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The Impact of Project Ambiguity on the Forms of Cooperation Developed: The Merging of Two Hospital Care Units

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Abstract. The aim of this article is to study how ambiguity, defined as the inability to clearly interpret a phenomenon or set of events, can affect the forms of cooperation developed within a team and make a project succeed. First, we tried to prove that the structuring of a project could generate ambiguity, called internal ambiguity, in a team. Second, we examined how the level of internal ambiguity felt by a project team could impact the shift from one form of cooperation to another. In order to test these two assumptions, we studied the merging of two medical units within a hospital, following a longitudinal analysis and an abductive approach. Our study led to the following results: internal ambiguity is a dynamic component of the project, but it depends on the team's ability to make it intelligible to themselves, in particular, by breaking away from the guidelines of the parent organisation. The level of ambiguity of the project does not systematically constitute a factor of evolution of the form of cooperation because other factors, such as the ability of the team to distance itself from the parent organisation and the will to support or stabilise change, play a role in outlining a form of cooperation.

Keywords: complementary cooperation, community cooperation, project team, internal ambiguity

INTRODUCTION

The literature on project management highlights tension between the need to quickly adapt to the uncertainty of changing environments (Eisenhardt & Tabrizi, 1995) and the requirement to achieve a predefined objective, leading to a certain degree of planning, coordination and structuring (Dvir, Raz & Shenhar, 2003). A project is viewed as a temporary organisation to which resources are assigned to undertake a unique and novel endeavour, managing the uncertainty and need for integration in order to deliver beneficial objectives of change (Turner & Müller, 2003: 7). The allocation of risks from cooperation under uncertainty is based on two perspectives: either the risk is anticipated by establishing probabilities and included in the structuring of the project (Melese, Lumbreras, Ramos, Stikkelman & Herder, 2017) or the project is flexible enough to gradually integrate risk management (Thomke, 1998). However, these analyses suffer from two pitfalls. Uncertainty is analysed in a very general way and is confused with ambiguity. These two concepts are, however, quite distinct: the first reflects an information gapa lack of information to be filled, while the second relates to the team's ability to interpret a situation in terms of problems or opportunities. These studies, then, demarcate the boundaries

between the environment and the project, suggesting that ambiguity or uncertainty only come from the outside, with the project being the structure that is supposed to reduce it. Yet, ambiguity can derive from the project itself.

Defined as the inability to clearly interpret a phenomenon or set of events (Feldman, 1991), ambiguity has been extensively researched in management science. First analysed as a component to be checked in order to promote the establishment of a shared perception of the action to be organised (Hampden Turner, 1992), it was subsequently considered as a potential resource, in so far assince it could help, by the given margins for interpretation, match the specific to reconcile personal interests within a collective action, given the possible margins for interpretation. According to Dameron (2004), it is a tool for fostering cooperation, i.e. when partners consciously share a common task in mutual dependence relations (Smith, Caroll & Ashford, 1995). Our goal is to extend these studies and examine the extent to which internal ambiguity, i.e. the ambiguity resulting from the structuring of the project, can impact the forms of cooperation developed within a team and foster its success. Our study offers several benefits. First, few studies tackle ambiguity in project management. Therefore, the links between ambiguity perception and cooperation have been scarcely addressed, although these two concepts, rooted in a team's ability to make sense of a situation and possibly cooperate (either to meet an individual interest or achieve a transcendent goal), appear to be closely related. Like Dameron (2004), we consider the project more in terms of collective dynamics than project management, with an emphasis on the team's ability to assume ownership of the project.

Accordingly, we study, from an interpretive perspective, the project to merge two medical units within a French university hospital (CHU). This 18-month longitudinal case study will allow us to determine the role played by project-related ambiguity in the forms of cooperation developed. We first discuss the concepts of cooperation and ambiguity and suggest avenues of research that link these two concepts. The second section addresses our research field, the abductive approach developed, and the results obtained, while the third section contextualises our findings within project management (theoretical and managerial contributions).

LINKS BETWEEN AMBIGUITY AND COOPERATION: A LITERATURE REVIEW

TOWARD A CONTEXTUALISATION OF COOPERATION THROUGH AMBIGUITY

Ambiguity as a determinant of cooperation? A relationship largely neglected

Defined by Dejours (1993) as a set of relationships built by the agents themselves to voluntarily achieve a common work, cooperation is based on the sharing of deep aspirations. It differs from simple coordination, which is based on the sharing of a common goal leading to the development of common operating rules. Conversely, cooperation is based on the establishment of rules emanating from a governance entity, intended to facilitate collective management (Kenis & Provan, 2009). Cooperation therefore encompasses the objectives pursued (achievement of a common goal) as well as the coordination rules that are developed (Dameron, 2004).

Cooperation is underpinned by the giving of a shared meaning to a situation, characterised by strong ambiguity or uncertainty, with both terms appearing to be used interchangeably to find the same answer to the situation. The sociology of conventions (Boltanski & Thévenot, 1992), whose purpose is to show how different groups governed by specific conventions agree to seek coordinated action, thus highlights the role of situation uncertainty when using a common higher-order principle that can transcend existing conventions (Lewis, 1969). Any convention, defined as an interpretive framework developed and used to assess action situations and coordinate them (Diaz-Bone & Thévenot, 2010: 4), will then serve to channel uncertainty from a common form of evaluation (Eymard-Duvernay, 2006: 6). According to Boltanski and Thévenot (1992), agents reflexively monitor their use, which allows them, in a situation that is ambiguous or characterised by strong uncertainty, to build bridges between the different conventions used and even make them evolve. Coming to an agreement is then possible through three processes: a) clarification—consisting in reinterpreting a situation in the light of another convention, b) criticism—describing the manner in which a situation, negatively viewed regarding its convention, is finally reassessed, and c) compromise—associating the components from different conventions to meet a transcendent common good. It all boils down to seeking an agreement that allows people to rise above the circumstances. Cooperation then appears as the product of the characterisation of the situation.

This relation between ambiguity and cooperation also appears—but in a more tenuous way—in the sociology of translation (Callon, 2006), which focuses on studying the manner in which cooperation is produced and leads to the construction of a stable actor-network. More specifically, cooperation here takes the form of a translation, materialised by four moments in constant interaction (Callon, 2006). The first moment, called problematisation, refers to the recursion between the definition of a problem and its solution using a rhetorical device. The second moment, called enrolment, refers to the roles that each party will accept to assume in order to solve the problem. The third moment, called interessement, refers to the possible gains obtained by each actor from their participation in the change. The construction of these roles, together with the interessement proposed, form an enrolment of potential members. As soon as each actor (human or non-human) decides to participate, allies (last moment), who will be designated as spokespersons of the parties enrolled, should be mobilised. The sociology of translation thus considers cooperation as being subject to the continued construction of a shared meaning which is renewed for each new controversy.

Although they highlight the various links between ambiguity and cooperation, specifying in particular how cooperation is built on the accepted, or simply shared, interpretation of an ambiguous situation, these theories do not deal, however, with all aspects of the relation. Thus, cooperation is the focus of these studies, but its characterisation is often overlooked compared to the study of the establishment of a common purpose. Nothing is said about the form it could take, either in the modes of coordination developed or in its relation to the defined objectives. Nor do we know whether cooperation varies over time or remains the same. Finally, ambiguity is often confused with uncertainty, but it is never precisely defined. In the following sections, we will successively address the concepts of cooperation and ambiguity in order to enrich the previously identified relation.

The concept of cooperation and its relation to ambiguity

Cooperation is widely studied in project management because it appears as paramount to its success. The literature focuses on three primary areas. The first area aims to study what factors can promote itfacilitate cooperation and identifies three types of factors. The first factor depends on the environment that the project derives from and in which it develops and includes the level of consensus on the set objectives (Boddy & Macbeth, 2000; Zika-Viktorsson, Hovmarkb & Nordqvistb, 2003) and the level of technological expertise (Pinto & Covin, 1989; Sundstrom, De Meuse & Futrell, 1990), as well as the quality of the relationships between the project-based organisation and the permanent organisation (Lehtonen & Martinsuo, 2008; Näsänen & Vanharanta, 2016). The second factor relates to the composition of the team, analysed through its level of cultural concordance (Barnes, Pashby & Gibbons, 2002; Skander, Prefontainre & Remonjavelo, 2006), technological collaboration (Kadefors, Bjorlingson & Karlsson, 2007) or variety of roles assumed (Pauget & Wald, 2013). The final factor, linked to team management in the psychosocial framework (Zannad, 2009), accounts for the differences between project- and work-related missions, the lack of evaluation of the skills developed during the project and the pressure exerted by the parent organisation.

However, this first research area has the same pitfalls as the sociological literature. Cooperation is hardly defined and is sometimes confused with coordination (formal and hierarchical rules) or collaboration (not including task sharing). Moreover, it is studied in a “fixist” approach, giving this concept an unchanging vision throughout the project. Finally, none of these studies explicitly links cooperation to ambiguity.

The second area focuses on characterising cooperation. Dameron’s (2004, 2005) studies have shown that, throughout a project, two forms of cooperation emerge, which correspond to the two approaches of cooperation from the sociological and managerial literature that are based on holistic and individualistic paradigms. The first form of cooperation, following an opportunistic rationale, is based on the arbitrage between gains and losses obtained by individuals when pursuing cooperation. Characterised by organic solidarity (Durkheim, 1930) and built on the differentiation of individuals and the division of labour, it involves formalising cooperation in a contractual, centralised and controlled way. The second form of cooperation addresses a common need for social identification (Dameron, 2004). Driven by a mechanical solidarity based on trust (Durkheim, 1930), it is displayed through the recognition of common values and a decentralised and informal development. Dameron (2002, 2004, 2005) has highlighted three constitutive dimensions of cooperation that help with understanding its specificity. Any cooperation is built around a purpose (why cooperate?), a form of preferred interdependence (how to organise the sharing of tasks and who will decide it?) and commitments by defining targets (for whom are the set rules intended?). Table 1 outlines this analysis.

Dimensions	Complementary cooperation	Community cooperation
Purpose	Congruence of individual interests	Shared objectives
Interdependence	Division of labour	Membership of the group
Commitments	Internal commitments	Interaction with external groups

Table 1 - Forms of cooperation in an organisation (Dameron, 2004)

In line with previous studies, the last area—viewing cooperation as a process—aims to examine the different forms of cooperation implemented according to the stage of development of the project. Their conclusions made in these studies are, however, diverse. A first trend considers that, in its early stages, each project presents community cooperation (Browning, Beyer & Shetler, 1995; Ingham & Mothe, 2007; Nooteboom, Berger & Noorderheven, 1997; Zucker, 1986), justified by the need to find a framework for common understanding within the team and assume ownership of the project. Subsequently, the collective development of common operating rules leads to the development of complementary cooperation.

Dameron (2002, 2004, 2005) has thus shown that cooperation within a project evolves through three stages, reminiscent of Lewin's (1947) three-step process of change. The first stage, called "unfreezing", is characterised by community cooperation. It relies on the team's strong need for social identification on their project and leads to informal regulation, based on the belief that individual interests should be coordinated into common objectives (Dameron, 2004: 142). This first stage will end when agreements with external partners are reached and the boundaries between the team and the environment are demarcated. The "change or transition" stage, characterised by the difficulties gradually encountered during the project, requires an evolution and formalisation of the initial rules. It corresponds to complementary cooperation, characterised by a hierarchy of knowledge between skilled trades and support function, and ends when the project is implemented. Finally, "refreezing" begins with the renegotiation of the objectives once the project is complete (prototype) and gives rise to community cooperation as the group redefines their identity when the project is implemented (Dameron, 2005: 111). It moves towards the renegotiation of the commitments of all partners and the arrival of new external partners.

Conversely, the second trend indicates that the appearance of complementary cooperation very early in the project can promote its dynamic development because it helps to formalise the role of each member and encourage them to invest in the project (Frankel, Whipple & Frayer, 1996; Goold & Campbell, 1987; Lee & Cavusgil, 2006; Mayer, Davis & Shorman, 1995; Pesqueux, 2009; Sitkin, 1995). Subsequently, community cooperation, based on the development of trust between members, can be implemented more easily and lead to the development of a common frame of reference and rapid progression of the project. This diverse succession of forms of cooperation shows that, beyond the organising specificities of each project (terms for setting the objectives, composition of the team, mode of management), the forms of cooperation chosen depend on how the members interpret them. In so doing, they organise the unknown and build their own reality. Therefore, the project is no longer a space with objective boundaries offered to the members and their analysis, but a reality cognitively and socially produced.

These two trends are interesting for our study because they specify the forms taken by cooperation and how they follow on from each other throughout the project. In addition, such studies highlight the role of ambiguity when shifting from one form of cooperation to another as the project develops. For example, Dameron identified three sources of ambiguity (linked to the objectives defined, the roles assumed by the members and the project scope) to explain the sequencing of the types of cooperation. The concept of ambiguity therefore seems paramount here, because it involves sensemaking by the team (Weick, 1995), leading not

only to cooperation but also to promoting one form of cooperation rather than another, according to the interpretation of the project.

Even if these studies more explicitly indicate the role played by ambiguity in cooperation, they are not specific enough to define the field of ambiguity. Hence, we will consider this concept in the following subsection in order to refine our research design.

DETAILS ON THE CONCEPT OF AMBIGUITY AND OUR RESEARCH DESIGN

Ambiguity in management: a tool for cooperation?

First defined in linguistics as a term with two or more meanings (Appollonius Dyscole's definition, quoted by Fuchs, 1994), the concept of ambiguity (although highly controversialthese typologies are still argued among experts) has three different accepted meanings, defined as follows by Fuchs (1994), Le Goffic (1982) andor Martin (1987): 1) ambiguity as suchitself ("equivocality"), when it may give rise leading to two incompatible and mutually exclusive readings or interpretations; 2) "equivocality by default" (Fuchs, 1994), referring when it refers to an fuzzy, approximate meaning, often due to referential uncertainty; and 3) "equivocality by excess", whenre the different meanings add up without being mutually exclusive.

According to Fuchs (1994), ambiguity has two origins. If, outside its context of utterance, a statement contains an equivocal lexical or syntactic pattern, it will be called virtual ambiguity. If the context itself contributes to creating ambiguity, thus applied to an actualised linguistic unit, it will then refer to effective ambiguity. This last category itself can be divided in two: involuntary (case of misunderstanding) or voluntary effective ambiguity. This situation is therefore created either with the speaker's complicity (fun ambiguity pertaining to a play on words or pun) or with deceptive intent to serve the speaker's interests (Kerbrat-Orecchioni, 2005).

When extended to the field of organisations, research on ambiguity is divided into two trends. The first trend, which endeavours to define what ambiguity is, has given rise to many studies highlighting its indirect, vague, disqualifying or still fuzzy nature, without actually defining the scope of ambiguity (for a review of these studies, see Eisenberg, 2006). For example, in project management, ambiguity is often associated with uncertainty (or even project risk management—see Chapman & Ward, 2003) without necessarily distinguishing it clearly in its definition or the characteristics of the proposed solutions (Pich, Loch & De Meyer, 2002; Turner, 1999; Turner & Cochrane, 1993; Turner & Keegan, 2001). According to Atkinson, Crawford & Ward (2006), it also appears as a topic to be addressed, just like uncertainty, because the failure to take it into account can reduce the success of the project. This polysemy, and the conceptual vagueness deriving from it, is, according to Eisenberg, inherent to the inability to determine when ambiguity "arises", whether during the speaker's intent, the listener's interpretation or the content of the message. For him, it seems to be a huge endeavour to define its scope, because this would imply locating it in speech acts.

The second trend, moving away from analysing ambiguity through its scope, chooses to focus on its interactionist perspective (Weick, 1979), studying how the social context impacts on its perception. Mainly used in an interpretive approach, these studies have shown that sentences or situations that are apparently clear in some contexts may appear vague in others and leave room for conjecture. Extending ambiguity to actions,

these studies have defined organisational ambiguity as the inability to clearly interpret "a phenomenon or set of events" (Feldman, 1991). Ambiguity consists of three dimensions (see method):

-Linguistic ambiguity, whose variety of interpretations makes it difficult to guide its practices and understand the rules (March & Olsen, 1976) without clear guidelines.

-Mixed ambiguity, perceived as a dichotomy between speech acts and current practices, the accuracy of the vocabulary used or its very general nature, does not appear to employees as being consistent with organisational practices.

-Factual ambiguity, encompassing all perceived discrepancies between (professional or organisational) practices, makes it difficult to determine how to react in a particular case.

This trend focuses on parties' enactment, considering external reality as a social production of the members of the organisation. Using their cognitive processes, individuals thus create their own perception of the environment and help to shape it. By focusing on some factors rather than others, they select their environment according to their causal map (set of enacted and stored environments that are used to provide schemas of interpretation) and enact differently, consistently with the former enacted environments (Weick 1979). Yet, Weick does not reject contingency approaches but limits their scope: "Almost all outcomes in terms of organizational structure and design, whether caused by the environment, technology, or size, depend on the interpretation of problems or opportunities by key decision makers" (Daft & Weick, 1984: 293). Enacting is then a prerequisite to sensemaking, which refers to the action by which an ambiguous situation becomes intelligible and a source of organised action. Even if the ambiguity of a situation may lead to a "downward spiral of loss of sense" (Daft & Weick, 1984), characterised by the inability to initiate collective action (Patriotta & Spedale, 2009), it can also become a trigger for sensemaking (Weick, 1995) from which the members will interpret their environment and create meaning where their project can be incorporated. The main studies of this interactionist trend (Eisenberg, 1984, 2006; Feldman, 1991; Urasadettan, 2015; Weick, 1991) have shown that ambiguity can be a resource for the organisation because it maintains a certain flexibility and allows the continuation of actions. According to Eisenberg (1984, 2006). it can help with harmonising differences, developing interpersonal relationships or preserving the commitment of partners. By making sense of the situation, it can also promote cooperation.

Through this interpretive approach, research on project management examines how team members interpret ambiguity and what structuring of the project it entails.

According to Thiry (2002), uncertainty differs from ambiguity because it is defined by the difference between the data required and the data already possessed, leading to a lack of information. While the management of uncertainty requires searching for additional information, the management of ambiguity is more related to the capacity to make sense of the situation, by defining it in terms of problem or opportunity.

More recent studies (Laine, Korhonen & Martinsuo, 2016; Walker, Davis & Stevenson, 2017) have confirmed the need for the project team faced with an ambiguous situation to extract a meaning from it. Pich et al. (2002) have proven this by showing how the understanding of ambiguity impacts the strategy and structuring of the project. If ambiguity is low, the strategy chosen will be "instructionist", favouring a certain amount of planning, formal hierarchy and a budget dedicated to the management of

ambiguity approximated from a list of associated potential risks. If ambiguity is average, a strategy of “learning” will be considered, based on a short-term approach (as the medium and long terms can be rescheduled), flexible and lateral coordination and incentives. Finally, strong ambiguity will result in a “selectionist” strategy, based on the competition between several scenarios and the commitment of the entire team to the winning scenario.

All these studies, however, only take account of one dimension of ambiguity in project management, which could be called external ambiguity, i.e. linked to the problems interpreting the external environment of the project (e.g. market opportunities, number of rivals or level of innovation). In contrast, there are few studies on ambiguity generated by the project itself, either in its characteristics or perception. Yet, structuring the project is in itself a source of ambiguity for the project team. Yang, Lu, Yao & Zhang (2014) have shown, for example, how the duplication and overlapping of tasks impact the degree of perceived ambiguity of the project. Dameron (2004) has also suggested that ambiguity has a strong impact on the dynamics of the project. More specifically, and as discussed at the end of section 1.2.1., she has analysed project ambiguity as being a factor of evolution of the forms of cooperation between community cooperation and complementary cooperation. Goal ambiguity facilitates movement between the different purposes attributed by the team members to the project. This interpretation then allows the shift from community cooperation, associated with the development of a common goal, to complementary cooperation, more related to a local goal or an occupation.

Role ambiguity, focusing on the recruitment or the gradual development of the roles of the members, stems from the difficulty of identifying themselves with both their occupation and the project. The resulting multiplication of work collectives can lead to the breakdown and restructuring of professional identities (Asquin, Garel & Picq, 2007). This identity management will depend on the transition from community cooperation (identity linked to the project) to complementary cooperation (identity linked to the occupation) and on the learning of the role within the project and their positioning in their professional identity.

Finally, the equivocal definition of a work collective failing to precisely define its boundaries is due to the choice to gradually include new members within the project, even if that means losing the main objective of the project. The reciprocal recognition of the different members can then act as a mechanism to facilitate the transition from community cooperation (keeping the current scope) to complementary cooperation (including or excluding members from the project).

For this study, we adopt an interactionist approach, where ambiguity can be a tool as it favours the transition from complementary cooperation to community cooperation and vice versa.

In addition, the level of ambiguity could impact the form of cooperation being implemented. A situation perceived as highly ambiguous by the team is likely to create sensemaking, i.e. a collective construction of meaning (Weick, 1995). Yet, if this process is likely to lead to a common vision of the action to be organised, it does not imply at all that the team shares the same perception (Vidaillet, 2003). Starting from their personal perceptions to develop a collective action, viewed here as a mutual equivalence structure (Weick, 1995), individuals will therefore resort to complementary cooperation. However, no study allows us to support this position a priori.

Presentation of the research design and proposals

Previous studies have allowed us to clarify the design of our research underlying the study of the link between ambiguity and cooperation within a project. More specifically, cooperation can take two alternative forms (complementary and community) throughout a project. Ambiguity plays a twofold role in the development of cooperation. It impacts both the transition from one form of cooperation to another and its order of occurrence (community or complementary cooperation first?) throughout the project. This research design led us to examine two proposals more closely, which we will try to contextualise in our study. These two avenues of research illustrated an abductive approach: they were neither conventional assumptions to validate or invalidate—i.e. a hypothetico-deductive method—nor derived from an inductive approach coming from the generalisation of a field study.

Research Proposal No. 1: The structuring of the project can create ambiguity among the project team (as well as the environment) likely to promote its dynamism.

Unlike studies on ambiguity in project management, assuming that the latter would only arise from the environment (external ambiguity), we considered that ambiguity could also derive from the project itself (internal ambiguity). From a linguistic (ambiguity as such, and wider ambiguity including equivocality by excess and by default) or organisational background (confusing situation or situation where some elements were incompatible), this project-related ambiguity was broken down into several forms of ambiguity, based on the project objectives, roles and scope (Dameron, 2004). It can be viewed as a tool to help create new dynamism within the project (Eisenberg, 1984, 2006).

Research Proposal No. 2: The level of internal ambiguity impacts the transition from one form of cooperation to another.

Internal ambiguity impacts the forms of cooperation developed within the project. Strong ambiguity would reinforce complementary cooperation and low ambiguity would reinforce community cooperation.

THE PROJECT STUDIED: THE MERGING OF TWO HOSPITAL MEDICAL UNITS

New Public Management: towards a fragmentation of conventional cooperation?

The project consisted in studying the merging of two care units within the Abdomen Hub in a French University Health Centre (CHU). It lay within the broader context of New Public Management (NPM), a public service paradigm introduced in the 1980s in the United States and the United Kingdom to improve efficiency in accordance with the ideal model of the organisation.

According to Hoggett (1996), this trend addresses three necessary strategies of control: creation of operationally decentralised administrative units run by autonomous managers; competition of public service providers; and development of performance management and monitoring processes to better control employees. This model, which is widespread in most Western countries, has, however, national characteristics, and can sometimes appear as a doctrinal puzzle (Bezes, 2005). For Bouckaert and Pollitt (2004), the role of the state in society—whether as one of its structuring elements or simply a tool of regulation—plays a major role in understanding and operationalising this movement. Thus, the United

Kingdom, characterised by a weak state and a strong cultural lag between Cabinet ministers and public servants, carried out a sudden and intensive reform, while France, characterised by a strong state and strong cultural similarities between political staff and public servants, carried out a reform that was well-considered beforehanddeeply pondered upstream and little hardly instrumentalisedexploited by the private sector (Saint- Martin, 2000), but hardly operationalised.

In France, the change in the health care and social sector took place in four stages. In 1982, the French medicalised information system programme (PMSI), which converted all medical procedures to points, accounted for all hospital procedures and helped to compare hospital facilities. The national health insurance expenditure target (ONDAM) was then introduced in 1997 to theoretically calculate the global budget envelope for each hospital, depending on its activity. A DRG-based payment system (procedure-based pricing called T2A) was adopted in 2005 to reimburse hospitals in proportion to the number of procedures theoretically performed, unlike the previous lump-sum payment system. Finally, the 2009 Hospitals, Patients, Health and Territories (HPST) Act, which restructured hospitals into financially autonomous and responsible activity hubs, assigned a manager's role to head doctors in charge of these hubs, the idea being that mixing medical usefulness and economic rationale should empower the medical staff and other health professionals to better use of resources. These reforms, which were largely inefficient according to Bezes et al. (2011), were thus characterised by the coexistence of conventional bureaucratic mechanisms (top-down decision making, formal assessment procedures) and innovative features (procedure-based pricing, activity hubs), leading to changing performance criteria and projects that were strongly guided by economies of scale and productivity principles—just like the project studied here.

These reforms, which combined conventional trust logic and performance management measures, could undermine the confidence of hospital staff. However, Christensen, Laegreid and Stigen (2006) have suggested that this is not always the case, as local features (historical context of the relations between hospitals and their regulatory authorities, ratio between health care provision and service) play a decisive role. Furthermore, Belorgey (2010) has shown that appropriating New Public Management is highly variable depending on the occupation. Therefore, individuals in a dominant position in the hospital work environment (paramedical staff) and outsiders (not closely linked to hospital or professional networks) favour this idea the most.

The asymmetry between staff looking for recognition (favourable to the reforms) and staff seeking to preserve their autonomy (less favourable) may fragment local cooperation and disadvantage the medical staff who are traditionally at the top of the hierarchy. According to Skander et al. (2006) and Barnes et al. (2002), cooperation develops more easily within teams with a strong cultural match or, at least, similar perceptions of their environment. In addition, a low level of agreement on the objective assigned to the project is less likely to foster cooperation (Boddy & Macbeth, 2000; Zika-Viktorsson et al. 2003). What can we say of this merging project—that it can be interpreted both as a cost-saving measure and a trial for improving health care provision?

The logic behind hospital projects: potential leverage for cooperation?

Hospitals are characterised by strong occupational segregation (standardisation of qualifications, strong devolution and bridging

mechanisms only at the administrative level) and a desire to centralise (budget) authority, which leads to the juxtaposition of logical determinants as each profession seeks to preserve its autonomy from the others (Davis 1966; Herzlich, Bungener, Paicheler, Roussin & Zuber, 1993; Kervasdoué, 2003; Petitat, 1994). Glouberman and Mintzberg (2001) have modelled these logical determinants as the combination of four worlds (non-clinical managers, clinical managers, doctors and other health professionals) separated by two curtains: a horizontal curtain between community care (doctors and other health professionals) and general hospital (clinical managers and non-clinical managers), and a vertical curtain between collaborative decision making (health care providers and non-clinical managers) and self-organisation (doctors and clinical managers).

Tasks related to the organisation of patient care are allocated according to a hierarchical coordination specific to the hospital environment, where doctors delegate their least prestigious tasks to professionals considered as lower castes. For instance, doctors delegate their most unpleasant work tasks (e.g. those involving intimate physical contact with patients) to other health professionals. Hughes (19511996) has described how individuals attempt to delegate the least prestigious part of their work to someone else as the delegation of dirty work. Task shifting increases the technicality of the tasks performed by the nursing staff and nursing assistants, which expands their level of autonomy, particularly among the nursing staff (Petitat, 1994). The type of cooperation established within these organisations is therefore largely complementary, because it is based on task sharing from a large decoupling of work design and execution authorised by doctors.

However, as the different reforms cited above aimed to counteract the effects of bureaucratic centralisation in health organisations and therefore the resulting fragmentation of tasks (Boutinet, 1990: 103), they should theoretically lead to the development of community cooperation, introduced by the public authorities through the project as an incentive. The project then tookappeared on a strategic and operational levelvalue. Backing hospitals to a strategic project derived from Since the French Laws of 30 June 1975 and 31 July 1991, hospitals must be backed up by a strategic project. They have to develop which entailed the development of a five-year hospital project that defineswhere their objectives as theirare set as assessment criteria. In doing so, Tthey are therefore considered as “project organizations” (Boutinet, 1990) with a blueprint that aims to legitimise the action in the context of a growing shortage of resources. On a more operational level, hospitals were gradually organised as a stream of “project-based activities” (Boutinet, 1990). i.e. as a set of activities “to be promoted and developed” (Boutinet, 1990: 101). The 2009 Hospitals, Patients, Health and Territories (HPST) Act, dividing hospitals into autonomous activity hubs, thereby facilitating the development of projects by delegating more autonomy to project teams (i.e. the members of activity hubs) from the hospitals’ Directorate General.

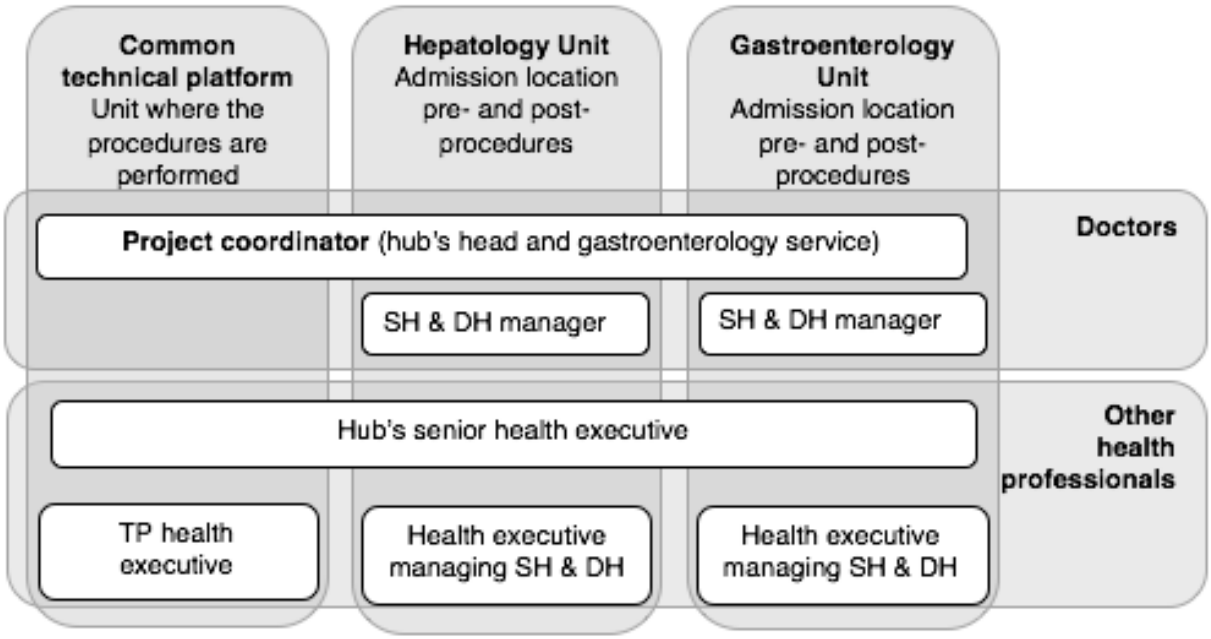
The growing independence of project teams from the parent organisation is characterised by stronger cooperation (Näsänen & Vanharanta, 2016; Wool et al., 2009). In other words, a temporary project organisation, subject to only some directives of the stationary parent organisation, is more likely to foster cooperation, developing “suitable routines” (Modig, 2007) and a social process (Winter, Smith, Cooke-Davis & Cicmil, 2007). Community cooperation is therefore more likely to develop within teams.

CASE STUDY

PRESENTATION OF THE CASE AND METHOD USED

The project consisted in studying the merging of two care units within the Abdomen Hub in a French University Health Centre (CHU). This hub consisted of four services, a general surgery service (hepatobiliary and digestive surgery) and three clinical services (urology, diseases of the digestive system and liver). The Directorate General decided, between 2013 and the last quarter of 2015, to combine two clinical services: diseases of the digestive system and liver. This change had three goals: to save on staff time by geographically combining the day care hospital, short-term hospital and the gastroenterology ambulatory service; to extend the opening hours (the two nurses now working one after the other) to stimulate gastroenterology activity; and to attract more interns into the service by opening up teaching. This restructuring affected 150 people (doctors and other health professionals).

The merger was initiated by the hub's head doctor, encouraged by the Directorate General and announced within the cluster at a hub meeting (involving only the doctor members of that body) in April 2014. The hub head then formed a project group, consisting of representatives of each of the professions (doctors, other health professionals) and services (hepatology, gastroenterology) concerned. The hub head, who was coordinating the project, had limited financial autonomy: he was asked to reduce the number of beds (from 24 to 22), based on a comparison between the hub studied and other CHUs. Theoretically, this objective should not have been prejudicial, being offset by a higher bed occupancy rate. The project group was consistent with the matrix organisation of the hub (Figure 1).



With SH short-term hospital, DH day care hospital, and TP technical platform

Figure 1 - Composition of the project group

Each member of the project group interacted both with their occupational group and just like with the project group. Thus, the health executive in the Hepatology Unit, who manages day care and short-term hospitals, kept SH and DH nurses in this unit informed of the progress of the project. Likewise, if during a unit meeting the teams told their spokesperson they could not implement the measure that had been agreed collectively, the latter would notify the project group in order to find other solutions.

Our longitudinal analysis spanned from June 2014 to October 2015 and overlapped for a few months with the period of the project, which began in April 2014 (official announcement at a hub meeting) and ended in December 2015, when the activity objectives were validated by the Assistant Directorate General, two months after the effective relocation and the necessary regulations had been made. With this in mind, we conducted a case study following Yin's (1994, 2003) method to highlight the interactions between the characteristics of the project and the forms of cooperation developed.

Data collection method and longitudinal analysis rationale

Table 2 shows the sources of data used, which allowed us to buildform a 361- page data basis.

Primary data	Data collection stages
26 semi-structured interviews in three stages (project contextualisation, progress and assessment): - Project team (2 doctors, 3 nurse executives, the hub's head doctor, the hub's healthcare executive) - Doctors of the two units (11) - Technical platform (3 scheduling nurses, 1 doctor anaesthetist, 2 nurse anaesthetists, 2 stretcher bearers) Non-participating observations carried out during the project progress stage: 11 meetings (hub meetings, meetings between doctors, meetings between doctors and nurse executives, meetings between nurses, meetings between nurse executives and nursing assistants) Participating observations carried out during the project assessment stage: Two days as a stretcher-bearer, just before the merging of the two care units	-Project contextualisation: collection of internal documents and conduct of in-depth interviews with members of the project who were aware of the development of this project (hub's head, doctors of the two units). -Project progress: non-participating observations in the meetings, supplemented by informal discussions with the members of the project group. -Project assessment: assessment interviews with the hub's head doctor, the senior health executive, several nurse executives of the working group, and several staff members of the technical platform.
Secondary data	
Meeting minutes: - Meetings on the hub's development contract - Framework document of the merging project - Visual aids used during meetings	

Table 2 - Types of data used and data collection stages

The data were gradually collected and summarised: minutes were written for non-participating meetings; in the form of minutes anda logbook was kept for non-participating observations of the service; in the form of a logbook, and the interviews were transcribed.

As our objective was to examine the project from the perspective of ambiguities and the forms of cooperation that gradually developed during its design and implementation, we chose a longitudinal analysis, allowing the in-depth study of a process. According to Forgues and Vandangeaon-Derumez (1999), this approach is characterised by three elements: the data are collected during at least two different periods; the themes studied are comparable from one period to another; and the analysis consists in comparing data between them, to trace their evolution.

As the proximity with the environment studied is essential in the pursuit of such an approach, it was important to reassure the project team that we were neutral (particularly the members managing it, as we were afraid that we could be considered as spies by the project team). We continually tried to display neutrality in our actions (explaining our approach at a meeting with the project team, answering questions or dispelling the doubts raised, and showing no marked preference in our greetings, discussions or note-taking). We also had to preserve the spontaneous nature of our interactions with the participants their spontaneity. The length of our study, our attendance at meetings and the three rounds of individual interviews we conducted played a major role in their acceptance. It became obvious when one of the team members offered us to participate for two days in the life of the service as a stretcher-bearer, to make us understand the project both spatially and temporally (by following patients from the technical platform to the care unit).

These multiple interactions with the environment helped us to better understand the reality. Our goal was also to address our research proposals through our observations and participation, and suggest plausible hypotheses that could be explored and refined (Musca, 2006). We therefore chose abductive reasoning, i.e. we made assumptions from our observations that could then be tested and refined (Koenig, 1993) by going back and forth between the environment (making hypothetical inferences) and concepts (here ambiguity and cooperation). Abduction is thus “the process of forming an explanatory hypothesis [but we prefer the term “research question”]. It is the only logical operation which introduces any new idea; for induction does nothing but determine a value, and deduction merely evolves the necessary consequences of a pure hypothesis. Deduction proves something ***must be***; Induction shows that something ***actually is*** operative; Abduction merely suggests that something ***may be***. Its justification is that from its suggestion deduction can draw a prediction which can be tested by induction” (Peirce, 1958: 171). In-between grounded theory (Glaser and Strauss, 1967), which generates conceptual categories from evidence, and deductive reasoning, which requires pre-existing conceptual categories, we created systematic coding, which allows the identification of conceptual categories a priori and the development of inductively designed coding (Miles and Huberman, 2003).

Identification method and analysis of the dimensions studied

The identification of ambiguity as an explanatory category

As one of the objectives of this study was to examine internal ambiguity, we found it important to highlight from the environment what the parties considered as ambiguous within the project and why its evolution was of concern to them. During the first and second rounds of interviews, our first task was to stimulate the interviewees when they discussed elements that seemed to them to be incomprehensible, contradictory,

approximate or unprofessional and subject to speculation. If we considered that elements of the interviews were vague or contradictory, we also brought them up for discussion again to determine whether this interpretation was shared. When this was the case, we included these data in the emerging category.

The minutes of the meetings were also analysed accordingly, sometimes with the help of the writers, whom we asked to clarify certain facts or information in their minutes. We then asked the interviewees to explain, during our last interview, the unclear parts identified during the first interviews in order to interpret them a posteriori. We were thus able to formalise how ambiguities could evolve in a diachronic perspective. The clarifications made by local parties enabled us to structure the concept of ambiguity on three levels:

- **Its nature**. Three types of ambiguity emerged from the content of the interviews: linguistic (what the parties considered as unclear or contradictory in project-based discussions); mixed (discrepancy between official oral statements, set out in a formal and project-based framework, and project-based official written documents, e.g. the decision to close two beds in the Hepatology Unit); or factual (contradiction between two acts, e.g. the appointment of a project manager but who did not initiate any action to bring the project forward).
- **Its object.** Derived from Dameron's (2004) three categories: the project objectives, roles and scope. To avoid circularity bias, we first used an emerging coding scheme, before realising that each sub-category could fall into one of the three aforementioned categories. For example, the ambiguity on the project's temporality (was the implementation time-frame imposed by top management mandatory?) could be classified in the objectives sub-category, since achieving the merger within the time-frame was one of the project-based ambiguities.
- **Its level**. This stage aimed to locate, during the different interviews, the return frequency of ambiguity elements within the extended project team (doctors of the two units and technical platform). If this ambiguity was raised by more than half of the interviewees who belonged to more than one profession (medical staff and other health professionals), and at least two different hierarchical levels (operational and managing levels), it was considered as strong; otherwise, it was considered as average (between half and a quarter of all individuals, regardless of variety) or low (less than a quarter).

The forms of cooperation developed

The forms of cooperation were encoded a priori using Dameron's analysis grid (see Table 1). In order to identify these, individuals were asked during the interview rounds to describe what actions they had implemented to make the project evolve or remove the ambiguities they had identified, and what they expected from it. For example, staff scheduling and discussion about this was considered as an "object" of cooperation involving several professions. Fifty-six objects of cooperation were thus identified during the study (physical development plan before relocation, physical development plan after relocation, bed management, staff scheduling, operating rules of the project group, bed scheduling, turnover of the nursing staff, bed relocation, new equipment, implementation of common agendas—IT aspect—etc.).

We then used Dameron's grid to distinguish the different forms of cooperation introduced, depending on the purpose of the actions: Was it to

work at the group (community cooperation) or occupational level (complementary cooperation)? Did the interdependence created imply other professions (community cooperation) or not (complementary cooperation)? Did the project group involve external partners (community cooperation) or the group members between themselves (complementary cooperation)? As we coulddid not find all these three dimensions for each object type of cooperation, we only took into account of at least one of these three dimensions to describe the form of cooperationit. The development of the project group's operating rules was thus analysed as community cooperation, as its objective was to share the project, creating interdependence between professions and outside commitment (creating communication channels between the Directorate General and the group). We also observed that, in the meantime, cooperation could take the two forms studied. To determine what form of cooperation prevailed over another in a given period, we then counted the actions in one form or the other and noted the most common form of cooperation.

PRESENTATION OF THE RESULTS

The project is presented chronologically by stages, each new stage being characterised by an increase or decrease in the level of perceived ambiguity. Each stage is also related to the form of cooperation that was mostly developed by the project team. We used Dameron's (2005) classification to name each stage.

Project unfreezing: strong internal ambiguity and complementary cooperation

This first stage, which lasted six months, began when the hub's head doctor selected the individuals who would be part of the project group and ended when an extra bed was obtained specifically for the Hepatology Unit and bed pooling between Hepatology and Gastroenterology Units stopped. It was characterised by ambiguities on the formal dimensions (rules, objectives, regulation) of the project.

Strong ambiguity on the objectives: Efficiency of the future service or savings at the expense of the Hepatology Unit?

In its early stages, the project was characterised by strong mixed-type ambiguity (language/act), focusing on the objectives targeted by the project. The official objective was to improve efficiency in the two units by merging, to offer:

> *longer opening hours. It means that we go beyond office hours, and we can accommodate more patients, and considering the number of patients waiting, that would be a great help for us.* (Project manager)

Yet, according to hepatologists and other health professionals, this objective did not target "the new hub", but rather the Hepatology service, which would lose two beds in the new structure, the first one being permanently lost and the second undifferentiated between hepatology and gastroenterology patients. The ambiguity, felt by hepatologists between official statements aiming to reconcile conflicting views between hepatologists and gastroenterologists (they all needed to be more efficient) and the acts (only hepatologists should be more efficient because they had to accommodate as many patients with less beds), became strategic: it

helped them to criticise the privileged position that would benefit gastroenterologists, and to reject the implementation of the project.

This distrust was further amplified by the way the loss of the two beds was announced: the news spread informally before being officially (and eventually) shared in a PowerPoint presentation in a meeting with the whole care team (medical staff and other health professionals). This visual support, with many figures and poor readability, added to the confusion, and missed its purpose of aligning the staff with the strategy (Bourgoin & Muniesa, 2012). It was interpreted both by doctors and other health professionals as a way to intentionally cause their demise. The loss of these beds was interpreted by the Hepatology Unit as a slap in the face for their speciality, which was deemed less profitable than gastroenterology. Gastroenterology procedures (endoscopy, biotherapy), which are minor and quick to carry out, require short-term hospital stays, while hepatology procedures, which are major (consequences and check-ups of liver transplant, endoscopy under general anaesthesia, liver puncture or biopsy), require more medical care and make it harder to determine the post-procedure immobilisation period. Distrust was fed by the fact that the hub's head doctor, who was the project manager, was a gastroenterologist. Conversely, gastroenterologists instead interpreted these objectives as being in the interest of patients because they met a need and there would be fewer and fewer patients in the Hepatology Unit in the future:

> *All hepatitis can be cured now […]. In addition, it's no secret that they [hepatologists] are turning to the Nutrition Hub, […] the future of this type of disease will lie in food security".* (Gastroenterologist)

Strong role ambiguity: Was the project coordinator a leader or a follower?

Ambiguity on the objectives was also complicated by factual role ambiguity (action/action), which made it impossible to coordinate actions. The project manager did not appear to initiate change or hold meetings with the project group, which had already been formed. This caused a great deal of confusion about the procedures and the roles assigned to each person:

> *Frankly, this merging is a lot of nonsense! We don't know who is doing what, we were appointed a member of the working group, but we don't know what we're supposed to do together, there's a lack of direction. As a result, I keep working with my close colleagues, and I see it directly with Mr X [the hub's head doctor] … if he accepts to see me, because he hardly says anything.* (Hepatologist in charge of day care and short-term hospital stays)

The silence of the project manager was even interpreted as a lack of consideration, failing to establish a positive environment for the project:

> *Mr X [the project manager] has a project in mind but doesn't share it. He could at least inform us of the dates. Just giving us factual information, that's the least he could do […] anyway everything is already settled.* (Hepatologist in charge of day care and short-term hospital stays)

Conversely, eager to bring the project group forward and convinced that its members had to find their own way to organise, the project manager:

> *gives [them] the flexibility to take action, they have to do it on their own. And I shouldn't cloud the issue. If I put myself in the limelight, it*

would seem I want to promote my own speciality [gastroenterology], while my priority is to safeguard the unit. (Project manager)

Doctors (hepatologists as well as gastroenterologists) thus interpreted this factual ambiguity (the official position of the project manager expected to lead the team while no strategy was outlined) as proof that this project group, which should have beenwas supposed to be a negotiated form of change butthat was in fact not discussedactually undebated, was actually a puppet. Once again, ambiguity was used by the unit's staff to express their disagreement and the internal views on the project were not compared.

Strong ambiguity on the scope of the project: Was the Directorate General part of the group project or did the project have its own autonomy?

The scope of the project also appeared as factually ambiguous (action/action). If a project group officially existed (action), it seemed to be more of a go-between for the Directorate General than a decision-maker (contradictory action). This led hepatologists to bypass the project manager and present their grievances (keeping the two beds in the Hepatology Units) directly to the Directorate General, even without obtaining tangible results. This misunderstanding was due to the fact that hepatologists used traditional channels—vertical structuring and medical speciality—rather than the channels developed by the project (project manager).

This first stage ended after two events. The mobilisation of hepatologists, belatedly relayed by the project manager to the Directorate General, enabled them to lose only one bed in the Hepatology Unit instead of two. At the same time, the project manager wrote a document presenting the principles of the restructuring, reaffirming the separation of beds within the new unit. The beds, although located in the same unit, were earmarked by medical speciality. This ambiguous situation for the staff was resolved when the project manager used it to maintain the commitment of the different partners (Directorate General and project group).

Complementary cooperation

This first stage was characterised by the development of complementary cooperation, i.e. the juxtaposition of individual answers to an inexplicable situation, which manifested itself at three levels:

- The purpose of this cooperation was characterised by the need for recognition of the two medical specialities in the project. This restructuring made sense only if neither of the two specialities suffered as a result. It took long negotiations before these initial objectives were balanced and the parties agreed to lose only one bed in the Hepatology Unit.
- It reflected interdependence through labour specialisation characteristic of health structures, which did not result in the development of common rules. There was no occupational pooling, with each one working in their own speciality. Thus, other health professionals, who were in favour of this change, met regularly from June to September 2014 to organise it (relocation programme, training plan), while the project team had not yet met at that time. Each team (day care and short-term hospitals) met every other week, and raised many issues, e.g. bed management, to which doctors gave no answer:

> *It's all clear between us [nurses], we've planned everything step by step, we exchanged care protocols so that each team would be ready to take charge of patients from the other unit […] but I have no news from doctors, and that's really worrying, because it is up to them to decide scheduling rules, I can't decide it for them.* (Health executive in charge of day care and short-term hospital stays in Hepatology).

- The project group was rather committed internally. For example, other health professionals attempted to involve doctors from the working group in the management of change by reassuring them, even in the case of bed pooling, an idea to which doctors were fiercely opposed:

> *I was rather surprised that Mr X [the hub's head doctor] was against bed pooling and asked for the separation of patients. He told me, "How on earth will I recognise my patients?" It made me laugh, and I told him, "Don't worry, the girls and I will put wristbands in different colours on beds, so you'll be able to recognise your patients!" It's often necessary to reassure doctors whatever one might say.* (Health executive in charge of day care and short-term hospital stays in Gastroenterology)

This complementary cooperation ended when hepatologists secured the loss of only one bed and the conservation of beds earmarked by medical speciality. The results of this first stage of the project are synthesised in the following table:

Object of ambiguity	Type of ambiguity	Multiple interpretations	Decision	Type of cooperation
Objectives	- Language: efficiency for all - Action: loss of 2 beds in Hepatology	For gastroenterologists: The project must be done For hepatologists: Both specialities must be equal in the project	Hepatologists' refusal to implement the project	**Complementary cooperation** - Purpose: find a balance between both specialities
Roles	- Action: hierarchical position of leader - Action: no initiation	For the project manager: The project group must act autonomously For the project group: The project group is a sham	No role commitment, no project dynamics	- Interdependence: progress occupationally uneven and stopped by occupational separation
Scope	-Action: Official existence of the project group -Action: go-between for the Directorate General (DG)	For hepatologists: They have to negotiate directly with the DG For the project manager: Direct intervention with the DG to negotiate the number of lost beds	Boundary demarcation between project and DG, and beginning of internal pooling	- Commitment: internal commitment attempts by occupation

Table 3 - Project unfreezing: from strong internal ambiguity to complementary cooperation

Project change: low ambiguity, with community then complementary cooperation

The second (11-month) stage began when the project group first met in November 2014 and ended on relocation to the new premises in

October 2015. This stage, defined by lower ambiguity, is characterised by the development of community cooperation followed by complementary cooperation, which was most significant when relocating to the new premises.

Low ambiguity with community cooperation: before the relocation

The loss of only one bed in Hepatology and the absence of bed pooling between medical specialities, which were measures negotiated by the project manager with the Directorate General, were accepted by the medical profession. The project manager then decided to convene a meeting with the working group, which was followed by a hub meeting, announcing the work schedule and the date of the relocation to the new unit. Two-week-long works were planned in April 2015 to equip the day care hospital, followed by three-week-long works in September 2015 for the short-term hospital. This announcement upset other health professionals who thought that they had not been notified in a timely manner.

At this stage, the project was less ambiguous, first of all because its objectives were better understood. An agreement between doctors in each speciality and between professions was observed: it was no longer a question of merging, but of "merging properly", a phrase repeated several times by the members of the working group who now met once a month. The meetings first focused on the development of operating rules (participation rules of out-group individuals outside the group, communication rules between the working group and professions).

Subsequently, the potential issues that the new unit might face emerged. These issues, which transcended the group, defined community cooperation, whose purpose was to establish shared objectives (Dameron, 2004). One topic was of particular concern to the team: bed scheduling rules, which set out the theoretical time of hospital stays allocated per type of procedure programmed. Although its development remained occupationally separated, it was discussed collectively. So:

> *the girls [health executives] listed all the procedures we had to do and their duration, for both day care and short-term hospital stays, and we submitted this grid to the doctors of the working group. Then they filled it in and validated it in a meeting of the project group, but took our objections into account.* (Health executive in charge of day care and short-term hospital stays).

Doctors validate the rules created, which allows them to intervene only within the limits of what they consider prestigious (Hugues, 1951): the passing on of medical knowledge to non-insiders.

One problem identified by the two scheduling nurses and relayed by doctors to the project manager actually emerged from this work. The increase in gastroenterology procedures due to the extension of working hours made it necessary to create an additional post of scheduling nurse in charge of planning medical procedures and booking beds. The project manager requested the Human Resources Director (HRD) to create an additional post on behalf of the group project, which clearly showed the development of a feeling of belonging to the group (second dimension of community cooperation):

> *If we don't get this position, the restructuring will collapse, Mr X* [the project manager] *had to make it clear to the HRD. And everyone* [the staff of the two medical units] *was in favour it, that's really*

> *important.* (Hepatologist in charge of day care and short-term hospital stays).

The Directorate General granted their request, provided that this extra position was offered first to hospital staff who needed to keep their jobs.

In parallel to these meetings, meetings were held by occupation, less often for doctors (every three months) and more often for nurses (every six weeks). Nurse executives were sometimes invited to meetings between doctors if they had questions to ask or had to discuss a particular topic.

Lower role ambiguity was also observed. However, when initially defining the rules of bed allocation, in order to clarify the rules according to which a patient would be assigned to a bed (what type of bed and for how long) after carrying out a medical procedure, the roles between doctors and health executives had to be clarified. Technological collaboration between doctors and health executives played a major role in resolving the situation which only affected doctors and health executives from the project group. In other words, health executives initiated meetings and rule development (modelled on the previous rules) and doctors amended or validated them. We no longer observed that the project manager was bypassed when the members of the working group made requests. At the same time, the project continued to be organised by profession: doctors developed the new technical platform schedule, and health executives were responsible for planning the relocation (coordinating the moves, setting out the relocation schedule after the opening of the new premises, and meeting safety and health standards during the relocation). Community and complementary cooperation coexisted, but "community" actions were more common at this stage.

Scope ambiguity also largely decreased because of this role allocation. More precisely, the working group was autonomous and acted as an entity with their external partners or parties temporarily associated with the project (central management and IT unit). Two communication channels were thus used: the institutional channel, through the project manager, for demands related to the future of the project (e.g. number of beds or request for the scheduling nurse position) and the informal channel, through personal contacts, for efficiency-related questions (e.g. asking the IT unit to set up the software). Low ambiguity on the group's boundaries led to community cooperation, oriented in its commitment dimension (Dameron, 2004), which led to the development of the group's relations with their partners (e.g. the IT unit for setting up the scheduling software, or the Directorate General for the scheduling nurse position).

Low ambiguity with community cooperation: after the relocation

The relocation to the new premises in October 2015 did not alter the level of project ambiguity. This two-month stage ended when the Directorate General decided to assess the results of the new unit.

During this period of adjustment and establishment of the unit, little ambiguity relating to the goals, roles or scope was reported. What was required above all was the smooth operation of the new unit in each field of expertise. The interviews conducted both within the project group and the two merged units showed that each occupation had a clear idea of their scope of thinking and acting while developing the new premises. This stage was characterised by community cooperation (one of the project group's doctors called the technical service when an elevator was

considered too slow by the stretcher bearers), and complementary cooperation (resetting the teams of other health professionals as they had problems in being versatile). However, complementary cooperation prevailed. Although team reorganisations were implemented when the two units were restructured in the same location, the regulations that took place were primarily within the same profession:

> *Everyone managed their own field. For example, I was the one who organised the rota of the teams of other health professionals, because it was my job, not the doctors'. I gave the teams the option of working on a twelve-week shift rotation [the day care hospital team working at the short-term hospital, and vice versa], but they refused, they found it too long, so they suggested a six-week rota instead. I agreed, but insisted for a staggered rota, so that they could all work together at some point.* (Health executive in charge of day care and short-term hospitals).

This distribution by profession was spatially organised: doctors primarily handled the technical platform (where medical procedures were performed) and other health professionals the new premises. "It's easy, what is medical is handled by doctors, and what is related to patients' care is handled by other health professionals", one of the doctors jokingly stated. On their side, the health executives of the three services met to discuss what cross-functional training should be implemented so that all the nurses could become versatile and learn how to care for both hepatology and gastroenterology patients. This complementary cooperation still exists even if the situation impacts all occupations. Thus, when doctors decided to decrease the number of medical procedures on the technical platform, other health professionals had to reallocate beds accordingly, but without discussing the decision. Besides, the project group did not survive the relocation, and no adjustment meeting was held either in April or December:

> *After the relocation in the new premises, it's true that the working group didn't hold sessions. But we were all a bit stressed so, when we reacted, I think we all focused on our own scopes. After adjustments were made gradually. In fact, after the large adjustment of the technical platform, when we realized that, technically speaking, we could not perform as many procedures as expected. But it was very carefully watched at the top* [the technical platform was in the basement and the in-patient unit in the third floor]. (Hub's head doctor)

This complementary cooperation did not coincide with strong ambiguity, as in the unfreezing stage. Two explanations may be suggested for this: the situation already had a meaning that, even if not shared, could trigger organised action; and, to evolve, the latter required the expression of technological collaboration between members (Kadefors et al. 2007), better expressed by this type of cooperation.

PROJECT VALIDATION: STRONG AMBIGUITY WITH COMPLEMENTARY COOPERATION

This last one-month stage was motivated by the wish of the Directorate General, two months after the relocation to the new premises, to check the efficiency of the new medical unit. Hence, the hub's head was asked by the Directorate General to make an account of the unit. The concern within the care unit greatly increased, because, although the

merging had been decided, the staff feared that schedules and the request to increase the number of performed procedures might be adjusted. The hub's head brought the project team together, reformed for the occasion, and presented them with what he understood from his meeting with the Deputy Director General (DDG). He also explained that the DDG's speech seemed ambiguous, both in its soothing (he was warmly congratulated for completing this restructuring) and stressful nature (the DDG asked him twice if the results presented were provisional or could be improved). The Directorate General encouraged the multiplication of the number of procedures, as the objectives set at the end of the change stage had not been achieved.

In this case, ambiguity was linguistic and focused on the results obtained, namely the number of procedures performed, which could be understood as an intermediate outcome to be improved or a final result. A large part of the meeting was then devoted to estimating whether the number of procedures set by the hub's head at the very beginning of the project had been understood by the Directorate General as a commitment to be met or an estimate subject to revision. After further discussion, the second interpretation prevailed, as the team members believed that:

> *Top management has already invested a lot of money in this restructuring, they have no intention of backing down now.* (Doctor in charge of the gastroenterology service).

The anaesthetist reported that the major issue facing the team was technical: an increasing number of procedures would have required a larger recovery room. However, this situation had never been taken into account in forecasts, which had only focused on the balance between the number of procedures and the number of beds available. In addition, bed separation between hepatology and gastroenterology patients resulted in their underuse. The working group met again to discuss the conclusions of the Directorate General and to find solutions to increase the number of procedures without adopting the proposed figures, which were considered as unrealistic. This situation ended when bed management rules were altered, leading to a form of bed pooling between hepatology and gastroenterology services, but the changes to the recovery room were physically impossible. This ambiguous situation caused community cooperation. When this situation was announced, the reaction was collective and extended beyond the boundaries of medical speciality or occupation. Thus:

> *as soon as we heard that top management asked for adjustments, the working group met and discussed how we could increase the number of daily procedures, but the good thing was that we came together, we were very constructive. I think we all understood that it was them* [the Directorate General] *or us*. (Health executive in Hepatology)

These discussions resulted in the idea of bed pooling between the two medical specialities. Even the doctors were no longer against it as the restructuring helped them realise that this was possible. The discussion focused on how hepatology and gastroenterology procedures on undifferentiated beds could be combined and new estimates were made, which the project manager was entrusted to communicate to the Deputy Director General. The DDG accepted the changes and validated the project, to the great relief of the unit. The table below summarises the results presented:

Object of ambiguity	Type of ambiguity	Multiple interpretations	Decision	Type of cooperation
Objectives	2.Language: final results 3.Language: provisional results	For the unit: Impossible increase in the number of procedures For the DG (interpreted by the unit): Necessary increase in the number of procedures	Increase in the number of procedures through bed pooling	**Community cooperation** 2.Purpose: showing the DG their capacity to cooperate 3.Interdependence: modification of operating rules 4.Commitment: negotiation with the DG.
Roles	2.Actions: rules should not be changed 2.Actions: necessary restructuring	For the unit: The rules could be changed For the DG (interpreted by the unit): The organisation must be reviewed	Bed pooling	
Scope	2.Action: the DG could not stop the project 2.Action: the DG had the power of life and death over this project	For the unit: Nothing should change For the DG (interpreted by the unit): Change was needed	Negotiation process between the project manager and the DG	

Table 4 - Strong internal ambiguity and complementary cooperation during project unfreezing

Two elements emerged from this study:

- Structuring the project was itself a source of ambiguity, which impacted its dynamic development. This internal ambiguity could help to structure the project (definitions of operating rules, internal communication channels or with the environment, revision of the set objectives) or prevent its development, whether the parties could interpret the situation collectively or not.
- Cooperation evolved with the development of the project, alternately taking two forms (complementary and community). The sequencing of these forms of cooperation appeared to be correlated with the level of internal ambiguity perceived by the working team.

Figure 2 summarises how the level of internal ambiguity impacted the forms of cooperation developed throughout the project.

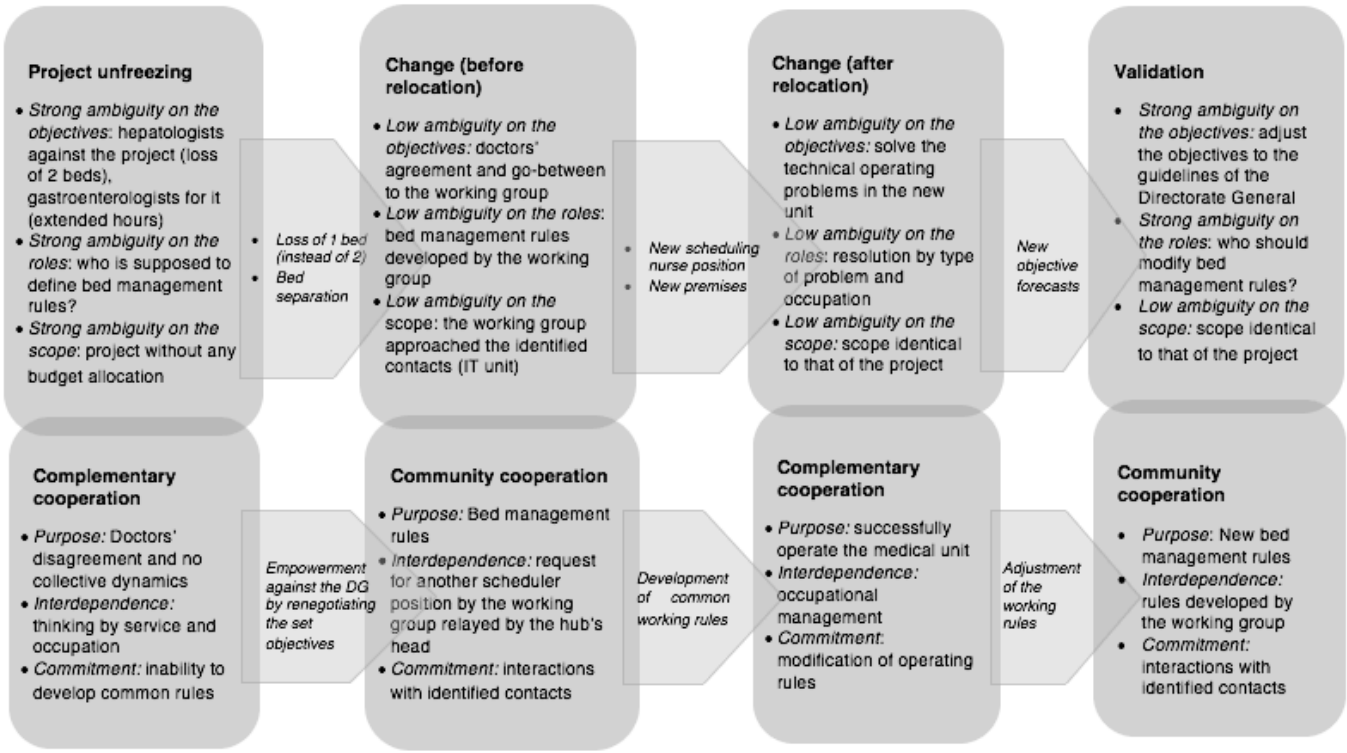


Figure 2 - Impact of the level of project ambiguity on the forms of cooperation developed

TRANSITION BETWEEN PROJECT AMBIGUITY AND TYPES OF COOPERATION

Structuring the project, a factor of internal ambiguity?

The study showed that the way the project was structured greatly impacted the ambiguity perceived by the new medical unit, but the unit could either hinder or hasten the dynamic development of the project. Ambiguity may thus act as a resource, but this is not always the case. Therefore, a project, which seemed a priori heavily structured in the set objectives and the allocated means, generated, contrary to what one might have expected, strong ambiguity. Ambiguity appeared both in language (the project was meant to improve efficiency… but whose efficiency?) and practices (the project manager appointed did not act…), and could be observed in three areas that were open to interpretation: the project objectives, roles and scope.

In times of strong or low ambiguity, expecting explanations or implementing actions to clarify certain ambiguities (e.g. the project manager asking the Directorate General to close only one bed in the Hepatology Unit instead of two) mainly focused on formal dimensions. Examples here are: firm and public commitments (the decision to close only one bed in the Hepatology Unit was made official at a hub meeting); written communications (the opening of an additional scheduling nurse post was confirmed by an email sent by the HRD, bed scheduling rules were recorded in a protocol file or the minutes of the meetings of the working group were written and then distributed); or even formal channels

(using institutional communication channels—the project manager—to make a request to top management). Even if more informal regulations existed in order to make sense of ambiguity, they were less common (contact with the IT unit).

The internal ambiguity caused here was mainly used by hepatologists and the working team to slow down the merging process, which, as they understood it, did not offer much purpose for them. It could thus be understood as a strategic tool, following Eisenberg (2006) for developing interpersonal relations, first between hepatologists and then between hepatologists and gastroenterologists, before trying to negotiate with the Directorate General.

The level of internal ambiguity as a way to shift from one form of cooperation to another?

Figure 2 suggested that there was interdependency between the variation in the level of ambiguity and the form of cooperation developed. Thus, the unfreezing stage of the project (stage 1), here characterised by strong ambiguity, resulted in complementary cooperation, while the change stage, corresponding to a decrease in ambiguity, resulted in community cooperation. However, this relationship was not systematic, because cooperation could evolve in its form even if the level of ambiguity did not change: cooperation turned from community to complementary while ambiguity remained average, moving the project from the change stage before relocation (stage 2) to the change stage after relocation (stage 3). In addition to the explanations previously put forward (situation becoming intelligible, being subject to community cooperation and requiring technological collaboration supported by complementary cooperation), this situation clearly indicated that, beyond an automatic link between level of ambiguity and type of cooperation, the direction taken by the project as a process would give rise to the most appropriate form of cooperation.

Accordingly, the factor determining the form of cooperation developed was apparently, here, the issue of change depending on the progress of the project. We observed that community cooperation developed when the project group had a strong desire to change the management of the unit (change stage before relocation and validation stage of the project), whereas complementary cooperation, more consistent with the hospital's standard operating mode, primarily existed when there was a desire to stabilise change (unfreezing and change after relocation). Thus:

> *There were times when we made very quick progress. And others when we didn't. As soon as the scheduling unit was carefully designed and the scheduling nurse position was accepted, we calmed down, we were in no rush.* (Health executive in gastroenterology)

This perspective was confirmed by Gersick's (1991) study, which suggested that systems evolve through an alternation between periods of stability and transition, the latter corresponding to a change in ways of thinking (Silva & Hirscheim, 2007). More generally, this study confirmed that the team's change dynamics evolved through irregularities, successive transfers, micro-changes and complex paths, which made the project's progress erratic (Chang, Bordia & Duck, 2003; Crossan, Pina, Cunha, Vera & Cunha, 2005; Turner & Müller, 2003). The level of ambiguity of the project was, here, largely associated with the degree of independence that the project group tried to obtain from the Directorate General, which

satisfied the need to assume ownership of the project, by fighting against the inertia determined by this distribution of power (Jasperson, Carter & Zmud, 2005). Ambiguity was a trigger for sensemaking (Weick, 1995). Thus, periods of strong ambiguity (project unfreezing and validation) coincided with the control of the project by top management.

> *That's the main problem, we have separate scheduling units, and we were supposed to discuss about this IT unit, which should have merged. And should be central in the scheme. Because it'll be in charge of bed scheduling. And obviously it largely remains 'to be defined'. And of course, it's decided at the top management level, we're just good enough to apply it blindly.* (Hepatologist, in charge of the working group)

Conversely, periods of low ambiguity (project change and refreezing) corresponded to the periods when the Directorate General was positioned (positioned itself) as a partner of the project (Figure 3)

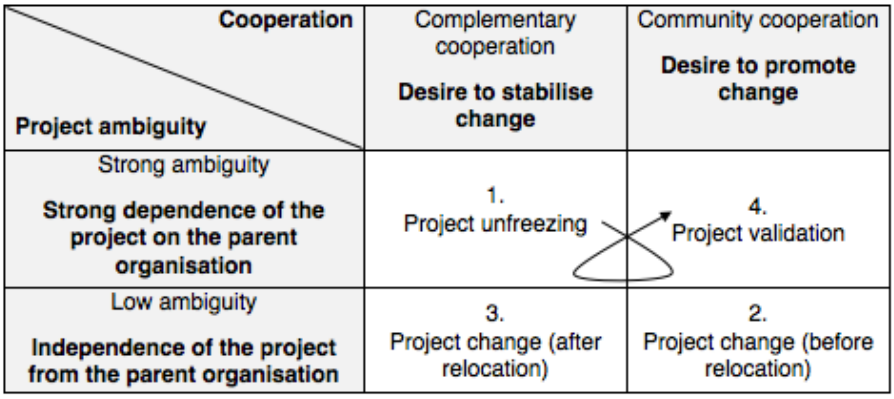


Figure 3 - Transition factors between attributes of the project and types of cooperation

If we come back to our second research proposal, according to which the level of ambiguity would determine the form of cooperation, we could therefore amend it as follows: the form of cooperation depends on two combined factors—the willingness or unwillingness to stabilise change and gain more autonomy from the parent organisation, which is directly associated with the level of internal ambiguity.

DISCUSSION AND LIMITATIONS OF THE STUDY

THEORETICAL INPUTS

This study aimed to analyse the impact of internal ambiguity on the cooperation developed within the project, using two approaches. First, we tried to prove that the structuring of a project could generate ambiguity in the team. Second, we examined how the level of internal ambiguity felt by the project team could impact the shift from one form of cooperation to another.

These research proposals were addressed as follows. First, the way the project was structured actually generated ambiguity within the group, which could either hinder or hasten the dynamic development of the project. Secondly, the level of ambiguity was not enough to explain the shifts from one form of cooperation to another because they could also be

explained by other factors, such as the project group's ability to break away from the parent organisation and their desire to evolve or preserve the status quo.

Internal ambiguity as an escalator for the project

This study emphasised one factor that had a strong impact on the dynamic development of the project: internal ambiguity, i.e. that generated by the project's intrinsic characteristics. This ambiguity derived both from a linguistic and organisational background and could impact on three levels: the project objectives, roles and scope.

We first focused on the internal dimension of ambiguity, i.e. ambiguity generated by the project itself. Accordingly, this study complemented the existing literature on ambiguity in project management, which mainly analyses it in its external dimension (problems to analyse the environment outside the organisation). The structuring of the project could create ambiguity among the project team (as well as the environment).

The level of ambiguity coincided with the degree level of dependence that the project team had from the parent organisation. Strong internal ambiguity thus corresponded to strong dependence, while low ambiguity corresponded to relative independence, the project team having succeeded in negotiating with the parent organisation in this sense. Yet, the level of internal ambiguity alone did not play a decisive role in the form of cooperation. However, when associated with the level of dependencey thatmaintained by the project team had from the parent organisation, and their desire to bring the project forward, it would impact the form of cooperation chosen.

The success of the project will depend on the team's ability to make sense of this ambiguity. Ambiguity was a twofold tool:

- As long as ambiguities related to the objectives, roles or scope of the project team remained, the team and their manager kept their own framework for understanding the project without seeking to create a common framework, which would have helped them to understand the project in its collective dimension. Yet, the project team's members did not attempt to reduce this ambiguity because it helped them to preserve their professional identity and not to conflict with the rest of the team. Hence, maintaining ambiguity was a tool for the project team to avoid collectively questioning the project. Both the project manager and the parent organisation therefore had to foster a climate limiting project ambiguity (shift from unfreezing to change) or promoting it (shift from refreezing to validation) to establish a common framework of understanding.
- Ambiguity helped them to match the interpretations of the project, but only to a certain extent. It thus helped them to create community cooperation in an organisation promoting complementary cooperation.

The forms of cooperation as factors for stabilising or stimulating change

Internal ambiguity was not the only decisive factor in the progress of the project. The form of cooperation adopted by the team at a given time coincided with a desire to progress the project, or not. Community cooperation thus indicated strong change dynamics, facilitated by the adoption of a common framework for understanding the project. It helped them to develop general operating rules, which would then spread in each profession and be followed by community cooperation. Correlating the form of cooperation and change dynamics was in line with Lewin's (1947) study,

examining the different stages following an unfreezing-change-refreezing axis. Yet, only the parent organisation and the project manager could generate this dynamic impulse.

The different stages of the development of a project

This study suggested that level of ambiguity and forms of cooperation could be combined and strongly impacted the vision of the project. In this case (which is not necessarily the case according to the project studied), it was divided into four stages.

- The unfreezing stage, when the project seemed very ambiguous to the project team, encouraged them to postpone the creation of the common "framework of understanding", and adopt complementary cooperation instead, which was less costly in cognitive terms.
- The change stage (before relocation) was characterised by the establishment of a common framework of understanding and the collective reduction of project ambiguity. The latter made sense for each member and helped them to develop community cooperation and progress the project quickly.
- The change stage (after relocation) consisted in applying the changes initiated during the previous change stage (before relocation). The level of ambiguity remained low, but cooperation between members became complementary, as the common framework of performance was reflected in usual professional practices.
- The validation stage, characterised by strong project ambiguity, was linked to its assessment and the adjustments made to the project. This stage reactivated the framework of performance, which evolved collectively, and gave rise to a type of community cooperation.

MANAGERIAL INPUTS

How the parent organisation took account of internal ambiguity

The ambiguity highlighted here largely derived not from the environment of the project but from the project itself. It would seem that the parent organisation should make efforts to clarify their relationship with the project group. As noted, this clarification had three dimensions: the goals to be achieved, the roles to be allocated and the project scope to be considered. More importantly, the team project should be given flexibility, in order to more easily assume ownership of the project. Appropriation is defined by Grimand (2006) as an "interpretive process of negotiation and sensemaking within which the parties question, develop, and reinvent models of collective action" (Grimand, 2006: 17). Yet, by favouring a rational or instrumental approach to understand the project as a way of rationalising action, top management totally prevents the project team from changing their own perception. This partial view thus overshadows the socio-political (project as a way to legitimise action), cognitive (project as a learning process) and mostly symbolic dimensions, interpreting the project as a way of sensemaking. The parent organisation should therefore do their best not to cause ambiguity between project announcement and programme purpose.

In addition, project ambiguity strongly impacts how the project manager perceives his own role. In this case, the fact that the Directorate General considered the project manager as a coordinator in a purely conventional planning way, while his team considered him as a project manager in a logic of enlistment and creativity, did not help his assumption

of duty, whose diversity could be more difficult to manage than within a clearly concurrent or sequential project. This role conflict can put pressure on the project manager's actions and extend the duration of the unfreezing stage. Therefore, the underlying context of the project should apparently help to clarify what level of autonomy the project manager is supposed to have as part of his role.

On the team's ability to handle ambiguity

At the level of the team project, sensemaking of an ambiguous situation requires two elements to avoid this ambiguity turning into a collective incapacity to act (Weick, 1993). The first element is the ability to improvise and tinkeradjust, which is necessary for the project group's members to cope with unknown and complex situations, requiring other answers than those that the usual and past routines mechanically applied. The studies on improvisation in project management have developed (Chedotel, 2005; Leybourne & Sadler-Smith, 2006) and suggest that developing this capacity is possible through managers' training (Klein, 2003).

The second element is related to each member's ability to think as a group, i.e. create a virtual role system (Weick, 1993). Forcing yourself to endorse and virtually change roles within the group (staffing coordinator, task delegator, or liaison) helps to develop a systemic thinking to avoid individual small-scale answers and to remain collectively organised even if the group evolves.

On the team's capacity to promote cooperation at the beginning of the project

Beyond the capacity of sensemaking in ambiguous situations, the group must be able to transform intuitions and plausible ideas into organised action, requiring cooperation. According to our research, three elements that foster cooperation should be emphasised. The first is adopting the attitude of wisdom in an organisational context. Less than a sum of knowledge or values, wisdom consists in observing a distance or restraint toward the beliefs, values, information and skills taken for granted (Bigelow, 1992). This ability to question allows us to act with greater clarity and resilience.

The second element consists in developing respectful communication between group members, based on the development of intersubjectivity. Defined as the ability to take account of what others think in our own judgements (Verhagen, 2005), it allows us to foster mutual understanding and the recognition of individual roles. The third element involves the project manager's role, whose inertia in a situation of ambiguity can reduce the latent capacity of cooperation. However, Wheelan's (19940) study suggested that, at the beginning of a project, members are highly dependent on their leader who must play his full role as a manager by promoting the emergence of a common identity.

LIMITATIONS OF THE STUDY

Theoretically speaking, the study of cooperation would have benefited from being enhanced with new analytical frameworks, e.g. on the links between cooperation and autonomy, in order to better define the links between the project development context and development of the forms of cooperation. Methodologically speaking, this study was strongly

characterised by the particular hospital environment, where restructuring could exacerbate tensions among the staff and bias the development of cooperation within a project team. In our exploratory study, the model highlighted should be tested in other environments, to give a more general scope to this explanatory or discursive study (Savall & Zardet, 2004).

Several avenues of research should be pursued to extend this study. First, we should extend the study to other environments with the same characteristics to confirm the results and isolate the context effect: the sector studied and how the project itself was structured here. Second, we should expand this study to other types of projects by varying some of the parameters (e.g. inter-organisational project, international project, or project within social and solidarity economy).

APPENDICES

Appendix 1. Extract of the coding for cooperation

Implementation of the new staff schedule: complementary cooperation

Purpose=> congruence of personal interests (domain of other health executives)
Interdependence => division of labour (depends on other health executives)
Commitment => internally (toward the project group)

Nurse executive in charge of Hepatology Unit:
I wondered if I should make one wall schedule or two, one by service, […], we'll have one common wall schedule, similar to that of [other hospital] by adding columns, where we'll have all our bed listing so for example we'll use pink for the [Gastroenterology service], *and yellow for the* [Hepatology service] […]. *So in order to see the sectors and especially so that these ladies and gentlemen doctors can also see where their patients are, what will be important is that the schedule could be done at the end or in the beginning of the week by the scheduling nurse and it'll always be the same.*

Hepatologist member of the project group:
And then we learnt that there were meetings of a sub-working group at the level of nurse executives, on the organisation of the health care team, working hours, the number of staff to put in the team, which were held twice a month, and they had to meet us to… They made an account of the nurse executives' meeting to ask us questions on the organisation.

Gastroenterologist, member of the project group
These were especially the executives who worked with their teams, we had done our work upstream and said what we wanted now, it's true we have to write things…

Appendix 2: Identifying the levels of ambiguity, case study of the ambiguity on the objectives of the project (unfreezing stage of the project)

Level: High (two occupations and two levels)	Number of doctors referring to it		Number of other health executives
	Executives: Gastro/Hepato	Non-executives: Gastro/Hepato	Gastro/Hepato
Language (efficiency of the new unit) / Action (only the Hepatology Unit was affected)	2 (out of 4)/ 2 (out of 4)	2 (out of 4)/ 4 (out of 5)	3 (out of 4)/ 4 (out of 4)

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