sense, human beings seek a kind of textual rationality in their past experiences in order to understand the situation. Therefore, sensemaking is not the search for an accurate answer, but the construction of a plausible answer for a specific situation or event.

Sensemaking is described by Weick (1995) as a social process because there is a representation of the system in the mind of every individual, influenced by other people's perception of their own identity.

Sensemaking can occur at three levels: (1) intersubjective, when sense is created based on interaction among individuals, establishing a synthesis of thoughts, meanings and intentions; (2) generic, when sense is created based on norms, rules and routines that substitute processes of interaction - in this case the intersubjectivity is incorporated into the system, ceasing to reside in the relations among individuals; and (3) extra-subjective, when a level of symbolic reality of pure meaning has been reached and can be compared to the notion of culture (Weick 1995). According to Frohm (2002), at the extra-subjective level, no subjective knowing exists. We have reached a level of symbolic reality and "pure meaning".

Group identity

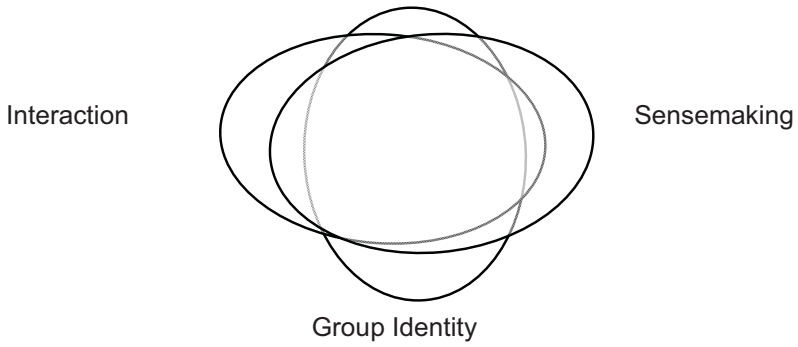
The construction of identity, according to Weick (1993), is part of the sensemaking process. This identity is explored and formed within the processes of interaction with other people and the moment the sensemaking of a situation is built. It is human nature to rationalize (make sense of) and deal with a situation in such a way that identity is preserved.

In summary, a sense of group identity is a feeling among members that they belong to a unique and worthwhile group (Druskat; Wolff 2004).

Overlapping concepts

It is difficult to separate or to understand these elements individually due to the strength of relationship amongst them (see figure 1). This complexity partly explains the notion of collective competence being related to the process and at the same time to its context. On the one hand, we have the notion of competence based on the process that stresses the dynamic movement which is necessary to articulate the three elements involved in the understanding of collective competences: interaction, sensemaking and group identity. On the other hand, we can understand collective competence based on the result of the combination of these three elements. In this last case, the focus is on the content of collective competence.

Figure 1



Based on the theoretical reference and inspired in the elements that compose collective competences, the field research aims to assess empirical evidence about how collective competences could be understood, created and stimulated within two work teams, which are distinct in their form – constitution and action, as described in further detail below.

Method

This research aims to design a qualitative case study, carried out in a Brazilian world-class petrochemical company, recognized for its excellence in working with self-managed teams since 1994.

We set some criteria for selection of the company to prioritize representativeness and relevance. Among these criteria, the company should be recognized by:

- Tradition and recognition for its HR management practices;
- Experience in working in teams;
- Promptness and speed in accompanying and promoting organizational changes;

- Reference in the national scenario for its excellence in business and performance in its industry;
- Use of a formal system of management by competences.

The company

Alpha[1] is a raw material center of a petrochemical complex in the south of Brazil. It is responsible for 40% of the ethylene consumed in Brazil. Founded in 1976 as a state company, it was privatized in 1992.

The company is "known for using state-of-the-art technologies of petrochemical production and environmental control for the sustainable development of the business and the country" (Alpha 2005). Some of the elements that led to this statement are the certifications ISO 9001 (Version 2000, ISO 14001), OHSAS 18001 and the acknowledgment of Alpha as a world-class company.

The structure of the company follows a flat organizational model and all the areas of the company are connected as a matrix.

The policy of HR management aims at maintaining professional talents, offering employees personal and professional development programs, quality of life, compensation, recognition and health and safety at work. Practices adopted by the company include management by self-managed teams, aiming at promoting the employee commitment to the results of the team and the company and a formal system of management by competences, with skills certification as a basis for wages. The group itself manages the development of its certifications. The operational staff turnover rate – around 3 to 4% in recent years is a reflection of the company's policies.

The productive process follows the continuous production flow type with the plant operations working 24hours a day, seven days a week. The productive chain is totally integrated among the companies that belong to the complex, demanding great synchronism of the petrochemical industry logistic chain. This implies that the context in which the company is inserted offers constant pressure on individuals, since occasional failures have an impact throughout the entire productive chain.

The teams

We chose two groups to conduct the case study: the *laboratory team* and the *certified systems development team.* As criteria for choosing these teams, we used annual performance evaluation and recognition by other internal teams. Also, considering that teams differ in terms of both composition and ways of acting; we chose two teams that we could characterize by their differences in structure and performance – the laboratory team is recognizes as a permanent team and the other one as a virtual team. These different characteristics could interfere in the way collective competence is organized and stimulated.

In summary, the objective of the laboratory team is to carry out chemical analyses of products - raw material or products generated by Alpha - and inform their clients (other company units) about the results of these analyses. Therefore, this team's work is characterized by the execution of routine tasks, demanding high technical abilities

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1 We preserve the identity of the company using a fictitious name.

from its members. Since it is a routine-based activity, some standard procedures have to be followed.

Regarding the second team, the objective of the certified systems development team is to act in quality norms certification processes, disseminating quality processes in the organization. It has a peculiar characteristic compared to the other virtual teams in the company since it assumes a permanent character due to the fact that certified systems require constant maintenance and attention. In this case, it is characterized as work under request, having the challenge of staying motivated during periods when there is no certification inspection or intended certification project.

The main characteristics of the two teams cam be better observed in the following table.

Table 1: Teams characteristics

Team Characteristics	*Laboratory*	*Certified systems development*
Objective	Chemical analysis	Act in quality norms certification processes
Activity	Technical	Technical and managerial
Job	Routine-based activity	Support quality system
Structure	Permanent	Virtual and by demand
Areas involved	5 laboratories	Different areas of company
Number of employees	40	60
Meetings	Constantly	Periodical
System operation	Work in 3 shifts	Work on a 9 to 5 basis

The research was developed based on three main phases: preparatory, investigative and conclusive. The objective of the first phase was to select the company, to collect general information about the company (context) and to define the work teams. The two self-managed teams of distinct structure and activity were chosen in this phase. In-depth interviews were conducted with the two managers of the teams in order to have a better understanding of the teams' context. The second phase, investigative, aimed to understand team dynamics, learning experiences, specificities and structure. Initially, we used the focus group technique developed in two moments – at first, with twelve members of the laboratory team and, later, with eleven members of the certified systems development team.

The use of focus groups aimed at the identification of internal aspects of the groups, their functioning dynamics and the identification of the constitutive elements of collective competences from the two contexts, different from each other by their history, structure and systematic operation. The basic question refers to "*what animal could better represent your team and why?"* Another aspect which is relevant to the use of focus groups is the explicit use of the group's interaction for the production of insight data that would be less accessible without the interaction encountered in the group (Morgan 1995 and Flick 2002). The drawing construction technique was used in focus groups allowing the manifestation of aspects of a subjective nature, such as feelings and needs. When used in a group task, this technique favors personal engagement and the construction of images and interpretation of results. Besides, the technique permits the complementation of data obtained through oral or written information, con-

tributing to the triangulation of data and enriching the vision on the phenomenon being investigated (Vergara 2005). The interpretation of drawings was made by participants during the group dynamics following Vergara's (2005) recommendation. Further, with the intent of carefully examining some questions raised in the focus groups, semi-structured in-depth interviews were conducted with four members of each group, chosen among focus group participants.

Non-participant observation occurred whenever the researchers were present in the company, whether when carrying out in-depth and focus group interview techniques or during the visit to departments, company blueprints, and through informal contact with company members.

Secondary data was used to complement context comprehension. Document analysis (administrative documents and company reports) was used as a way to identify formal practice in the company. The main purpose of the information proceeding from document analysis was to strengthen and value other sources of evidence, mainly by supplying details or even making new reflections and discussions.

Finally, in the conclusive phase we analyzed data previously collected and pointed out the main elements linked to the collective competence inspired by the theoretical review.

For the data analysis, qualitative content analysis was adopted (Bardin, 1977). The categories of analysis were previously defined, based on (1) the notion of collective competences and, (2) the three constitutive elements of collective competences highlighted in the theoretical review: interaction, sensemaking and group identity. The table below points out the main categories of analysis.

Table 2: Content analysis categories

Understanding Collective Competences		
(1) Notion of Collective Competence		
Group Development Level	Exchange of views	Hansson (1998)
	Intimate knowledge	Hansson (1998)
	Entity	Hansson (1998)
Competence	Interpersonal	Hansson (1998)
	Practical	Hansson (1998)
(2) Collective Competences Elements of Analysis		
Interaction	Exchange of experiences	Hansson (1998)
	Knowledge and perceptions	Hansson (1998)
	Shared meaning and understanding	Hansson (1998); Sandberg (1994); Weick (1993)
Sensemaking	Time and space	Hansson (1998)
	Past experiences	Weick (1993)
	Intersubjective Level (interaction, synthesis of thoughts, meaning, intentions)	Weick (1995); Frohm (2002)
	Generic Level (norms, rules, routines)	Weick (1995); Frohm (2002)
	Extra-subjective Level (pure meaning, culture)	Weick (1995); Frohm (2002)
Identity	Part of sensemaking process	Weick (1993)
	Feeling of belonging	Druskat; Wolff (2004)

Although we have defined the categories of analysis a priori, we were open to identify other possible elements that could contribute to the development of collective competences and could also inspire further studies. Based on these analyses, we made some considerations and analytic generalizations that we hope can shed light upon the notion of collective competence and its development. The comprehension of collective competences and their constitutive elements are presented in the following sections.

The case study

The laboratory team

This section presents the laboratory team and includes the context of its activities, the notion of collective competence and the three constitutive elements of collective competences: interaction, sensemking and identity.

Initially, we present the following table that highlights the profile of the laboratory team participants in this study.

Table 3: Participants of laboratory team[2]

Participants	Main activities (laboratory)	Work schedule	Time in the company and in the team
1	Physical Chemistry / Chromatography	Shift	18 years
2	Solution/ Chromatography	9 to 5	4 years e 5 months
3	Effluents / Chromatography	9 to 5	7 years e 3 months
4	Control and Supply of Materials / Chromatography	9 to 5	23 years
5	Physical - Chemistry / chromatography	Shift	23 years
6	Physical - Chemistry / Utilities	9 to 5	2 years e 8 months
7	Physical – Chemistry	Shift	7 years e 8 months
8	Physical – Chemistry	Shift	6 years e 7 months
9	Physical - Chemistry / Chromatography	Shift	24 years e 2 months
10	Technical support / Effluents / Control and Supply of Materials	9 to 5	23 years
11	Technical support / Chromatography	9 to 5	23 years
12	Physical – Chemistry	Shift	4 years e 5 months

As we can observe, we have basically a technical profile and most of the participants have worked in the company and in the team for a long time. They have different types of work schedule: shifts and regular schedule (9 to 5 basis).

To understand the collective competences development in this team, it is important firstly to understand the context in which the team works. Some features of this team have already been presented in the previous section.

The context and notion of collective competences

The laboratory team operates in five different laboratories. Each laboratory has specific sectors for the different kinds of chemical analyses required by the petrochemical productive process. The employee in this team should be able to work in at least two

[2] The identity of the participants in this research is not reveled to protect them and also to allow them to speak freely.

laboratories, implying a constant exchange of knowledge amongst members of the team and rotation of sectors and shifts in order to keep them updated with the processes of chemical analysis.

The team has a firm structure with defined activities, composed by a leader, a group of people that make up the technical support group, and technicians. The leader of the team was chosen by the own team, which helps to legitimate the actions and choices of the team. In the technical support, each laboratory is assigned one technical coordinator and two specialized support technicians who are responsible for specific technical orientation for new methodologies, knowledge of equipment and definition on the team's routine.

The laboratory team has a shared acting space, a physical environment where interaction takes place. Following Hansson's (1998) approach, it is in this space where practical and interpersonal competences are exercised, that is, competences related to interaction and to tasks performance. What Hansson (1998) calls practical competences are the abilities developed by the members of the group to perform an action. In this team, the development of practical competences happens by means of training, personal effort, observation, and practice.

Once inserted in the group, the individual gets a notion of the group and is placed in the real work environment, characterizing a roletaking process. At this moment the new member will be part of the team's processes.

The level of development of the group is advanced; we can say that it is in between the level of intimate knowledge and entity (Hansson 1998). Interestingly, the level of team development is a cumulative process. In other words, the team has characteristics of the 3 phases presented in the theoretical framework: exchange of views, intimate knowledge and entity. Another curious point is that it was possible to observe a relationship between the team development level and interaction process. Thus, the higher the degree of interaction and its quality, the more advanced the level of maturity of the team.

Interaction

The interaction processes refers to the way the teams exchanges experiences, builds knowledge and perception, and shares meaning and understanding (Hansson 1998). As a member of the team points out: "This interaction allows the lab to work well for 24 hours a day". Actually, the interaction process is very intense in the laboratory team. According to another member: "Perhaps the strongest element we have here is the relationship (…) this constant interaction is what enhances team work". More specifically, the interaction processes that lead to the execution of the team's activities occur at different moments and amongst different groups. As one of the teams members highlights: "Most interactions happen during meetings". These interactions can occur amongst members of the team from the same laboratory – at shift changeover -, amongst members of the team from different laboratories – in knowledge, experience and training exchanges, and amongst members of the team and external agents who require their activities. As another member of the team highlights: "The shift changeover is a time of rapid contact and much information. (...) So we try not to omit anything, do not leave anything out". There is a confidence among the team members,

which contribute to the continuous improvement of their tasks. A member of the team highlights: "I will not be alone, someone else will be working on another sector, in another routine and I know I can count on him/her".

In order to achieve its goals the team emphasizes the importance of face-to-face interaction that mostly occurs at shift changeover. The employee leaving the shift has 10 minutes to give information to the colleague who is starting the shift and to update him/her on the status of his/her activities. It is through this interaction that the context is perceived and incorporated by the employee. A team member highlights: "[...] The same way we share information and experiences [...] it is something that we do everyday, without thinking, we do and show how to do it." This kind of interaction rescues what Hansson (1998) points out as knowledge and perception and it also represents the way this team share meaning and understanding.

Besides the face-to-face interaction processes, the team has technology artifacts such as e-mail, information systems and reports that help the communication and exchange of information within the team.

Sensemaking

In this team, the action are diffuse in time, since the team operates 24 hours a day, with different individuals performing the routine at different times (shift and regular schedule). The definition of these routines is the responsibility of technical support staff, through negotiations with other business areas.

Regarding sensemaking, we highlight that the actions of this team are based on pre-defined routines guided by formal standard procedures, accessible to all, indicating the steps to be followed for each analysis. This way of sensemaking is related to the generic level in Hanssons' proposition (1998). However, the team is able to meet different demands by altering the daily routine. According to one of the team member: "Our work is the most important thing for us. It represents a great amount the of knowledge generated in the company. (...) So we have freedom to set priorities and manage our routines from the requests received".

The fact that the group members act in different sectors of laboratories and conduct exchange shift implies constant upgrading by individuals. In other words, the team frequently builds sensemaking in an intersubjective level (Hansson 1998). In addition, the team is prepared to deal with adverse situations. More specifically, this team receives extraordinary demands and negotiates with the customer, according to the following statement: "[...] We often receive this type of extra request. And sometimes we have to decide among two, three or more priorities [...]". At this time, the group interaction goes beyond their internal limits, because there is a negotiation with their customers. This process of interaction is fundamental in the decision making, as it illustrated by a team member: "[...] Imagine that the operation make this request, so we have their demand, and we, knowing, understanding the whole, the whole process, we then decide". In the regular schedule, this prioritization is done by a technical support, while in the shift, this prioritization is done by the team members themselves.

The definition of the team's goals is a collective task, considering the strategic guidelines of the company, which encourages the process of shared understanding. Here we can observe an interesting fact: the overlapping of competences elements.

More specifically, interaction and sensemaking comes together. It is impossible to speak about one of them without thinking of the other.

In sum, even if the team's actions are based on a previously defined routine, this does not characterize a non-reflexive or habitual action. Even when routines vary among shifts, or the team receives extra calls, forcing a change in routine, the team needs to be flexible enough to accommodate the needs.

Lastly, the sensemaking processes occur in three levels as shown by Weick (1995): inter-subjective, generic, and extra-subjective. The inter-subjective level occurs with face-to-face interactions, be it in shift changeovers, in the establishment of group aims, or even in the adjustment of daily demands in order to attend extraordinary requests. It is observed in the generic level that interaction is absorbed by the routine system and standard procedures that are followed daily by the team. It's important to highlight the elements related to the company's culture assimilated by the members of the group and inserted in the daily routine represents the extra-subjective level defined by Weick (1995).

Identity

Group identity, determined by Weick (1995) as part of the process of sensemaking, is clearly perceived by the sense of group belonging.[3] According to one of the team members: "I see myself as someone representing the laboratory. (...) We are a real team, composed by people who really seek the best for the team." This identity seems to have been constructed along the years, starting from the internal and external social environment of the company. The group shows that the sociability among them is not restrict to the company's daily routine, but goes beyond it, including leisure activities (soccer, get-togethers, etc.). In the group's sample not one member has been in the company for less then two years, being that 50% of them have been in the company for at least eighteen years. In the work environment, there is friendship, respect, and fondness among them. According to a member of the team: "We know each other very well. Not only the part related to the technical work but we have a deep affinity". The group calls itself one big family (see the drawings collected in the focus group activity, which shows the feeling of belonging, in the appendix), which is agile and dynamic in a way that it easily adapts to changes in the environment. This atmosphere has a positive influence on group actions and learning situations once it facilitates knowledge exchange in the group, and exchanging favors as, for example, the shift changeover between individuals. In this group, complicity, flexibility and obligation are observed among its members. Each and every factor acts in the building of a shared view among all team members. According to one of the team members: "We try to rotate between the activities of each laboratory because, in this way, we can be more flexible, solve problems that may suddenly arise."

Thus, this team differs from the groups studied by Weick (1993) and could be characterized by disclosure-oriented intimacy, since the team has been together over time and constantly shares experiences.

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[3] Once again, there is an overlapping of the constitutive elements of collective competences.

The certified system development team

In this section we also start presenting the context and notion of collective competences, followed by their constitutive elements. However, before that, it is important to check some characteristics of the team members.

Table 4 presents the profile of the interviewees in the certified system development team.

Table 4: Participants of certified system development team

Participants	Original Area	Work schedule	Time in the company	Time in the team
1	Maintenance unit	9 to 5	23 years	10 years
2	Planning and development office	9 to 5	20 years	10 years
3	Planning and development office	9 to 5	2 months	2 months
4	HR, safety and environment office	9 to 5	16 years	3 years
5	Maintenance unit	Shift	24 years	4 years
6	Utilities laboratory	Shift	24 years	10 years
7	Aromatic unit	Shift	21 years	10 years
8	Engineering unit	9 to 5	23 years	10 years
9	Engineering unit	9 to 5	23 years	10 years
10	Maintenance unit	9 to 5	26 years	10 years
11	Planning and development office	9 to 5	23 years	6 years

Differently from the laboratory team, the members of the certified system development team have a combination of profiles – technical and managerial - and, their members belong to different areas of the company. Similarly to the laboratory team they have also been working in the company for a long time. However, the length of time that they have been at the company and in the team are not the same, since they are not a permanent team.

The context and notion of collective competences

The main role of the team is to disseminate the certification standards (ISO 9001, ISO 14001 and OHSAS 18001) granted to the company. As a result of the activities of this team, this group shows that the dissemination of quality issues are each time more integrated into daily routine.

This team's actions are different from the previous team, since they do not work based on routine procedures. On the contrary, its performance is based on reflexive action, as a result of an intentionality based on observation and experience exchange with the members of the group. Among the actions and responsibilities of the team is the knowledge of norms and quality standards. The team is also responsible for updating and communicating these norms as well as keeping the colleagues from their original areas motivated in relation to the certification processes. The members of this team have the role of multipliers and auditors of the quality management. As multipliers, they operate in their original areas; as auditors, they audit different areas other than their original ones. Considering the multiple roles of team members and especially the necessity to lead the process of maintenance of norms and quality standards, the

required profile of a team member is someone with leadership and persuasion skills. According to the technical coordinator. "[...] This team aims to go beyond the processes of quality".

The team members have functions that range from managerial to more operational ones, including people from all the areas of the company, who work in shifts and follow a regular schedule. This background features imply in a heterogeneous group, i.e., the members skills vary according to their attribution in their teams of origin. As a way to unify these different profiles in the certified system development team, all members are certified in the ability of quality disseminator. Besides this accreditation, the team members can be certified as auditors.

In this team it was possible to clearly observe that the members have developed technical and interpersonal competences. Since they have to support the quality system of the company (technical demands) and they are located in different areas of the company, they need to interact in both groups – in their original area and in the certified system development team (interpersonal demands).

The work of the team has a collective and individual dimension. It is collective because it runs across the company and, it is individual because every multiplier advisor is responsible for giving support to his/her team of origin and the executive in charge of his/her area, on issues relating to certification. According to a member of the team: "It is very restrictive to say that the actions are individual. They could start as an individual action, but they always get shared."

The team has a diffused performance in space and time. In time because their actions are dissolved in the daily routine of the company, and in space because it is embedded in the entire organization.

Regarding the group development level, this team can be considered as between the phase of exchange of views and intimate knowledge. During the focus group activity it was possible to observe that the relationship among the members of this team is formal and they are not completely integrated. We could not observe friendship relation or meetings outside of the company as it occurs in the laboratory team. However, there is a desire for greater interaction and intimacy, including social life. This is due to "lack" of daily possibilities of interaction and the opportunity to build a closer relationship. The reality and routine of the members of this team are very different from their activities as members of certified system development team.

Interaction

In this team, due to the virtual and inter-disciplinary character, interaction occurs in distinct moments: in the original areas of the members and in the teams meetings, which occur monthly and the attendance is not compulsory. At these meetings, the team defines its actions and an exchange of knowledge takes place. According to one of its members: "Although the work is not continuous, perhaps the strongest element in the group is the relationship we have here - the value of teamwork, the exchange of experiences."

This process of exchanging experiences is based on narratives of the team experiences, mainly those related to the original team members, which in some way contribute to the group's learning. One of the team members highlights: "Exchange occurs

mainly through the narrative of the experiences of the people in their areas. (...) It is the simplicity that allows people to build this environment of information exchange."

Technological artifacts such as g*roupware* software and e-mails allow the team to interact and communicate in periods between meetings.

The group could be characterized by non-disclosure orientated intimacy. It means, there is no close contact among group members and their work. However, it does not indicate that there is no shared meaning in this team. Instead, there is a shared understanding, which was built over time from their actions and knowledge base, both tacit and explicit, generated for each system in which the company was certified.

Sensemaking

The sensemaking processes in this team occur in an intersubjective level (Hansson 1998), based on the perception that each employee has of the system in which he/she is inserted. And, also, it happens in the extra-subjective level, due to the emphasis on the company's culture issues intrinsic in the groups.

The narratives of experiences have an important role in the process of sensemaking building and also stimulate the interaction process, as pointed out before.

To better understand how this team works we should rescue the historical perspective once the team performance and objectives are reconsidered according to demand. Although some objectives are reviewed, characterizing a similar environment of projects, the function of constant acting as a watcher over certified systems remains for the team. This objective is shared by everyone in a way that the team refers itself as "the guardian of certified systems" (please see the drawings collected in the focus group activity in the appendix). For this paper, the group was studied at the moment when it was acting like a multiplier and not when implementing a new certification.

Identity

Although the feeling of belonging to the team is in relation to their original team, their members feel proud to be part of the certified system development team.

They feel like representatives in the organization, that is, as a bridge between the certified systems development team and the team of origin. According to one of the team members: "I represent a unit. In fact this is a huge responsibility".

In other words, the idea of what this group is developing in relation to its work is basically composed by two distinct situations that generate two identities: one towards routine and its daily responsibilities in its functional areas and another one, more punctual such as "quality process guardians" in the company, emphasizing the work in the virtual team.

The members of the group feel motivated to participate in this team because they understand the importance of the developed work by the team for the company. They share the understanding that the quality systems support the management system at Alpha. The history and experience of the group, and the quality of the interactions of its members influences the process of their identity building.

In a few words, the team's identity was built over years and it is based on its history. The team was created in 1995, with a reduced number of members with the objective of obtaining the ISO 9001 certification. Since then it has received new members and new objectives have been defined.

Conclusion

This article has sought to understand collective competences based on three elements: interaction, sensemaking and group identity. These elements were analyzed in two self-managed teams.

The two studied teams have rather distinct characteristics, peculiar to the context and specificity of their actions. They differ in essential aspects of collective competences: interaction processes, sensemaking and building of the team's identity. This study shows that these elements are interrelated in such a manner that it becomes impossible to understand their meaning separately. Moreover, these elements are influenced by the nature of the team's actions. The sensemaking processes of the teams are strongly based (1) on their history, (2) on the identity built over years, (3) on the development of the teams during this period and, moreover,(4) on an internalized basis of knowledge for each individual, as well as (5) externalized knowledge in formal procedures. Furthermore, we have highlighted the importance of interaction quality processes of the teams studied. In other words, it's not enough to have interaction within the team. The quality of this interaction makes all the difference. Moreover, this quality has a positive influence on the building of shared meaning, pointed out by Hansson (1998) and Sandberg (1994) as a pre-requisite for collective competences.

Empirical research suggests that although there is some specificity in the two teams, collective competences can be developed in both cases, respecting its characteristics and way of working. The team's context could represent a restrictive or encouraging factor in the interaction processes, as well as its actions (either routine or not). However, as it was shown in the research analyses, it is the quality of these interactions that influences the development of collective competences. This fact highlights the important role that affection has in the development of collective competences.

Therefore, the analysis of collective competences of teams should consider that these competences are dependent on context and related to the action to be performed. The overlapping of concepts and the impossibility of considering them individually signal the dynamism and complexity of the understanding of collective competences.

There are also other elements involved in the creation of collective competences observed in the teams analyzed, such as confidence, affection, specific learning and trust. We suggest further studies that could improve the analysis of these elements.

Finally, all the collective competences elements highlighted are closely related and it is impossible to consider them separately. We believe that the understanding of collective competences is more deeply related to the dynamics and to the process than to the content of competences. This finding strengthens the importance of learning process embedded in the collective competences development.

Limitations and recommendations

The main limitation of this research is also one of the main results - the impossibility to understand the elements involved in the collective competences when the circumstances surrounding them are different from their own. Context-dependence is the basis for understanding collective competences. Moreover, how these constitutive elements influence each other is not easy to identify and understand. However, this paper does not mean to be conclusive, but to raise some insights about these elements as a preliminary discussion. We suggest further investigations on collective competences and its main elements.

Finally, the study of collective competences could bring some insights to understand other issues in the organizational field such as: the link among different levels of competences – core competences, managerial competences, individual competences; the dynamics of team work; situational leadership; individual skills development and organizational learning.

References

Alpha (2005): Documento Interno. Triunfo.

Bardin, L. (1977): Análise de conteúdo. Lisboa: Edições 70.

Druskat, V.U./Wolff, S.B. (2004): Building the Emotional Intelligence of Groups. Boston: Harvard Business Review on Teams that Succeed.

Flick, U. (2002): Qualitative Sozialforschung. Hamburg: Rowohlt.

Frohm, C. (2002): Collective Competence in an Interdisciplinary Project Context. Department of Management and Economics, Dissertation, Linköpings University.

Hansson, H. (1998): Kolektiv Kompetens. En studie av skicklig interaktiv handling. Department of Business Administration, Doctorate Thesis Summary, Gothenburg University.

Le Boterf, G. (1997): Compétence et navigation professionnelle. Paris: Éditions d'Organisation.

Leonard, D./Swap, W. (1999): When sparks fly: igniting creativity in groups. Boston: Harvard Business School Press.

Morgan, G. (1995): Images of organization. Thousand Oaks: Sage.

Sandberg, J. (1994): Understanding Human Competence at Work: An Interpretative Approach. In: Academy of Management Journal, 43: 9-25.

Shonk, J. (1992): Team-Based Organizations. Developing a Successful Team Environment, Business One, Irwin, Homewood, IL,

Vergara, S. (2005): Métodos de pesquisa em administração. São Paulo: Atlas.

Weick, K.E. (1993): The Collapse of Sensemaking in Organization: the Mann Gulch Disaster. In: Administrative Science Quarterly, 38(4): 628-652.

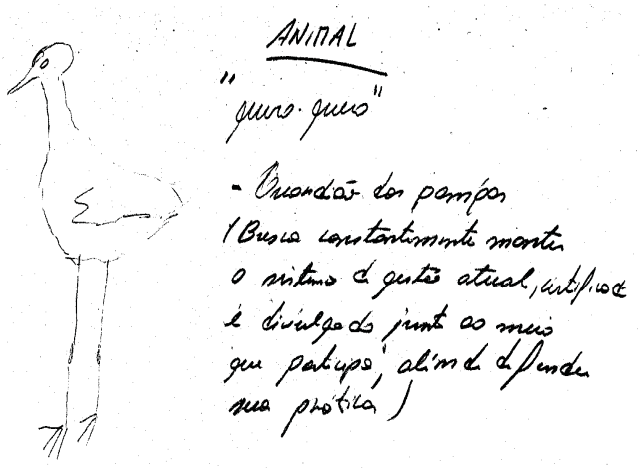
Weick, K.E. (1995): Sensemaking in Organizations. California: Sage.

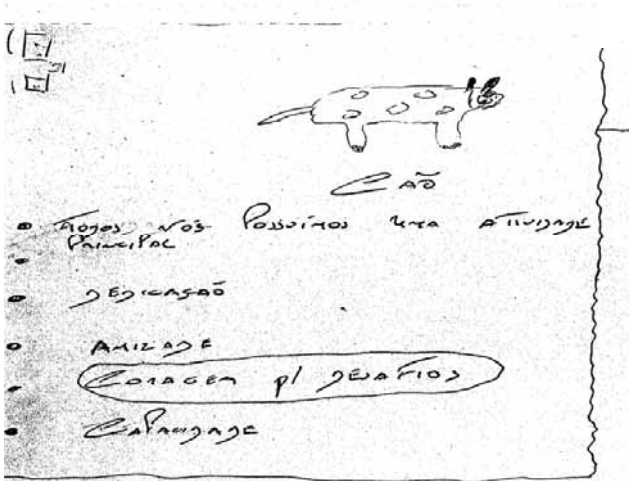
Zarifian, P. (1999): Objectif compétence. Paris : Editions Liaisons.

Appendix: Some drawings collected in focus groups

Certified System Development Team

This bird represents the guardian of fields. It's a typical bird from the South of Brazil which is famous for protecting their babies.

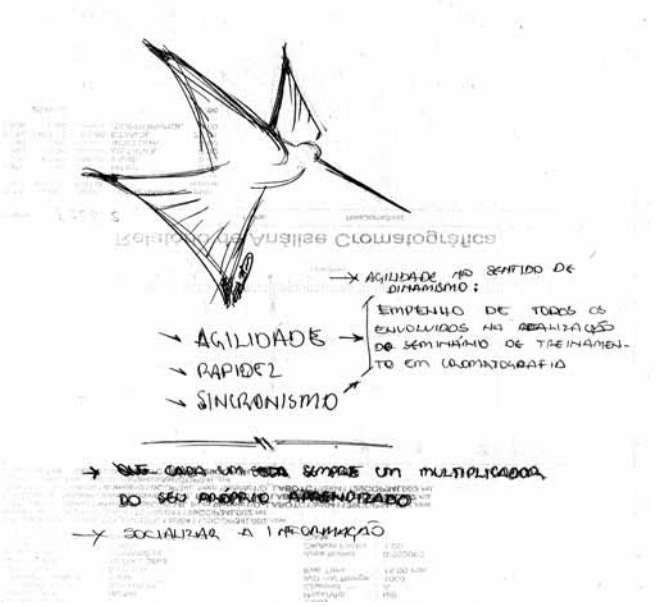




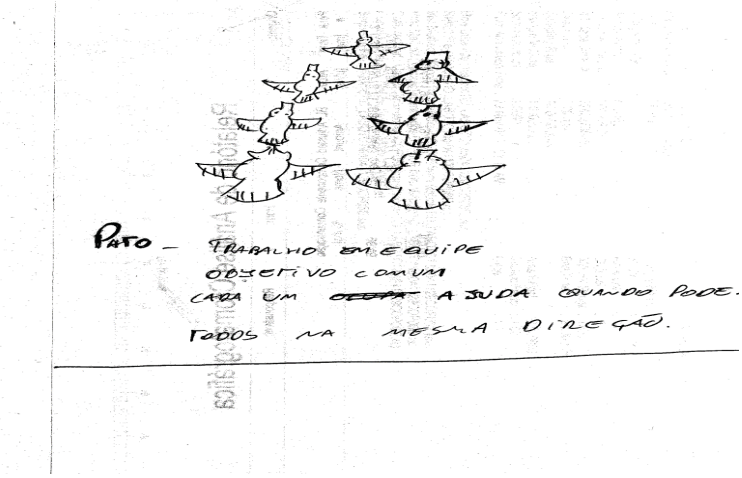
Dog: it represents dedication, friendship, courage and faithfulness.

Laboratory Team

Humming bird: It represents agility, velocity and synchronicity.



Centipede: it represents many feet that walk together; flexibility; capacity to overcome obstacles.



Ducks: They represent work team; common objective; all in the same direction.