Emergent coordination in a fragmented world; a practice-based view of integration

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ABSTRACT

Coordination has historically been associated to the concept of integration. In the emergent perspective, this association leads to the definition of different integrative conditions of coordination (Okhuysen & Bechky 2009). Consequently through integration, actors emphasize their commonalities and similarities, fostering a sense of belonging or cohesion that is conducive to the successful achievement of the coordination conditions. However, the fulfillment of the conditions of predictability, common understanding, and accountability seem difficult to achieve in contexts where differences are more prominent and integration difficult to consider (Wolbers et al. 2018). The analysis of two cross-border regions in which borders generate multiple differences challenges the predominance of integration and question more broadly the ways in which coordination conditions can be achieved. From a practical perspective, our results show that integration is far from being the favored way for actors in cross-border regions to coordinate; their actions converging more towards accommodation or fragmentation dynamics. Far from being detrimental to the coordination process, our results show that accommodation and fragmentation can also serve the achievement of coordination conditions yet by relying on different practices.

KEYWORDS

Coordination, integration, cross-border regions, practices.

INTRODUCTION

In the aftermath of a large-scale disaster (Majchrzak et al. 2007), in an organizational project (Bailetti et al. 1994; Bechky 2006) or for teams operating in a fast-response organization (Faraj and Xiao 2006), the question of how different actors collectively perform their interdependent work is at the core of coordination studies. We define coordination in this article as " *a temporally unfolding and contextualized process of input regulation and interaction articulation to realize a collective performance*" (Faraj & Xiao 2006: 1157). Many example in organizations studies acknowledge the importance of this topic. While coordination is essential to collective performance, a lack of coordination may generate social inadequacy and discordance between actors (Pichault & Alsène 2004), create delay and additional cost for the organization (Bechky & Chung 2018) or dilute individual efforts and create misunderstandings (Wolbers et al 2018). As a consequence, authors have linked organizational performance and a high degree of coordination by highlighting the fact that projects' development failures are often associated to an inadequate integration of work (Bailetti et al. 1994).

In both contingent and emergent perspective of coordination, the phenomena has always been associated to the concept of integration. In the emergent perspective we adopt, authors consider coordination in extreme and evolutive contexts by relying on integrative conditions of coordination rather than on mechanisms (Okhuysen & Bechky 2009). In such contexts, actors from a police squad (Bechky & Okhuysen 2011), an air force aerobatic team (Godé 2011, 2015), a race-sailing crew (Bouty & Drucker-Godard 2018) or in a trauma center (Faraj & Xiao 2006) have to manage their complex interdependences. These examples show that, despite differences between actors (e. g different epistemic communities between groups in the trauma center), actors yet share the same workplace (Faraj & Xiao 2006), are inserted into the same structure or occupational community (Bechky & Chung 2018) or are driven by joint work habits (Godé 2015). To say it differently, actors share some commonalities that facilitate the achievement of coordination conditions. Achieving conditions of accountability, predictability and common understanding is then mainly associated to a search for integration. We defined integration as a capacity to generate a global alignment by "pulling together" (Harrison & Rouse 2014 : 1258) interdependent actors sharing relative commonalities in order to achieve a compatible and cohesive whole.

However, the evolution of organizations (e.g. tertiary sector expansion, digitalization or internationalization) and the development of large scale phenomena (e.g. global disasters, grand challenges, transboundary crisis) stress different new forms of organizing. Organizational boundaries have indeed become blurred and the development of outsourcing or global value chain concepts have shown that it has become difficult to distinguish between the core business and the periphery of organizations' activities (Scott 2004; Okhuysen & Bechky 2009). Consequently, the rise of interest for multidisciplinary teams (Ben-Menahem et al. 2016), distributed team workers (Sierra et al. 2017), relative strangers from dissimilar agencies with limited history of collaboration (Beck, 2014) or groups with no pre-existing structure nor leader that drive interactions (Phillips et al 2000; Majchrzak et al 2007) underline the fact that coordination between heterogeneous actors is much more complex to consider than within a homogeneous one (Owen et al. 2013). On more extreme settings, terrorist attacks of November 2015 in Paris (Hirsch et al., 2015) have shown that the series of suicide attacks located in different places in the city (i.e. Stade de France, restaurant patios in the 10th and 11th districts, the Bataclan concert hall) involved the engagement of many actors scattered over the territory. Due to the involvement of three separate commandos with an increasing number of actors on the field, it was difficult to align all means and global strategies in a cohesive way (integration). In such complex and heterogeneous situations, an article recently presented a fragmentation perspective of coordination (Wolbers et al 2018) that somehow "pull the group apart "(Harrison & Rouse 2014 : 1258). Authors consequently treat discontinuity and ambiguity as new essential components of coordination (Wolbers et al, 2018). In this vein, this fragmentation perspective questions the way coordination conditions unfold when managing interdependencies could not rely on the core concept of integration. However, there is little evidence to show to what extent and under what circumstances the particular fragmentation perspective is helpful or detrimental to coordination.

Considering these complex situations involving heterogeneous actors, this article aims at challenging how different perspective can be beneficial to coordination, by relying on a practice-based approach. Consequently, this article the following question : In contexts that are not naturally favoring integration, what are the dynamics through which the conditions of coordination are achieved?

To empirically answer this question, we build on qualitative cases of two European cross-border regions where diverse and multiple organizations are involved on both side of the national borders. These regions gathered different actors, each embedded in its own socio-cultural network and institutional environment. Our results stress out different dynamics that unfold when differences among actors are brought to the forefront : fragmentation, accommodation and integration dynamics. We argue that these dynamics all converge towards the achievement of coordination conditions yet through different ways. As a consequence, our article does not call for an opposition between fragmentation and integration but rather acknowledges the fact that coordination could not only be built over a search for alignment, cohesion and compatibility (integration).

THEORETICAL BACKGROUND

1. COORDINATION AND INTEGRATION IN ORGANIZATIONS STUDIES

Coordination has been historically investigated in organization studies, often in association with other concepts such as collaboration or cooperation. The particularity of coordination however is that it differs from cooperation both in its motivations and in its purpose (Castaner & Oliveira 2020). Coordination, according to Gulati et al. (2012) is motivated by partners' desire to manage interdependencies in their tasks and in their reciprocal actions. Having interdependencies to manage is therefore an essential element of coordination (Bechky & Okhuysen 2009; Majchrzak et al. 2007), the focus being made on the adjustment (Gulati et al. 2012 : 537), alignment of actions (Kretschmer & Vanneste 2017) or articulation of actors' contributions (Faraj & Xiao 2006) in order to achieve common goals. We chose to define coordination in this article by adopting Faraj and Xiao (2006) definition of coordination as a "temporally unfolding and contextualized process of input regulation and interaction articulation to realize a collective performance" (Faraj & Xiao 2006: 1157). With coordination, it is a matter of understanding how the interactions between partners are organized. This involves thinking about the allocation of tasks and actions as well as the orchestration of resources (Godé 2015; Pichaut & Alsène 2004) in order to achieve collective performance.

Both in historical (Lawrence & Lorsch 1967 ; Mintzberg 1979) and latest research on coordination (Okhuysen & Bechky 2009 ; Wolbers et al. 2018), the concept has been associated

with a search for integration. Integration refers in our article to an organizational capacity to " *pull together* " (Harrison & Rouse 2014 : 1258) interdependent actors around their relative commonalities in order to achieve a compatible and cohesive whole. A lack of integration can consequently result into unsuccessful coordination, highlighting opinion discordance and frustration among actors (Schakel et al. 2016), generating additional delays and costs (Bechky & Chung 2018), projects development failures (Bailetti et al. 1994) or misunderstandings (Wolbers et al. 2018). Coordination has deeply been rooted in a search for integration because authors have mainly investigated situations where actors share some commonalities. To say it differently, achieving coordination by relying on integration has been mainly possible because the emphasis has been on actors' relative similarities that naturally pulled them together. Coordination studies in police squads (Bechky & Okhuysen 2011), an air force aerobatic team (Godé 2011; Godé 2015), a race-sailing crew (Bouty & Drucker-Godard 2018), between members of a polar expedition (Lièvre & Gautier, 2009) or even a trauma center (Faraj & Xiao 2006) show some similarities that fuel belonging (Godé 2011; Beck & Plowman 2014), compatibility (Lièvre & Gautier 2009) and coherence among actors (Bechky & Chung 2018). Even though some differences may remain (e.g. different epistemic communities between disciplines in the trauma center), actors are able to erase them because they share a joint workplace (Faraj & Xiao 2006; Beck & Plowman 2014) that facilitate their everyday communication and the management of their interdependencies . Actors can also share a common rest room (Godé 2011) or belong to the same structure and chain of authority (Bouty & Drucker-Godard 2018) thanks to which they develop joint work routines, habits (Godé 2015) and a common mental structure (e.g. knowledge of ABC protocol in the trauma center) (Faraj & Xiao, 2006) that enhance their interactions' articulation. Finally, by sharing a common identity, actors may develop a unique experience, their common language and their own disciplinary culture. These values and culture are "*naturally and quickly spread among members*" (Godé 2011: 425), facilitating the coordination process. Similarly, by belonging to the same occupational community (Bechky & Chung 2018; Okhuysen & Bechky 2009), actors can internalized the legal and historical separation of expertise among professionals of the community (e.g. abdominal problems are systematically managed by surgeons) (Faraj & Xiao 2006) so that coordination is more naturally achieved and maintained. Time finally plays an active role in integration by allowing actors to engage into frequent social interactions and strong relationships (Beck & Plowman 2014). Through time, actors moved from a swift trust (i.e. based on the reciprocity of risks and common vulnerability) to a trust driven by

conventional and affective relationships. This more intense relationship generate some similarities that allow to federate the group and naturally manage their interdependencies.

2. COORDINATION IN CONTEXTS THAT ARE NOT FAVORING INTEGRATION : A PRACTICE BASED VIEW

2.1 Different dynamics of coordination

However, deep socio-technological transformations as well as the emergence of extreme contexts – and the uncertainty and disruption such contexts induce (Hällgren et al. 2017) - have highlighted several obstacles to integration.

- First, the evolution of organizations (e.g. tertiarization, internationalization) promote organizational heterogeneity in addition to involving a larger sets of actors. Consequently, they stress different new forms of organizing that go beyond organizational boundaries and the periphery of an organization's activities (Bechky & Chung 2018; Okhuysen & Bechky 2009). Scholars have then increasingly examined coordination in multidisciplinary teams (Ben-Menahem et al. 2016), between distributed team workers (Sierra et al. 2017), between actors from dissimilar agencies with limited history of collaboration (Beck & Plowman 2014) or groups with no pre-existing structure nor leader that drive interactions (Majchrzak et al. 2007).

- Second, the development of large scale phenomena (e.g. global disasters, grand challenges, transboundary crisis) underlie the fact that incidents also get global, multidimensional and more complex (Christensen et al. 2015). For instance, systemic or transboundary crisis (Ansell et al. 2010) involved many actors scattered over a dense urban territory. In such situations, the contribution of diversified organizations may obstacle cohesive use of means and resources (Hirsch et al. 2015). Furthermore, these diverse and unfamiliar actors often need to operate in urgent settings (Wolbers et al. 2018) so that temporal pressure and matters of life and death complexify even more the coordination process (Hällgren et al. 2017).

In such complex and extreme settings, actors cannot benefit from their similarities nor common elements (e.g. same workplace or structure of command) that naturally facilitate

integration and allow actors to manage their interdependences on this basis. By revealing heterogeneity and differences between actors, authors have progressively pointed out difficulties to manage interdependences through integration (Wolbers et al. 2018; Kellogg et al. 2006; Majchrzak et al. 2012; Bruns 2013; Harrison & Rouse 2014). As a result, the natural association between coordination (i.e. interaction articulation Faraj & Xiao 2006) and integration (i.e. compatible and cohesive alignment of contributions) becomes less easy to achieve. Majchrzak et al. (2012) opened up the discussion by exploring the transversal approach to knowledge integration. Kellogg and al (2006) also highlights coordination between members of heterogeneous professional communities of a web marketing organization. Since these communities are particularly dispersed and diverse, coordination across community boundaries rely on the concept of a "trading zone" (Galison 1999), according to which it is not necessary to have aligned contributions nor common interests between individuals to generate coordination (Bruns 2013; Kellogg et al. 2006). However, while questioning the feasibility of integration, these previous authors do not fundamentally question integration nor do they investigate other ways to coordinate.   To our knowledge, Wolbers et al. (2018) and Harrisson & Rouse (2014) were the first to explicitly introduce other ways of coordinating that do not derive from integration.

Wolbers et al. (2018) for example examined coordination practices between emergency commanders of various organizations (police, fire, emergency medical services) involved in crisis simulation exercises. Authors show that, when facing a danger (e.g. explosion, toxic release), actors are pushed to divert their procedures (practice of working around procedures) which generates ad-hoc adaptations. By introducing fragmentation practices, Wolbers et al. (2018) pointed out that discontinuity and ambiguity always prevail over integrated actions so that fragmentation perspective becomes an essential and helpful part of coordination practices in some turbulent environments (e.g. ad-hoc adaptation facilitates the evacuation of victims in a fire episode). In more creative context, Harrison and Rouse (2014) similarly explore the concept of desintegration. While there are forces that "*hold groups together*" (Harrison & Rouse 2014 : 1274) as it is the case in integration, authors emphasize that these same groups can also "*fall apart*" voluntarily in order to foster creativity. If these authors agree to consider fragmentation as a way to cope with the situation, fragmentation practices simultaneously question the ability to achieve coordination. For example, Wolbers and al. (2018) show that the practice of working around procedures (Wolbers et al, 2018) may create new expectations regarding the tasks to be carried out and eventually reduce the capacity of anticipation due to a

greater ambiguity of actions. Similarly, Harrison and Rouse (2014) show that desintegration "violate group boundaries and introduce ideas that disrupt " the group (Harrison & Rouse 2014 : 1257).

[Figure 1 near here]

The introduction of unpredictable and extreme contexts that are not naturally conducive to integration challenge the way coordination can be achieved. This raises different theoretical concerns. First, the changes in the situations and context investigated in the literature seem to suggest that there are other ways of coordinating than integration. This suggests exploring more situations when the focus is on the differences rather than on the commonalities shared by actors. Also, authors who preliminary offer insights to consider alternative ways of achieving coordination do not strictly elaborate the link between this new dynamic and how it achieves coordination. For example, authors who introduce a fragmentation perspective also acknowledges the existence of conflicts between communities or potential problems of jurisdictional control (Kellogg et al. 2006), questioning then to what extend this fragmentation dynamic is helpful or harmful to coordination (Wolbers et al. 2018). Moreover, while pointing out that fragmentation is "an expected and indispensable parts of regular coordination practices" (Wolbers et al. 2018 : 1525), these same authors do not explicitly explain how coordination explicitly unfold through fragmentation.

2.2 The theoretical lens of practice

If integration is not the only way to generate coordination, this article aims at questioning more broadly all the dynamics that can achieve it. To do so, we choose to adopt the theoretical lens of practice through which the contextualized and ongoing work of actors is emphasized. Practices can be defined as "a temporally evolving, open-ended set of doings and sayings linked by practical understandings, rules, teleo-affective structures, and general understandings" (Schatzki 2002 : 87). Examining coordination through a practice-based approach is relevant to emphasize how coordination is shaped by and shapes actors' everyday actions (Nicolini 2012; Schatzki 2002; Jarzabkowski et al, 2018). Achieving and maintaining coordination is then a matter of practices that are reflected in the everyday saying and doings of actors. This approach also points out that coordination practices exist in assemblages (Nicolini 2009 ; Schatzki 2001).

This means that practices are bounded together in a harmonious or more conflicting way in order to achieve coordination conditions (Nicolini 2009).

Adopting in this article the theoretical lens of practice is interesting as it is particularly in line with an emergent perspective of coordination that relies on the investigation of extreme, innovative, uncertain and unpredictable contexts. It is indeed in such contexts where the challenges to integration are multiple that it becomes possible to observe the development of alternative coordination dynamics. In the emergent perspective, coordination is seen as a contextualized and ever-evolving process (Okhuysen & Bechky 2009; Majchrzak et al. 2007; Faraj & Xiao 2006; Buthion & Godé 2014) rather than defined *a priori* and according to certain contingencies (contingent perspective of coordination according to Lawrence & Lorsch 1968 ; Thompson 1967 ; Mintzberg 1993).

In this vision, coordination cannot be specified in advance nor the dynamic through which coordination unfold. Actors' trajectories are then negotiated in action and vary regarding the situations (Wolbers et al. 2018; Kellogg et al. 2006). With the theoretical framework of practice that rely on an emergent perspective of coordination, we shift from the idea of *mechanisms* to conceiving coordination through the *conditions* of coordination (Okhuysen & Bechky 2009). Organizations should then meet three majors conditions to manage their interdependences (Okhuysen & Bechky 2009): i) accountability (i.e. who is responsible for specific elements of the tasks), ii) predictability (i.e. ability to anticipate what are the elements of a task and when they happen) and iii) common understanding (i.e. capacity to provide a shared perspective of the whole task and how each actors' work is related to others).

In line with a practice-based view of coordination that rely on the achievement of three coordination conditions, our article proposes to explore the coordination process in contexts that do not naturally favor integration. More fundamentally, it allows to examine in such contexts all the ways in which the conditions of accountability, common understanding and predictability can be achieved.

METHODS

COORDINATION IN CROSS-BORDER REGIONS : CASES OF THE FRENCH/ITALIAN AND FRENCH/BELGIAN CROSS-BORDER REGIONS.

This article examines coordination practices (i.e. practices that allow the achievement of coordination conditions) in two cross-border regions. Cross-border regions provide a high revelatory potential (Gioa 2013) of coordination in contexts that are not naturally favoring integration due to the many differences between actors operating on these territories. The first cross-border area presented in this article is the French and Italian region with a major focus on the coordination unfolding in the Mont-Blanc tunnel linking Chamonix in France to Courmayeur in Italy (11.6 km). The second case is the French and Belgium region with a major focus on the cross-border coordination project labelled ALARM, aiming at enhancing civil security coordination between cross-border actors in the two countries. This project has been funded by the European Union with the objective to erase operational obstacles to cross-border coordination as well as raise the awareness of local elected officials regarding the need for civil security cross-border coordination. Actors operating in CBR often need to manage their interdependencies on a daily basis or in more extreme configurations, making cross-border coordination essential. Coordination is important because the territorial proximity and the cross-border nature of these spaces highlight challenges of **reciprocity** (ex. similar impacts due to the geographical proximity in the Franco-Belgian case), **dependency** (ex. binational infrastructure in the Mont-Blanc tunnel) and **assistance** (ex. the most adequate and rapid relief organization could in some places be located in the neighboring country).

We chose to investigate these two cross-border regions as they are contexts potentially conducive to the identification of dynamics that allow the unfolding of coordination conditions without relying on integration. In fact, cross border regions highlight many differences that minimize the capacity of actors to coordinate by focusing on their similarities in order to achieve a harmonious and aligned whole (integration dynamics).

First, these two cross-border regions stress a diversity and a multiplicity of actors involved in every situation at the borders. For national sovereignty matters, every cross-border situation quickly requires the commitment of many diverse actors, duplicated from both sides of the national border. This is true for every type of situations, whether it is an extreme (e.g. cross-border crisis) or daily situations (e.g. cross-border meetings or simulation exercises). For

example, when a fire happened in 2004 at the border of France and Belgium, different French firefighters brigades as well as the French hospital center were required to support, assist and transport burn victims in the explosion. These actors had to coordinate their actions with their Belgium counterpart since the explosion happens on a Belgium territory, making the number of actors in interactions significant (i.e. North of France firefighters, rescue teams in Belgian zones , French and Belgian medical teams, ministries and governments from both states). In the Mont-Blanc tunnel also, every situation involves plethora of actors, duplicated on the national border : firefighters brigades in Haute-Savoie and in Courmayeur, French and Italian governments, Italian and French operating companies.

More than a significant number of interdependent actors, coordination in cross-border region reveals an important diversity and heterogeneity of organizations which are also embedded in different institutional and legal environments. Regarding civil security in particular, actors involved in cross-border exercises in the French/Italian or French/Belgium cross-border regions (CBR) are all governed by the operational regulations and strategic legislations of their own office and state ministry. This means that their emergency response networks are also different, which may highlight differences, particularly emphasized in the emergency response structure in the Franco-Belgian region (e.g. departmentalized structure in France VS zonal structure in Belgium with five formalized disciplines). In the case of the Mont-Blanc tunnel, this heterogeneity is emphasized through the tunnel governance, the infrastructure being directly managed by two independent concessions (French public operating company and Italian private company) and indirectly by the two national states. Also, heterogeneity comes from the fact that these actors manage their interdependences while bringing their very own operational expertise, procedures, routines or prerogatives in the interaction. For example, French and Italian firefighters do not share the same missions, the latter having a role of judicial police officers that the French do not hold. They also do not necessarily have frequent relationships with their cross-border counterpart. In some cross-border meetings when actors from both side of the borders have to coordinate their responses, differences in languages (ex. Italian language versus French language) as well as incompatibilities in the resources and techniques (ex. ANTARES civil security communication network used in France versus ASTRID system in Belgium) arise. These differences that may impede the coordination process are particularly exacerbated in the French and Italian CBR were the physical separation between actors is embodied by the presence of the Mont-Blanc mountain range. Unlike the Franco-Belgian case where, in some cities at the border, the transition from one country to another is continuously done only by crossing the street, the Franco-Italian region has a particular

topology. With the Frejus Tunnel, the Mont-Blanc tunnel is indeed the only crossing point linking France to Italy. This makes cross-border interactions and integration between the various actors' contributions even more difficult to consider.

Coordination is therefore highly challenging in these regions because these many differences may impede actors' ability to achieve coordination conditions by relying on an aligned and cohesive collective performance (integration). In an extreme way, these coordination challenges have been mainly emphasized in both cross-border regions, respectively in 1999 and 2004 with the Mont-Blanc tunnel fire and the explosion of Ghislenghien. Crisis reports have shown that these events created a deep traumatism for civil security actors because the importance of material damage and the high number of deaths (39 deaths in the Mont-Blanc tunnel; 24 deaths and more than 130 injured) have been strongly associated to failures in cross-border coordination. In the aftermath of the crisis, many civil security actors from both side of the borders engaged in a work towards the improvement of cross-border coordination. These improvements took various forms : creation of a binational structure for tunnel operation, launching of a civil security coordination program at the border of France and Belgium, institutionalization of meetings, workshops or exercises' simulation.

Data collection

We collected data for over three years between May 2018 and September 2021 to understand how coordination conditions may be achieved in contexts that are less prone to integration and in which differences are put in the foreground. We used a cumulative case study (Garreau 2020) and collected different sources of data to make our results more robust. We then mainly rely on in-depth observations and interviews to highlight what actors do in practice in order to achieve the coordination conditions. We conducted two long processes simultaneously, i) in the French/Italian region and ii) in the French/Belgian region, in order to have data on different situations were coordination is challenged. Data collected covered a long period of time going from 1999 to 2021 for the Mont-Blanc region and from 2004 to 2021 for the Franco-Belgian case. We started the coordination process analysis in each cross-border region after the massive crisis each of these area encounter (1999 for the Mont-Blanc fire and 2004 for the Ghislenghien crisis), these crisis - as we noted earlier- being an important indicator of coordination failures between civil security actors operating at the borders. We collected data by gathering observations of simulation exercises, meetings and workshops where coordination was

unfolding, discussed and even sometimes challenged. These observations have been particularly useful to identify the material and instrumental dimension of the practice (organization of space, objects used during the situations examined), but also to consider unnoticeable elements in interviews (identity, mixed culture, intangible barriers to interactions). Long observations, particularly those of the cross-border exercises in the tunnel (tunnel closing for the whole night), allowed us to deeply capture the tunnel culture in different perimeter (the operational command post in the first exercise, the command and control post in the second, the direct intervention of firefighters in the tunnel by shadowing the French relief chef in the third exercise). Exercises feedbacks also enlighten actors' reflexive capacity on their own coordination practices and thus enables to capture the whole analysis of the coordination process. Additionally to observations, and as **Table 1** emphasizes, we conducted 51 interviews with different actors in different situations (incident, exercises or cross-border meetings). These actors come from different organizations, professions, expertise and different nationalities (French, Belgian and Italian). We then discussed with both French, Italian or Belgian firefighters engaged in exercises and interventions ; members from emergency medical services in France (SAMU 74 ; SAMU 59), Italy (Protezione civile) or Belgium ; institutional actors such as a member of the Hainaut governor's office or the prefecture ; members from the Italian private company operating in the tunnel; members from the French public company operating in the tunnel, members from non-profit organizations (association for the protection of the Mont-Blanc site or victim support association). These semi-directive interviews essentially aimed at letting actors talk about their experience and the reality of coordination between their organization and their cross-border counterpart.

[Table 1 near here]

Data analysis

In this article, we adopt a practice-based approach to capture how coordination conditions can be achieved in a context of CBRS that are less prone to integration. We define practice as "an open-ended, spatially-temporally dispersed nexus of doings and sayings" (Schatzki 2012: 2). This definition see practices as made up of different components (units of activities) organized around a purpose (ex. skiing encompasses actions of : playing on the slopes, participating to resort events) (Nicolini & Monteiro 2016). Practices are then always seen in an assembled way : they only exist in connections and not in isolation. Finally, practices have a history and are historically situated and contextualized (Nicolini 2009). This last idea suggest that practices

embrace a processual dynamics were actions can be followed in time and space in order to capture its normative dimension.

In continuity of Wolbers et al. (2018) work, we first considered coordination practices with a primary focus on "doing and saying" of actors who are facing various differences while managing their interdependences. This first step in data analysis involved the specification of actors' work to achieve each condition of coordination (predictability, common understanding and/or accountability). The identification of saying and doing was first appreciated at a local level. This means selecting only particular situations when, (i) actors discuss or do something explicitly in order to manage their complex interdependencies or, (ii) situations where coordination emerge without any premeditation. We ultimately analyzed 15 different situations (daily situations such as meetings or exercises ; more uncertain such as intervention on the field) where coordination occurred, had been debated or challenged (8 in the Mont-Blanc case, 7 in the French/Belgium one).

Second, we moved from a local specification of actions undertaken by actors to achieve the coordination conditions to a trans-local vision of practices. This means going beyond the description of what actors *say and do* in a particular situation (Nicollini 2007, 2009, 2012). In this second step of data analysis, we then tried to gather categories of actions and explain the dynamics of activities: how they are generated and articulated "in different contexts and over time" (Feldman & Orlikowski 2011:1241) . To do so, we then searched for practices interconnections by following actions in time (from one situation to another) and space (from one type of actor to another). Consequently, by tracking these associations in time and space (trans-local vision of coordination), we managed to identify several dynamics of coordination that specify different ways of achieving the coordination conditions.

RESULTS

DIFFERENT DYNAMICS OF COORDINATION : INTEGRATION, FRAGMENTATION AND ACCOMMODATION

Our results show that when engaging in coordination practices to maintain or achieve the three conditions of coordination, actors coordinate and manage their interdependences in time and space by relying on one of the following three different dynamics of coordination : (i) integration (ii) fragmentation or (iii) accommodation. Our result show that each of these three

dynamics rely on its own practices and levers to achieve coordination conditions in different ways.

Each of these three dynamics gathers an aggregation of different coordination practices that converge towards different types of collective performance : a discontinuous, flexible or unified collective performance. Our results will successively present each of these three dynamics. What is important to mention is that in the integration dynamic, practices converge towards an alignment of work between actors who initially face various differences. However, in the reality of cross-border regions, such integration seem difficult to achieve for actors who cannot necessarily bridge their multiple institutional, cultural, political, expertise or normative differences in order to achieve conditions of predictability, common understanding and accountability. Consequently, other (more accurate) ways of achieving coordination conditions in cross-border contexts are presented through the accommodation and fragmentation dynamics. Our results show that the practices that unfold through the dynamic of accommodation and fragmentation are also supported by complementary work that ensure a complete achievement of coordination conditions.

1.   Different combination of practices : the dynamic of integration

Our results show that part of the work initiated by some actors to achieve predictability, common understanding and accountability unfold through an attempt to converge. In this integration dynamic, practices to achieve predictability, common understanding and accountability converge towards an harmonization of diverse actors' actions. For example, in order to reach predictability, actors engage in a practice of procedures standardization in which heterogeneous actors erase their respective technical boundaries and align their work by working on the creation of a common Franco-Belgian GIS (Geographic Information System) platform (**see verbatim below**). towards an aligned collective performance

> Chief coordinator of the Franco-Belgian civil security cross-border coordination project
>
> *The idea of this Geographic Information System platform is to allow the development of a shared vision of cross-border risks, equipment and resources. It*

> *is to have a cartography that would allow a shared knowledge of all material and technical things on our living area. We need to be able to use shared data with technical and operational tools that can be used in emergency situations, accessible by everyone and with added value for everyone at the border of France and Belgium. It is a tool that must be used and we are in this logic with the ALARM project. Therefore, significant progress has been made in the development of a GIS platform that should allow the collection of geographical information and cross-border capabilities. First of all it is the collection of resources because we realize that as French and Belgian we do not know each other well, it is a reality. The idea is to erase a certain number of things to have a better cross-border knowledge while focusing on the quality of the data and the exhaustiveness of the information*

Regarding accountability, in some situations actors do not hesitate to out-pass their boundaries to assist their cross-border counterparts when needed. For example, during an intervention that occurred at the border in the Belgian city of Mouscron, some chemical expertise were needed and French firefighters were the closest one to hold it. Because the fire occurred on the Belgian side, Belgian actors were the territorial competent authority to handle the fire. However, a French colonel and its chemical unit arrive very quickly to support and offer their help as if the intervention were occurring on its own territory. This practice of transfer in roles and responsibilities allows to reach the condition of accountability by relying on an homogeneous vision of the territory by a posture of humility. Through this posture, actors who transfer their resources and offer their help consent to appear as a support in order to help the neighbors. This contributes clarify the authority command (**see verbatim below**), making in return accountability easier to achieve.

> Lieutenant Commander of the Departmental Fire and Rescue Service (North of France)
> *We assume a role that we are not used to, we go from being a commander on national land to having to insert ourselves into an existing system on the other side of the border: there are difficulties in dealing and interfering in an existing system without wanting to manage the situation as we would do at home, but we do it.(…) So the first step is this one : it means that we have a potential officer who can go and meet his cross-border counterpart and exchange with him, see how the work is*

> *done there and project himself saying I would like to help and assist you where the fire has spread. So I come and I interface myself as smoothly as possible in respect to what you are going through and doing. (…) This notion of coordination means that people will have to put themselves behind a command and organizations with modes of operation that can sometimes be different. But we are only an over-added support that are integrated into their system, which is under the authority of our Belgian colleagues. We are therefore at their disposal.*

In the same vein and in order to achieve common understanding, some actors consolidate their informal relations over time with their cross-border professional counterparts so that it facilitates the spread of a shared perspective among actors. With a practice of local support' mobilization, actors differences tend to be bridged thanks a sustainable use of the cross-border network. For example, in the Mont-Blanc tunnel, strong relationships between some firefighters that experienced the fire trauma of 1999 crisis has been built with private actors operating in the tunnel (ex. annual Christmas parties with family ; informal gathering). Some of these firefighters have even been employed by the tunnel to manage some key positions related to civil security. As a consequence, during events (exercises and informal restitutions) the presence of firefighters is particularly high and constant.

However, while some practices converge towards integration, this dynamic seems little reflected in the daily reality of cross-border regions. This can be explain by the fact that aligning simultaneously many cultural, legislative, normative or expertise differences among actors operating in cross-border region can be difficult to achieve. Also, because actors change over time, it seems difficult to maintain a solid network of interactions and consolidate relations from one professional generation to another. Our results rather show that in context where many differences are shared by actors, fragmentation and accommodation dynamics are rather appropriate to achieve the conditions of coordination.

2. Different combination of practices : a fragmentation dynamic

Another aggregation of the practices initiated by some actors to achieve predictability, accountability and common understanding converge towards a dynamic of fragmentation. In this dynamic, actors manage their complex and heterogeneous interdependences by reinforcing their own boundaries of intervention so that they can simplify, clarify and guarantee the work

that has to be done. It is paradoxically through a practice of space intervention segmentation (i) ; the practice of dual representation of authority (ii) and the practice of communication channels demarcation (iii) that the conditions of predictability, accountability and common understanding are respectively achieved in this dynamic. Fragmentation highlights the necessity in some situations to ensure the coexistence of different norms, expertise or institutions so that the process of coordination may unfold correctly. To say it differently, in this dynamic demarcating different collective performance paradoxically help to achieve the conditions of coordination. However, this fragmentation is never complete and an additional work is often needed to create some interfaces and connections between the discontinuous contributions of actors.

For example, when a fire happened on a large perimeter at the border of France and Belgium, instead of trying to mix teams (every team having its own national procedures and techniques), a quite natural grouping has emerged between French and Belgian intervention teams. Each team has taken charge of a perimeter in a more or less autonomous manner. Consequently, a territorial or functional separation between French and Belgian actors allows for greater autonomy while simplifying the scope of intervention of each team. This makes easier to foresee the evolution of the tasks to be carried out within this scope and then facilitates the achievement of predictability by **simplifying** the work. By geographically or professionally segmenting areas of intervention (practice of space intervention segmentation), national actors become more autonomous in their tasks and have a clearer vision on what to do on their perimeter. However and in order to totally reach predictability, the different areas segmented remain related so that it is possible to have an idea of what is simultaneously happening elsewhere. What we noticed is that the different teams working on their own perimeter often have one member, explicitly distinguishable from others (e.g. particular jacket with a logo, distinctive color), that communicate with other groups and reports the update to its team. As a consequence, predictability is achieved 1. thanks to a segmentation that allow to simplify the work and 2. because the coexistence of different performances is combined with a display and communication work ensuring a connection among actors.

In the same vein, since the Mont-Blanc tunnel is bi-national, responsibility is necessarily shared between actors with no claim of superiority from one state to another (tunnel owned 50/50 by two French and Italian concessions). Each operating companies in the tunnel, which is either governed by the French or Italian nation-states, ultimately has the obligation to

maintain a balance in decision-making with the other. The coexistence of both nationalities in every decision affection the tunnel is guaranteed through the freezing of certain key positions (**see verbatim below**). For example, the security director of the tunnel is always Italian so that each recruitment process associated to such position should meet this requirement. This practice of dual representation of authorities that **guarantee** the coexistence of actors is also revealed in the French-Belgian cross-border regions. For example, in the cross-border project Alarm we analyze in this article (*and which is dedicated to improve cross-border cooperation between civil security actors- see methodology section for more details*) there are as many French as Belgian among the 27 partners. It is because all nationalities coexist that a form of monitoring and contradictory debate are developed, which facilitate greater accountability.

However, this balance is possible when actors are not tied up in their differences and strictly stuck on their own interests. In this sense, additional awareness-raising work is necessary to support this fragmentation practice. This awareness is for example highlighted through the creation of workshops that insist on the risks cross-border partners commonly share on their territory (common responsibility), or through mediation among actors to solve a conflictual situation. The mediation can unfold through the intervention of a binational organization such as the Eurométropole (organizations funded equally by French and Belgian actors). The role of the Eurométropole is here to put Belgian and Italian official elected around a negotiation table to discuss a cross-border project that may affect civil security. Without this awareness, actors are not encouraged to discuss their potential disagreements in order to clarify their respective positions and create a room for achieving greater accountability.

> Director of the tunnel safety department
>
> *How do we determine the key positions?*
> *It is done by freezing key positions. Since the creation of the bi-national structure it respected a Franco-Italian balance at best. For the department directors it means two Italian two French, and at the level below it's also almost half/half. The board decided that the best to do is that key positions should be frozen in the nationality that created it. So if the first director was French in this department, his succession will be given to a French and vice versa. It's not a drama in terms of competence because Italians have lots of competent people and French have lots of competent*

> *people. So the reservoir to look for replacements exists. But this is how responsibilities are maintained here.*

Finally, the dynamic of fragmentation appear also convenient to satisfy the condition of common understanding through the unfolding of a practice of demarcation of communication channels that **clarify** actions of cross-border actors. For example, during an exercise in the Mont-Blanc tunnel simulating a vehicle pile-up with a series of damages and wounded people to extract from vehicle, three different teams arrive to deal with the situation (i.e. security department of the tunnel with both French and Italian operators, police officers, medical support (SAMU) from France, firefighters from Val d'Aoste and Chamonix). Because so many actors are involved simultaneously, French actors when arriving to the tunnel automatically tried to gain information from the command and control room located at the French entrance of the tunnel. Simultaneously, Italian actors have collected information from the second control room located at the Italian entrance. Also, when they enter the tunnel, these different organizations gradually gathered information by referring to actors from their own disciplines (firefighters, police, internal teams) who have their respective discussion channel. By relying only on particular and identified actors to collect information and generate discussions, these demarcation allow to gain clarity by reducing the number of person in interaction, making then common understanding easier to achieve. Similarly the two previous practices, our results show that fragmentation facilitate coordination conditions, here by clarifying actions in order to gain common understanding. However, this practice is also supported by complementary interfaces to allow common understanding achievement to unfold properly. In particular, the practice of demarcating communication channels is associated to an additional work through which channels are connected thanks to resources that facilitate the linking. For example, in both Italian and French command and control rooms in the Mont Blanc tunnel, each of the two regulator shares exactly the same screens and technological systems (software, physical tools, common nomenclature). They appear as the stable and focal point of reference in case other groups are expecting a report or updates regarding the evolving of the situation. The observation of exercises in the French command and control room has shown that these regulators also have access to all of the communication channels so that they can easily bridge communication gaps between operators in the tunnel in order to avoid misunderstanding or a lack of a critical information transfer.

3. **Different combination of practices : the accommodation dynamic of coordination**

Finally, the dynamic of accommodation emerge from the aggregation of three practices (the practice of maintaining a hybrid culture (i), the practice of complementing role (ii) and the practice of leadership temporal rotation (iii)) that unfold to respectively achieve common understanding, predictability and accountability. In this dynamic, actors rely on successive temporal or spatial alternation in ways of doing things in order to achieve coordination conditions. Similarly to the fragmentation dynamic, the accommodation dynamic need to be complemented by actions that guarantee a complete achievement of coordination conditions. Indeed, practices that are aggregated in the dynamic of accommodation highlight the existence of a flexible collective performance that need to be completed with additional work to make these practices more sustainable.

For example in cross-border regions, several cultures and languages co-exist on the same area so that cultural boundaries are permanently reconfigured in action. Opening up to the other culture is what allow to facilitate interactions and discussion and then enhance common understanding. In the Franco Belgian as in the Franco-Italian cases, it does not mean that actors need to be fluent but rather that everyone is free to use the language he feels the most comfortable with (Flemish, Italian or French language) while still being capable of understanding / being understood by others (i.e. everyone systematically speak slowly, often repeat and articulate when it comes to important point in meetings) (**see verbatim below**). This flexible use of language is also revealed in the narrative : when interviewing department officers in the tunnel they always refer to the Italian and French side of the tunnel only as the South and North platform and not as different national entities. As a consequence, this flexibility in languages is a way to make the work of actors intelligible for everyone. They can switch easily from one language to another and facilitate common understanding. However, this flexible collective performance is beneficial to the achievement of coordination conditions only if an additional interface promoting cultural diversity is rooted in the daily life of cross-border actors. In the Mont-Blanc tunnel for example, operators from France and Italy are contractually hired regarding their capacity to work in multi-cultural teams. This comes for example with the requirement to satisfy the European standard B2 in French and Italian, which is equivalent to being able to understand and express essential ideas in each of these two language. Also, an open-mindedness to cultural diversity is expected by all. The tunnel finally hired a language professor so that, in some professions, learning basics of each language became compulsory.

First managing director of the tunnel following the tunnel fire in 1999

But the essential thing is that we understand each other; it is not to lock each one on his own culture or to force to impose a unique language. Each one speaks his own language, and the other one must be at least able to understand, and he answers back in the language he understands better. So it's not a question of being polyglot, it's a question of understanding what we say. And there are standard security languages that we can establish of course. (...) It's clear that we still ask for the language, you know that we have a French and Italian teacher for people working in the tunnel. In some jobs, we also ask for a minimum level of B1 to have the position.

But in general, I don't mind speaking French or Italian. (he looks at me) Now, if we want to understand each other, I speak French... kind of. You understand me very well, don't you even when I speak a bit of Italian/French together no ? (laughs). Otherwise we complicate our lives.

No, today it is essential that each one understands what the other is saying. Then if one is more comfortable speaking one of the two languages he alternates or chooses.

This cultural diversity promotion is even more revealed in the French and Belgian region. In this region, mixing culture and languages is part of actors' everyday lives (ex.bi-nationalism, civil-security training with cross-border neighbors) (**see verbatim below**). To do so, development of cross-border mobility projects between French and Italian actors became recently a way to promote each of these two cultures. Additionally, the Eurométropole Lille-Kortrijk-Tournai is an agency legally constituted by French, Flemish and Walloons partners. Some of these actors with whom we spoke, often highlight their "pure cross-border" position, showing in this sense that they embody and reflect this dynamic of accommodation. The following verbatim introducing the an institutional actor of the Eurométropole agency is quite revealing of this cross-border posture and cultural essence (see verbatim below). Also, in some meetings we observe, coordinators from this agency have an important role in translating some words when different languages are spoken. They also work on translating some equivalences between different nomenclatures (ex. some prerogatives associated with communal actors in Belgium are at the departmental level in France and a communal level in Belgium) and designations (ex. the "bourgmestre" in Belgium is the equivalent of the "mayor" in France).

> Director of the Eurométropole Lille-Kortrijk-Tournai
>
> *I live in Tournai, so I am a pure cross-borderer. I have dual nationality, so I'm French-Belgian, so I'm really a pure product of this border, because I have a French mother and a Belgian father and dual nationality from an administrative point of view, so it's important to know that, I think, and so I started working on European funding here in the city of Tournai. Then I moved on to positions on both sides, but always related to these European and cross-border issues.*

On the same vein, the dynamic of accommodation is also revealed in a practice of temporal rotation of leadership, unfolding to achieve the accountability condition. In the Mont-Blanc tunnel for example, two operating room exist within the tunnel (one on each national territory). To facilitate roles and responsibilities identification of each person and to make it possible to know who is responsible for the activities to be carried out, each of these control rooms successively have an active and passive role during the year. This means that for six months it is Italy that holds the active command post and for the next six months it will be transfer to France who previously had a passive role. This assumes that in the presence of a particular event, only the active command room is in charge of managing the event, the passive command room being dedicated to secondary tasks (ex. managing the traffic). In this sense, by making the work more flexible, this rotation facilitate the achievement of accountability. However, because this rotation happens every six months, operators in these rooms that are both French and Italian have to work alternatively on a French and Italian territory. This is not without raising legal and contractual issues insofar as each operator is affiliated to one of the two tunnel operating companies. Actors are then affiliated to a French or Italian employment contract, with its own rules on leaves, rest days, etc. Consequently, a contractual simplification is required in order to make this accommodation dynamic fully beneficial to the achievement of coordination conditions. Some actors have the task of simplifying these contractual configurations so that operators do not perceive these complications in companies' management (e.g. rely on more flexible contracts in the different countries, adjust social benefits) (**see verbatim below**).

> Department chief in charge of both control and command room in the Tunnel

The national border is established every day in our workplace. This is what we deal with every day : different employment contracts. There are some Italians who work 40 hours, French 35 hours. We have the regulations that are French and Italian. The Italians work 4 consecutive days, the French work 3 days… and with all this, we must maintain two different control and command rooms : one "passive" and one "active" on the French and on the Italian side because actors in the passive room can help the active room in case of equipment breakdown in the active command room… So we have to set up a service rate with all that. Managing human resources and contracts in all this is complicated. For example for an Italian coming to work on the French platform requires that he start his job earlier than the French who would come to work directly on the French platform. So that's really a big internal organization. (…) So to balance between these differences for French and Italian people who do the same work and who all work 8 hours a day, we choose to rely on rotation and alternation. This means that the active command room is in France or in Italy every half a year. We balance like this : people rotate and the command room is alternatively in France and Italy every 6 months.

DISCUSSION

In this paper, we propose to explore the practices through which actors can coordinate and manage their complex interdependences. In the context of cross-border regions, different dynamics of coordination unfold : integration, fragmentation and accommodation. We then stress out that coordination is a process that involved simultaneously a plethora of actors whose practices are converging towards different ways of achieving the conditions of coordination. In this sense, contrary to what coordination literature has shown, coordination could not be resume to a work towards alignment compatibility or coherence at the core of integration. Consequently, working to achieve the conditions of coordination does not necessary mean integration practices. Coordination conditions achievement is also if not mainly a process through which actors practices converge towards a fragmentation dynamic of coordination or towards an accommodation dynamic (**Figure 2**.).

In the integration dynamic, actors practices highlight an attempt to align their collective performance through an harmonization of resources or procedures or through the development of strong informal relationship with their cross-border counterpart along the years. Through these practices, the dynamic of integration points out a vision of the cross-border region as a space of unity and a common living area where differences among actors are bridged. In the fragmentation dynamic, the practice of segmentation of different functional areas or the practice of demarcating authorities through the freezing of some key positions in accordance to the nationality underline the existence of a discontinuous collective performance. In such dynamic, cross-border coordination unfold with the tacit idea of demarcate expertise, contributions and role of actors while maintaining a balance between both side of the national borders. Finally, the accommodation dynamic underlines practices through which actors promote a hybrid culture or switch between roles, depending on the moment and the situation encountered. In these practices, the collective performance is flexible and the dynamic of accommodation underlie the capacity of actors to adapt their performance depending on the situation encountered.

[Figure 2 near here]

First, the consensus in the literature is that coordination is achieved through **integration**, which refers to the process of "pulling together" (Harrison & Rouse 2014) interdependent actors

around their relative commonalities in order to achieve a compatible and cohesive whole. (Argote, 1982; Okhuysen and Bechky, 2009; Wolbers and al, 2018). In the emergent coordination literature, integration has been progressively and naturally associated to the accomplishment of the three different conditions of accountability, predictability and common understanding (Okhuysen & Bechky, 2009). This is possible as the literature mainly examined situations were commonalities among actors exist so that it enhances compatibility, coherence and sense of belonging among actors. Our article however enriches the emergent coordination literature by providing a better understanding of coordination practices in contexts were integration is difficult to achieve. In particular, the study of coordination in contexts where differences are put in the forefront such as CBRs show that integration is hard to obtain in practices. Additionally, there are, through fragmentation and accommodation dynamics, other relevant ways to achieve coordination in cross-border contexts. In these two other dynamics actors acknowledge the fact that there are some forces that "pull the groups apart" and that commonalities cannot be found. The idea is then less to search for similarities in order to generate a globate alignment than it is to make divergent perspective locally or temporally compatible. Consequently, and contrary to what the literature highlights, fragmentation and accommodation dynamics are not in opposition with the integration perspective; they are just different ways to achieve the same coordination conditions.

Our article also contributes to the literature on coordination in a practice-based approach by stressing out the importance to consider "bundles of practices" in a strong practice approach of coordination (Nicolini 2009 ; 2016). When considering fragmentation or accommodation dynamics in particular, the work to achieve and maintain conditions of coordination is indeed thought as resulting of the combination of different practices requiring core activities and complementary ones. By insisting on these different combinations made of several activities in the fragmentation and accommodation dynamics, we emphasize the fact that, in cross-border contexts, coordination requires more efforts than in the integration dynamics in which the coordination conditions are achieved in a more natural and forward way.

Related to the previous point, our results finally show how the different practices in the fragmentation and accommodation dynamics clearly **facilitate** the achievement of accountability, predictability and common understanding by making the work of actors simpler, clearer and easier to monitor (fragmentation dynamic) or more flexible and comprehensible (accommodation dynamic). This allow to specify more precisely the link between

fragmentation practices and how they allow the achievement of conditions, a link that has not been explicitly made in previous contributions (Wolbers al, 2018; Harrison and Rouse, 2014). Additionally, if these practices in the fragmentation and accommodation dynamics facilitate the achievement of Okhuysen and Bechky conditions (2009), they also create favorable conditions for activating complementary activities. It is ultimately thanks to such combinations of activities in practices that fragmentation and accommodation dynamics can be achieved.

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Table 1. Data collection

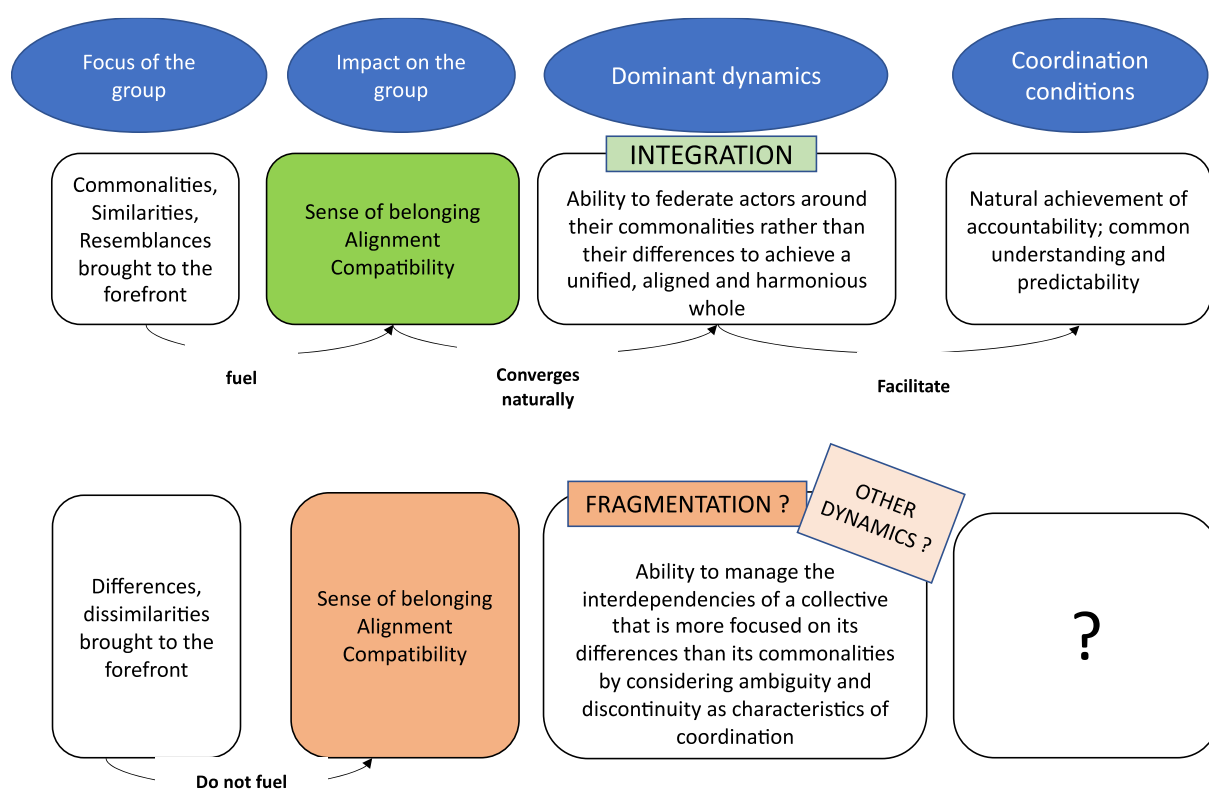|	Observations	Interviews
French-Italian cross-border region (Mont-Blanc tunnel)	9 observations (mainly exercises, feedbacks meetings)	23 interviews
French-Belgian cross-border region (ALARM project)	12 observations (workshops, meetings mainly)	28 interviews
TOTAL	**21 observations (62 hours)**	**51 interviews (53 hours 29 minutes)**

Figure 1. Dynamics for achieving coordination conditions

Figure 2. Coordination conditions achievements in CBRs

+ COMPLEMENTARY ACTIONS
- Practice of maintaining a hybrid culture
- Practice of complementing roles
- Practice of leadership temporal rotation

ACCOMMODATION

+ COMPLEMENTARY ACTIONS
- Practice of space intervention segmentation
- Practice of dual representation of authority
- Practice of demarcation of communication channels

COORDINATION

- Practice of space intervention segmentation
- Practice of dual representation of authority
- Practice of demarcation of communication channels

FRAGMENTATION

INTEGRATION