

From ventriloquism to high reliability: Object of activity and figures' significance

Jérémy Eydieux, Cédric Raimondeau

▶ **To cite this version:**

Jérémy Eydieux, Cédric Raimondeau. From ventriloquism to high reliability: Object of activity and figures' significance. 31st EGOS Colloquium, Jul 2015, Athens, Greece. hal-01230865

HAL Id: hal-01230865
https://hal.science/hal-01230865

Submitted on 19 Nov 2015

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Copyright

Authors:

Jérémy Eydieux
PhD Student
Chaire REcherche en Sûreté Organisations Hommes (RESOH)
Laboratoire LEMNA
Ecole des Mines de Nantes
Social sciences and management Department
4 rue Alfred Kastler, BP 20722
44307 NANTES cedex 3 (France)
jeremy.eydieux@mines-nantes.fr

Cédric Raimondeau
PhD Student
Projet Tarification au Cycle de Soins (TCS)
Laboratoire LEMNA
Maison des Sciences de l'Homme Ange Guépin
Axe Santé et Société
5, allée Jacques Berque BP 12105
44021 Nantes cedex 1
cedric.raimondeau@univ-nantes.fr

Paper submitted for the 2015 EGOS colloquium, **sub-theme 16 – (SWG) Organization as Communication: The Performative Power of Talk**

From ventriloquism to high reliability: Object of activity and figures' significance

Introduction

This paper presents the results of a communicational study of High Reliability Organizations (HRO). Starting from a gap in the HRO literature, we seek to deepen the understanding of communicational nature of interactions within HROs. In particular, we contribute to the question related to the track: What forms of talk do we find in organizational practice, and how do they differ in shaping and constituting organizational phenomena in our study of reliability? We draw on the concept of ventriloquism (Cooren, 2010) and examine its impact and importance on the production of high reliability. We base our work on two empirical case studies. The first concerns heavy handling activity in a naval defense industry, and the second concerns the care provided to demented patients in a short-term geriatric ward. We use actor network theory, or ANT (Latour, 2005), to build an original analysis framework of ventriloquism that qualifies the figures in terms of "actor", "actant" or "object." Through a comparative approach, we show that ventriloquism can serve or disserve the high reliability of an organization. Specifically, we demonstrate that the nature of the object of activity

(Engeström, 1987) is a crucial element for the relevance of ventriloquism. We describe the impact of ventriloquism on HROs and build a preliminary typology of talk practices that foster it. We conclude by discussing the theoretical, methodological and practical contributions of our research.

Theoretical Background

HRO: Important fundamentals, but where is the talk?

Reliability is a permanent and fundamental question for actors at organizations with a high probability of accidents with major consequences. In these organizations, the absence of accidents can be considered a form of performance (LaPorte and Consolini, 1991). According to Rochlin, LaPorte and Roberts (1987), this performance depends on individual and organizational flexibility and redundancy of operations. The fact that the society, i.e. the wide range of organizations' stakeholders, cannot accept errors is another element that characterizes HROs. These organizations are continuously facing a high level of risk that could have many implications on the object of activity, whether it be on an aircraft carrier, where a disaster is always possible during flight operations (Weick and Roberts, 1993), or in a hospital unit, where harming the patient is a constant risk for the nursing staff (Vogus, Sutcliffe and Weick 2010).

Weick and Roberts (1993) highlight the necessary absence of reification in the collective mind to permit high reliability organizing. The collective mind is a distinct process in the social life of a group. Weick and Sutcliffe (2007) identify five processes that transform collective mind into organizational mindfulness that can produce high reliability. These processes are: preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience, and deference to expertise. Thus, organizational reliability is not only a matter of established structure of the organization, but also a matter of social dynamics, which need to be maintained to enable the development and upkeep of lasting reliability in the organization.

High reliability organizations are intelligent systems in which different actors cooperate. These actors share a collective consciousness that lets them adapt to their activities reliably.

The systems evolve in an exposed context where error is not acceptable, but is nonetheless likely to occur. Works on HROs highlight organizational processes and the importance of the social question, but do not elaborate on the performative power of talks that produce reliability. Communicational scholars have shown that communication has a decisive impact on HROs (Cooren, 2004; Fairhurst and Cooren, 2004). That is why the study of talk in HROs is particularly relevant to understand how actors produce reliability when they discuss their object of activity.

Talks in HROs: Ventriloquism concerning the object of activity as a reading key

We focus our study on communicational interactions between subjects and objects of activity (Engeström, 1987). Initially, communication studies saw communications as transmitter-receiver relationships (Shannon & Weaver, 1948). In this perspective, known as "classical" (Grosjean, 2008), communication only involves transmission of a message between two persons through a channel. Researchers are mainly concerned with the effective or ineffective transmission of the message from the transmitter. This perspective is somewhat problematic for us because our focus is not on messages sent and received between subjects and objects of activity, but on the relations enacted in communications. In the second, "social constructionist," approach (Grosjean, 2008), "receiver" and "message" interact, in our case through the way actors talk about their object of activity. Communication implies interpretations and actions that ground communications in the social context in which they occur. The social context is in turn constructed through actors' talks. We explore how the relations enacted in communications contribute to the production of organizational high reliability. That is why we need to study the performativity of talks, by adopting the Communication as Constitutive of the Organization (CCO) perspective.

In the CCO perspective, three paradigms have been identified (Schoeneborn, Blaschke, Cooren, McPhee, Seidl and Taylor, 2014). The first one shows that four communication flows collectively constitute organization: (a) reflexive self-structuring, (b) membership negotiation, (c) activity coordination and (d) institutional positioning. This perspective is not the most appropriate for our study because we do not look at communication on a symbolic reference plane, but rather on the plane of meaning produced through talks. Another paradigm of CCO is that of social systems, which describes organization as a consequence of decision-oriented communications. While also very interesting, this perspective is also problematic because it

tends to consider non-humans solely as disruptive elements in a context of communication between humans. The Montreal school (Schoeneborn and al., 2014) seems the most relevant for our study because it represents communication as transactional relations between both humans and non-humans. It highlights the agency of the objects of activity in the communicational constitution of the organization. Further, within the body of theories developed by this school, we are particularly interested in ventriloquism of humans and non-humans, which is particularly relevant to our study.

Cooren defines ventriloquism as "the phenomenon by which an agent makes another agent speak through the production of a given utterance or text" (Cooren, 2010, our translation). Actors' talks use "figures" (Cooren, 2010) directly linked to the object of activity. From an ontological view, these figures can be humans or non-humans. The reciprocity between the ventriloquist and the figure he or she uses is described as follows: "Interacting is making figures speak; of course those figures move us, but we also move them explicitly or implicitly to arrange the conversation in some way" (Cooren, 2010, our translation). Ventriloquism is grounded in actors' activity and constructs it in return, especially through the figure mobilized by the ventriloquist. When the ventriloquist manipulates a figure, he influences his audience and modifies its worldview. Conversely, the animated figure influences the ventriloquist's worldview. Ventriloquism is a performative act of talk to the extent that it has an impact on the actors' activities and on sensemaking. In this study, we look at ventriloquism's impact on the production of organizational high reliability.

Methodology

Research Settings

We study two distinct empirical fields. Both are facing the need to organize in a highly reliable way. They operate in changing environments, which can likely cause organizational mistakes that are unacceptable to stakeholders. The main difference between the two organizations is the nature of the object of activity, which is non-human in one case and human in the other. The first case is a naval defense industry, which builds warship propulsion systems. Its stakeholders cannot accept errors because of the important impacts in economic, political and military situations. The second case is a short-term geriatric ward of a

public hospital in a large city. As in the first case, its stakeholders cannot tolerate errors because this could cause pain, mistreatment, damage to health or even death for senior citizens. Particularly, families visiting their relatives could notice errors when they spend time on the ward.

Introduction to the naval defense industry

The first field is a naval defense industry site. It builds propulsion systems for deep or surface water warships. These warships are highly complex systems. SSBN (Sub-Surface Ballistic Nuclear) vessels are known in the industrial group as the "most complex systems existing": an SSBN contains some of the biggest and most lethal ammunition, all the infrastructures and equipment necessary for the work and the rest of the crew, and a very small nuclear power plant for propulsion. The factory where we did our fieldwork is dedicated to production of propulsion systems, which include everything from technical elements to a whole section of the submarine. The complexity of the SSBN associated with that of nuclear power systems makes defects in the production processes unacceptable. Most of the projects are prototypes; each submarine model is produced at most three times. Errors are also not acceptable for this factory; stakeholders cannot tolerate the impact they would have in economic, political and military situations. The organization, inspired by military organizations, is designed as a high reliability organization. The factory is divided into "workshops," each designed to produce its own high reliability: machining, welding, boilerworks, assembly and heavy handling. Unlike the other areas, heavy handling has no dedicated area because it is dedicated to the transport of work parts. The Controls department has its own workshop. Figure 1 is a simplified organization chart of the factory:

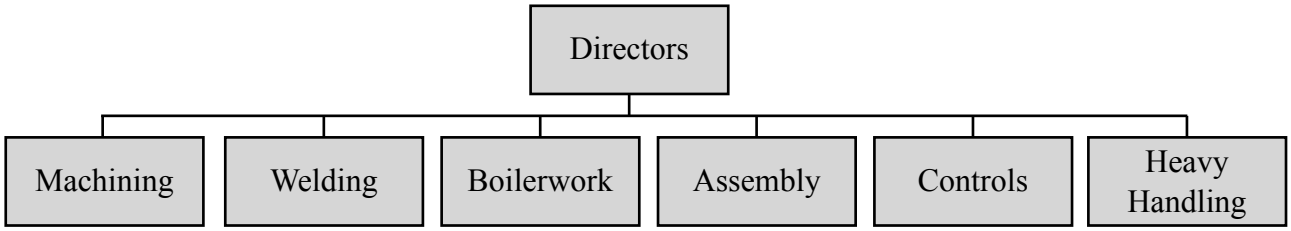


Figure 1: Simplified organization chart of the factory

Our fieldwork led us to focus on heavy handling activity. As Figure 1 shows, heavy handling is at the same hierarchical level as the other activities at the factory. This activity also has the potential to significantly damage work parts through scratches, collisions, and even dropped

loads. However, heavy handling activity is quite invisible compared with the other activities. It notably lacks formal procedures, unlike the other activities, and is not as controlled as production. Further, material handling is an interstitial activity, i.e. it is positioned as an interface between production activities. For example, material handling could have to move a work part from the boilerworks to the machining workshops. This is quite problematic because heavy handling has a supplier/customer relationship with the whole factory, whereas the workshops are organized separately regardless of what is going on in other workshops. Because of these two points, heavy handling invisibility and factory partitioning, the interface between heavy handling and production is very intriguing. Notably, invisibility and partitioning make "heedful interactions" (Weick & Roberts, 1993) hard to produce in managers' activities. This is why we focused on this interface and on how organizational mindfulness is produced here.

While searching for organizational mindfulness in conversations, we found that work parts are often discussed among activity managers. To articulate activities between them, managers incorporate work parts in their dialogues. We chose to focus on heat exchangers because they are frequently discussed in the interface. Given that they are priority work parts, conversations about them are easier to contextualize. The box below presents some of their characteristics and features.

Among the work parts lifted by heavy handling operators, heat exchangers are one of the largest. They are cylindrical with a half-sphere at each end. They measure approximately 8.5 m long, 1.5 m to 2 m wide, and weigh about two dozen tons. These work parts are close to being finished products. They are important components for the customer's technical systems. The customer, a foreign country, intends to maintain its superiority over neighboring countries with these systems. Customer representatives often come to the factory to control the heat exchangers. Very meticulous, they tend to spot unexpected details, make the factory accountable for it, and use that to renegotiate the terms of the contracts. As nearly finished goods, heat exchangers have a lot of "value added" incorporated. Many hours and considerable resources have gone into their production. As a result, mistakes in heavy handling operations could become very costly. In addition, heat exchangers are associated with a "critical project," with firm due dates in which delays are costly, because the company must pay its customer for those delays. Heat exchangers are priority work parts in the

workshop. This means that all production (boilerworks, assemblies, etc.), control and material handling activities must adapt their schedules by prioritizing the exchangers. Finally, although they look very simple from the outside, heat exchangers are highly complex systems that spend approximately 50% of their time in quality control. Heat exchangers demand high skills from the production and control workforces. Similarly, heavy handling workers face particular challenges because their handling of the exchangers requires the use of a tool yoke, which is complex.

Box 1: Heat exchangers description

As mentioned, heat exchangers are one of the most important work parts of the factory. They destabilize the distribution of heavy handling operations in the whole factory when they need to be moved from one place to another. They are also often discussed in production meetings so that operations can be adapted to the needs of the associated project. Heat exchangers entail high stakes in both production and heavy handling. This reverberates in the interactions of the interface between these two areas, which are particularly heedful when they are related to heat exchangers. Indeed, in both areas, there is no room for error regarding this work part. An error in production would imply at least a reworking of the product, requiring the handling to be redone, along with loss of time and new exposure to the risks of defects. In the worst case, an error in production could lead to a discarded, unreworkable product. This is obviously the kind of catastrophic consequence actors try to avoid. Material handling is also very hazardous. A dropped load, for example, would surely damage the product enough to make it unreworkable. Scratches and collisions evidently affect heat exchangers' quality significantly. They require more controls and maybe more production operations, which obviously entail heavy handling operations to move the work parts. Because mistakes are unacceptable in production and in heavy handling, managers of these departments often interact during the day. For both production and heavy handling managers, the interface must be as reliable as possible. This is why managers often call each other, to transmit information about the status of the heat exchangers or to arrange their schedules according to the circumstances. However, these interactions vary in reliability, depending on the situation and the elements the managers discuss through their conversations. We emphasize this point in the paper.

Introduction to the short-term geriatric ward

The second field is a short-term geriatric ward. It accommodates patients at least 75 years old who need hospitalization for medical reasons, for example due to undernourishment or a fall. Medical reasons for hospitalization could also be social: nursing is not always possible at home because of safety concerns. Patients are admitted via the hospital's emergency services, or the mobile geriatric care team that acts outside the UHC. Each patient is admitted in less than 24 hours "in order to offer a care service applied to the admittance reasons and to comorbidities." This care comes with a mission of "prevention in order to detect patients seeming too weak for their return home and so organize their way out with adapted help measures" and a mission of detection of the "main geriatric symptoms" (nutrition, cognitive troubles, etc.). The average duration of the stay in the geriatric ward is about 10 days, enough time for the patient's health condition to stabilize or for the rest of the patient care to be prepared and adapted to the patient's needs, including primary caregivers, family, and if necessary, the organizations likely to accommodate the patient (residential accommodation for dependent elderly people, rehabilitation and recuperative care, home-based care, etc.).

During his or her stay, each patient receives treatment and a social follow-up to organize the best way to discharge that person from the ward. Because of the diverse competencies needed to complete this mission, we find several professions, such as Hospital Service Agent (Agent de Service Hospitalier, HSA), Qualified Hospital Service Agent (Agent de Service Hospitalier Qualifié, QHSA), Care Assistant (Aide-Soignante, CA), State-Registered Nurse (Infirmière Diplômée d'Etat, SRN), Extern (beginner student of medicine), Intern (student finishing studies in medicine), Hospital Practitioner (Praticien Hospitalier, HP), physiotherapist, social worker and orderly. The ward we observed is open to the public from 6:30 a.m. to 9 p.m., and many families pass through the corridors during these opening hours. Some families are able to stay all day long and take part in the care of their close family member by giving information concerning the "habitus" of the patient (living hygiene and conditions), or even by participating in some nursing activities such as aids for meals. Patients can also communicate with each other because half of the rooms are double bedrooms. SRNs and CAs work in duos, and each duo is responsible for 10 patients. Interns and externs are also divided up in three duos, each one responsible for a sector. Two HPs are divided up in the three sectors and supervise intern/extern duos. Two other CAs are divided up on missions regarding the three sectors, and the QHSAs also have missions. One QSHA in particular secures the

orderly duties of the ward to bring patients to examinations on stretchers. The social worker and the physiotherapist work throughout the ward as needed. All of the nursing staff changes sectors (every three to four days) and working hours (often alternating weekly between morning and evening). At each change of team, targeted transmissions are made between CA and SRN duos, and then later between SRN, extern, intern and HP. These practices enable all of the caregivers to know all the patients currently in the ward.

In our fieldwork, we compared demented patient care and non-demented patient care to measure the organizational impact of the demented patient. In consultation with the partners of our study, we realized that dementia was sufficiently frequent to regularly pose problematic situations for the nursing staff but was not conducive to the implementation of standardized practices due to the variety of its manifestations in the speech and acts of the demented patients. For example, we observed that some demented patients were quite cooperative in the treatment while others clearly opposed it. It should be added that Alzheimer's dementia can be proven only with a post-mortem examination, and needs to be deduced from tests that eliminate other diseases. All of these uncertainties create a need for sensemaking between caregivers facing dementia. We focused on this case to understand how these actors can offer reliable treatment to the demented patient, who could be a source of organizational confusion for both the nursing staff and for other patients.

Ms. V. entered the ward after a fall that required her arm to be put in a cast in the hospital emergency ward. She has Alzheimer's disease. This dementia seems to complicate tasks in several situations: during mealtime, drug distribution or events triggered by a request by the patient herself.

For example, when she wants to urinate, she calls by shouting instead of using the bell. CA n°3 comes and tries to help her move, but she asks to be left alone. She wishes to take off "her bag" but cannot. She shakes her cast vigorously. CA n°3 asks for help from CA V, while Ms. V says she knows "what has to be done." After several minutes, the two CAs manage to seat her on the toilet. CA n°3 offers to dry the patient, but the patient demands autonomy while CA V goes to look for materials needed for her to wash up. The patient accepts, but she does nothing. CA n°3 dries her. The patient has difficulty standing up and she accepts the help of the CA. Once up, she complains less but still does not answer requests by the CA and says what seems to the nurses like contradictory statements about what she wishes. She is bathed

while standing up, because she does not cooperate. CA n°3 offers to put her in her armchair, and speaks about the patient's cat while steering her to the armchair with the help of CA V. They put her in slowly because she complains throughout the transfer and seems to suffer. Yet when the nurses ask her about possible pain, she does not mention anything.

Box 2: About difficulty handling a demented patient: Example of Ms. V

As mentioned, patient dementia is a common phenomenon in geriatric medicine, and its unexpectedness makes it one of the major difficulties in intensive geriatric care. As box 2 shows, patient dementia seems to disrupt the organization of the care by requiring reinforcement from CA V. Additional time is also needed due to the actors' difficulties understanding each other, especially between patients and nurses in the transfer. Moreover, Ms. V. previously had to be transferred to a single room due to her agitation (implying multiple transfer operations). She was initially in a double bedroom but she never used the bell, during the day or night, and her shouting caused a noise nuisance that prevented her neighbor from sleeping and harmed her health condition. The stake of dementia for the geriatric ward's organization is thus major; it is pivotal to numerous interactions aimed at giving sense to the patient's medical and social situation. The patient is not always able to clearly express his or her own needs, which creates an additional difficulty for the caregivers. In fact, mistakes in nursing could be a source of significant moral or physical pain during transfers given the weakness of the hospitalized elderly person. An error in treatment could also cause the patient's health condition to worsen, or even lead to death. This risk of errors is even greater for patients with dementia. For example, Ms. V. did not report that she was allergic to any drugs, but can caregivers trust her given her behavior? The patient's position remains central in the nursing process as a result of the information he or she holds, and the staff tries to organize and adapt themselves to each context to offer reliable treatment. We focus mostly on the way the patient is depicted in the caregivers' discourse and on the impact it has in terms of medical practices and organizational reliability.

Data collection

Inspired by ethnomethodology, we decided to study "the endogenous and local production of the most ordinary things of social life; proceeding from organizational work" (Garfinkel, 2001, pp. 31-56, our translation). Our data collection was based upon an ethnographic

fieldwork method and lasted several months. It was supported by different qualitative research methods. We used triangulation (Yin, 1981) to maximize the reliability of our results. The principal axis was direct, situated observation of the activity (Journé, 2012), during which we used informal interviews in situation (Fox, 2004). We supplemented this with formal interviews and document studies to confirm the meaning of what we observed. The empirical materials used in our analysis are excerpts of our observations.

We applied a strategy that made our observations participant in line with what Piette (1996) wrote, i.e. as a "form of socialization", but not as much as "taking a role already existing in the situation" (Arborio & Fournier, 2010). We immersed ourselves for several months in each field to be accepted by the groups we observed. Following Journé (2012), our observation was dynamic. We followed four different observation strategies to capture the variety of situations in modifying our position (fixed or mobile) and duration (short or long). With this perspective, we observed regular talks on dialogical and organizational scales. We also observed some crisis talks when unexpected events arose. These strategies enabled us to adapt to opportunities and contextualize the unexpected relative to normal situations. Conversely, when we observed outstanding situations, it was easier to characterize the normal activity of organization.

We also conducted interviews to complement our observations. In the field of the geriatric ward, these interviews were non-structured, to collect "the perception of the situation" (Muchielli, 1995, p. 242, our translation) of the caregivers (health executive, CA, SRN, intern). This method enabled us both to enlarge our vision of the field and to confirm some points of understanding. Accordingly, we introduced an extensive topic without offering a point of view to the interviewee while encouraging the respondent to offer us his or her point of view on several situations. For example, we started a discussion with the question "what differentiates the demented patient from the non-demented one?" and we directed the dialogue slightly toward the way demented patients are spoken about between caregivers.
In the industrial field, we conducted ethnographic interviews with production managers (Beaud, 1996) to collect their subjective point of view, which we could not collect during situated observations and informal interviews. We had previously observed these actors, but during observations of heavy handling actors (with whom we were socially engaged at the time). These interviews were semi-guided, to help interviewees clarify their point of view; heavy handling is an unknown activity in the company. For example, to better understand

what they consider “good handling,” we asked them “what does production need from heavy handling?”

Finally, we collected documents that formalize the organization to understand the organizational context influencing actors’ practices in the course of action. These documents were directly used in communicational practices or represented, for example, a strategic representation of the organization. We thus situated the action in its context to better observe its emergence. Similarly, we oriented our interviews toward the object of our research. For example, we used the annual report of the geriatric intensive care ward, an annual review that sets strategic orientations and that describes the demented patient as a fully fledged actor of his or her own treatment. This formalized will is translated by the emergence of communicational practices related to demented patients.

Our common methodology, based upon situated observation (Journé, 2012) and supplemented by interviews and document collection, enabled us to compare the two fields. We used a common methodology adjustable to the context to compare the way actors talk about their object of activity depending on if it is human or non-human. The longitudinal characteristic of our fieldwork was a determining element in the success of our two inquiries based upon observation (Arborio, 2007).

Data Analysis

We base our analysis on observed interactions, and particularly on ventriloquism acts (Cooren, 2010). To differentiate the ontological aspect of the object of activity as human or non-human, we use actor-network theory (ANT) (Latour, 2005). It shows some asymmetrical aspects in the performativity of the talk, specifically because of its symmetrical perspective on humans and non-humans (Callon, 1986). We analyze ventriloquism acts with the following three categories: “ventriloquizing as object,” “ventriloquizing as actant,” and “ventriloquizing as actor.” In the naval defense case, we study ventriloquism acts between two managers from different activities: production and heavy handling. In the short-term geriatric ward, we study ventriloquism acts between the different actors who participate in the demented patient’s care.

The terms “actor,” “actant” and “object” qualify figures, which are elements in utterances or texts. When they are represented as “objects,” non-humans are implicitly considered passive

entities (Latour, 1996). As such, they form the space, "all of entities […] which do not have any particular action to accomplish but upon which the other ones' actions are based or need to bypass" (Akrich, 1993, our translation). Latour deliberately uses the term "object" (2005, pp. 63-86) to criticize sociologists' tendency to represent non-humans as passive in social interactions. By highlighting the absurdity of a posture that systematically views non-humans as objects, as extras in social scenes, he underlines the active role that non-humans play in societies.

The "actant" is defined as a figure, human or non-human, which is acting in the utterance. The "actant" concept is widely seen in ANT as revealing the active role played by non-humans in social interactions. It "widens the social question to all beings who interact in an association" (Latour, 1996). In her study of technical objects, Akrich (1993) defines the actant as "the entity named by a particular element of the technical device, for the purpose of the action for which it has been designed" (our translation). This capacity to contribute to an action is a characteristic of the actant figure. When it is qualified as "actant," the figure is much more active than if it were an "object," but still does not have the features of an "actor." The "actor" figure is capable of sensemaking and of acting for reasons that the utterance does not specify. In Akrich (1993), the actor is called an author, "the people to whom the action is attributed [... the author] unite[s] the face-to-face interaction between the object and its user and introduces a third party for whom and by whom the action takes a part of its sense" (our translation). The actor is also "what is made to act by many others" (Latour, 2005). What exactly makes actors act must remain uncertain, Latour warns, "not because actors know what they are doing and social scientists do not, but because both have to remain puzzled by the identity of the participants in any course of action if they want to assemble them again" (Latour, 2005, p. 47).

We rely on these three categories to clarify the kinds of forms the actors give to the figures through their talks. In the first case, heat exchangers take the form of "objects," passively constituting the space of the managers, or the form of "actants" when they are actively involved in the situations managers try to solve. In the second case, demented patients take the form of "actants" when they are reduced to only acting, and that of "actors" when their sensemaking ability is involved in the situation resolution by the nursing staff.

Main findings

Results in the naval defense industry

We present here the results that clarify the impact on high reliability production of the figure employed to ventriloquize the object of activity, in the case where the object of activity is non-human. First, we present a few elements of the research context. As shown in box 1, mistakes are unacceptable in the handling of heat exchangers. The stakes are such that any mistake, be it a production inaccuracy or a scratch or collision in material handling, may have unintended catastrophic consequences (Orlikowski and Scott, 2008). Further, given that the research was conducted on the interface between production and material handling, we see a dialogue between two very different ways of looking at things. Even if they work in the same factory with the same non-humans, production and heavy handling actors do not pay attention to the same things. Their work is different, so they are not concerned about the same stakes related to tools and work parts (Dodier, 1995; Tillement et al. 2009).

Heat exchangers as "objects," penalization of high reliability

The context presented above makes it hard to communicate reliably about the same object of activity, or the same work part, representing different stakes depending on the occupational group. It becomes even harder when managers involved in the conversation are focused on activities other than communication. This is the case in the next box. The production manager is in his office, updating a table of material handling requests. The heavy handling manager is in the workshop, finishing his shift and making a round where he reviews the situation to the material handlers who will work at night. The production manager suddenly has a doubt concerning two material handling requests, and calls the heavy handling manager to find out if he has received these requests. While this talk brings him the information he seeks, it is shown to be unreliable. Particularly, the use of the "object" figure, which depicts heat exchangers as passively involved in the situation, did not encourage the two managers to clarify the stakes of this object of activity (see the box below).

The heavy handling manager is doing his end of shift round. He gives the material handlers working at night their last orders before he leaves work. In the meantime, the boilerworks production manager is updating a table on his computer, where he records handling requests and upcoming handling. The production manager calls the handling manager: **Production manager:** Yes, [handling manager's first name] ***Handling manager:*** *You called for exchangers to transport to underwater tests?* **Production manager:** Yeah. ***Handling manager:*** *Do you know when the tests will begin in the zone?* **Production manager:** They're going to get it done with the 3 and the 4 next Monday. Please get around to it if you have the time. ***Handling manager:*** *Guys are on it, I gave them instructions.* **Production manager:** Perfect. They should go talk to [zone manager's first name] then. ***Handling manager:*** *I'll tell them that.* **Production manager:** Great, thanks. The heavy handing manager finishes giving instructions to the material handlers. The production manager finishes updating his table.	Figures of heat exchangers as objects are shared among the managers Heat exchangers are sum-up as their serial number (4 exchangers are in the workshops)
The next morning, the production manager is visibly troubled. He has serious doubts about the requests he sent to the heavy handling manager the day before. The production manager checks his computer, and sees he has forgotten to remind the heavy handling manager about the switch between heat exchangers 3 and 4.	Production manager realizes that his ventriloquism of the heat exchanger was inaccurate: risk of error

Once in the workshop, the production manager sees that none of the heat exchangers has been moved. In doubt, the material handlers preferred to wait. The production manager told them that was a good choice, especially because the exchanger whose handling had been postponed has to be treated with nitrogen before the tests. The production manager then called the heavy handling manager. He praised the material handlers' choice to wait, which avoided seriously harming the heat exchangers.	Material handlers' doubts were well-founded and compensated the figures of heat exchangers as objects

Box 3: Heat exchangers ventriloquized as objects

As box 3 shows, the use of the "object" figure penalizes the production of organizational high reliability, because it did not encourage the production manager to talk about the switch between heat exchangers 3 and 4. This could have led to a catastrophic situation, given that one of the two heat exchangers has to be treated with nitrogen before going to underwater tests. The literature on high reliability organizations points out the importance of "heedful interrelations" where such information is shared among managers. Weick & Sutcliffe (2007) specify five dynamic processes from which organizational mindfulness can emerge. We see here that these processes are penalized by the "object" figure. First, the representation of heat exchangers as passive did not clarify the failures that preoccupy the managers concerning these work parts, especially regarding nitrogen. This figure, along with the situation of each manager, encourages them to focus on the information they need, and consequently simplify their interpretations. Moreover, the "object" figure makes interlocutors insensitive to the operations. Passive heat exchangers do not seem to be a topic that can delve into these operations through managers' conversations. As such, this representation does not help managers detect future possible problems and thus reaffirm their mutual commitment to resilience. Finally, the "object" figure obfuscates both the problems exchangers create for managers and the expertise they demand of them, penalizing the field of deference to expertise.

Heat exchangers as "actants," sustainment of high reliability

Both situation and conversation are very different in the second case. While this conversation is still about heat exchangers, stakes related to reliability in each occupational group are made clearer. Indeed, they seem to be the topic of the talk. In this case, production managers are in the workshop talking about heat exchangers and how they need them to be placed in a particular place. The heavy handling manager and operator come to get clarification about material handlings' requests. We then see employment of the "actant" figure to represent the heat exchangers in the utterances. The production managers first explain how these work parts impose constraints on production operations and management, which justify the requests. Heavy handling actors then clarify how the handling of these work parts represents problems for them, in that each lift is a dangerous situation for both the people and the heat exchangers. While being somewhat problematic and revealing of tensions between production and heavy handling, this conversation enables managers to produce lasting reliability (see box below).

Boilerworks production manager has made a series of handling requests to move some heat exchangers to the underwater test zone. He is in the test zone with the zone manager. They are discussing the places where each work part must be put. The heavy handling manager enters the zone with a material handler. The two men seem on the defensive. They have come to ask for further clarification about the handling to be done. The production manager draws a plan of the zone in his notebook (exchangers reverse parked). ***Handling manager:*** *What about the other way? Wouldn't it fit? (Parallel parking)* **Zone manager:** There would be a head loss. **Production manager:** Anyway, the objective is to gain some floor area to put as many parts in the zone as possible and be able to work on them. **Zone manager:** And as I say, because we need to test them all	Heat exchangers are ventriloquized separately in each department Figures of heat exchangers as actants imposing

at the same time and under high pressure we need to have the heat exchangers reverse parked. ***Handling manager:*** *When you see the number of times we moved it for nothing.* ***Material handler:*** *The last one, I had barely put it down when you asked me to turn it.* ***Handling manager:*** *Can you guarantee that it would not move then?* **Zone manager:** We can never guarantee such a thing 100%... **Production manager:** It depends on the hazards. ***Handling manager:*** *In any case be careful, the heat exchangers tend to move a lot for nothing these days.* ***Material handler:*** *Can you make me a plan so that I can know exactly what has to be done?* **Production manager:** Ok, I'll make you a plan. ***Handling manager:*** *Thanks [Prod. manager's first name]* Afterward, heavy handling managers and operators use the plan made by the production manager to precisely situate the production needs they receive. When the exchangers need to be moved again, production managers discuss how to restrict the number of heavy handling requests as much as possible.	constraints on production organization Figures of heat exchangers as actants imposing constraints for heavy handling organization Ventriloquism allows the parties to make an arrangement based on the constraints of both sides Figures of heat exchangers as actants produce lasting reliability

Box 4: Heat exchangers ventriloquized as actants

As box 4 shows, the use of the "actant" figure helps actors sustain the production of organizational high reliability; it encourages them to explore in detail the stakes heat exchangers represent to them. As such, the exchangers take the role of boundary objects (Star, 2010), enabling actors to provoke interaction between the occupational worlds of heavy handling and production, and thus foster collective mindfulness. By helping the actors collectively manage the stakes the heat exchangers represent for them, the "actant" figure leads to lasting reliability produced in the conversation situation. The heavy handling actors

then use the plan the production manager made, and the production managers discuss among themselves to restrict heavy handling requests as much as possible.

We find in this heedful interaction how the "actant" figure fosters the five dynamic processes sustaining organizational high reliability (Weick & Sutcliffe, 2007). Because it supports the detection of the problems created by the heat exchangers for each occupational group, the use of this figure helps clarify the failures that preoccupy the actors involved in the talk. Then, the exchangers figured as being actively involved in the situation forbid the actors from simplifying their interpretations of what they are talking about. This makes both managers and the operator especially sensitive to operations and their complexity. The "actant" figure also helps reaffirm the mutual commitment to resilience, because it signals what could become a problem for heavy handling and for production. Finally, this figure prepares the field of deference to expertise by making the knowledge and problems of each actor regarding heat exchangers explicit through talk.

Results in the short-term geriatric ward

In the case of the short-term geriatric ward, the demented patient is outside the communicational norm because of cognitive and language impairments associated with his pathology (WHO, 2012). This difficulty can decrease the importance of his talk in the community of talk (Demoures, 2003). As a result, ventriloquism acts concerning a demented patient are omnipresent in sensemaking and in the preparation of nursing care. We observed two kinds of ventriloquism. The first one is the figure as an actant, i.e. the patient is represented as an entity that takes an active role in the utterance but is not able to participate in the sensemaking process. The second one is the figure as an actor, i.e. the patient is able to participate in the sensemaking process about his care.

Demented patient as an "actant," penalization of high reliability

In the first case, we study how a human, as an object of activity, is figured in actors' utterances as an "actant." Being only an active figure, the person loses his capacity to contribute to the sensemaking, contrary to the other persons involved in the situation (Latour, 2005). In the context of neonatal resuscitation, Honoré (2015) showed that this way of presenting patients is related to the classical organization of care. Here we find that the

enabling, enacting and elaborating processes that foster an organizational culture of high reliability in care (Vogus, Sutcliffe and Weick, 2010) are endangered, as illustrated in the box below).

Mr. C., diagnosed with Alzheimer's disease and considered a "heavy" case by the nursing staff, was admitted because of a general deterioration of his health condition. Bedridden and living in a retirement home, he spent 14 days in the ward. During a morning visit, the care assistant and the nurse note a presence of stools. The patient needs changing. Despite requests and insistence from the nurses, he resists, struggles, and hangs on the edge of his bed to propel himself onto the bed. A cooperative patient would have grasped the edge of his bed to hold himself up while leaning to one side to facilitate the task execution. Mr. C. then plunges his hand in his stools, and soils all of his bedding by spreading it. The SRN and the CA have "to force" and the nursing care takes longer than in the classic case. While leaving, they note they are late with their planning. Later, in a break, another CA questions the SRN: **CA:** So, how did it go this morning? **SRN:** That was hard. We finished up late… (short silence) **CA:** What happened? **SRN:** 34 did just about everything to prevent us from changing him, for no reason! He pushed himself away with the bed bar and hurt me! He spread his stools everywhere, it took us plenty of time to clean up everything and change him… and we needed to force. (Irritation and sorrow clarified in an informal interview)	The patient is ventriloquized as a room number. He is also ventriloquized as able to act, but without giving sense to action.

In the following days, Mr. C. is presented to the nursing staff through this event during targeted transmissions. Nurses do not seek his cooperation as much as before (CA, SRN and orderly fasten him directly for a transfer, for example). A CA explains: "When it doesn't want, it doesn't want…"	The figure of the patient as an actant crystallizes itself in the discourses of the nursing staff. They involve him less in the treatment: loss of reliability in care.

Box 5: Demented patient ventriloquized as an actant

First, we identified the patient's figure that is animated by its ventriloquist, the SRN. The patient is designated by a striking expression: "34." Yet through targeted transmissions and sector changes, the whole nursing staff knows the names of all of the patients currently in the ward. During normal activity, caregivers represent the patients' figures by their identity, and then, if needed, would state the room number. This gap in practice is even more obvious considering that his stay is longer than the average in the ward. Mr. C. is therefore well known. The figure of the actant used here tends to dehumanize him in the discourses.

Further, the patient's figure in those discourses is represented as a force preventing action from being done without creating meaning "to prevent us from changing him for no reason!" This figure has also been proven capable of unjustified psychological ("we needed to force") or physical ("and hurt me!") violence. Indeed, as the nurses explained, the patients know that it "is bad to force" and that it provokes "a feeling of badly done work." The patient's figure is therefore nearer to actant than to actor because it has a role in action but does not participate in the creation of meaning concerning action.

This ventriloquism act that mobilizes the patient's figure as an actant has a direct organizational impact on caregivers' practices. Indeed, they adopt a different position and count less on Mr. C.'s cooperation during the treatments. Yet this patient is still an actor with a determining role in his own treatment. For example, he is best qualified to indicate where he feels pain. This reduced solicitation therefore hinders the emerging convergence of interests between him and nurses to protect him from pain, i.e. "consolidation and reconciliation of diverse concerns about safety" (enabling), and complicate the preservation of those interests through concrete acts linking specialties (enacting) (Vogus, Sutcliffe and Weick, 2010).

Finally, the CA's utterance "When it doesn't want, it doesn't want…", while being a popular expression in French, also represents the end of the safety practice refinement concerning this patient between multiple specialties. He has lastingly become an actant figure in the different actors' discourses, and actors give up on trying to continuously improve their practices in a reliable way (i.e. elaborating on Vogus, Sutcliffe and Weick (2010)). The actors do not seek the patient's cooperation or the trick that will induce it, and expose themselves to the risk of the patient's suffering pain by giving up attempting to gain his cooperation.

Demented patient as an "actor," sustainment of high reliability

In the second case, we find how another human is figured in actors' utterances as an "actor." This figure gives the patient an additional ability to make sense and to act for underspecified reasons (Latour, 2005). Honoré (2015) showed, in the context of neonatal resuscitation, that the representation of the patient as an actor of his/her own treatment enables the care organization to be distributed among other actors than the nursing staff, and thus reinforce organizational reliability. Here we find that the representation of the patient as an actor in the caregivers' discourses foregrounds the contribution of the patient in the treatment and thus fosters the enabling, enacting and elaborating processes (Vogus, Sutcliffe and Weick, 2010) (see the box below).

Following the admittance of Mr. M., ostensibly a demented patient, a diagnosis was made by an intern and an SRN. This diagnosis was complicated for them because they tried to involve the patient to make him clarify his symptoms. Mr. M. seems to openly make fun of them, laughing when he is asked questions and answering inconsistently. His family is absent and cannot provide information. The workers return to the treatment room dissatisfied and brief the geriatrician: **Intern:** That's it, but he is not cooperating and almost never speaks. This will not be simple… in my opinion he is totally demented.	The patient is ventriloquized as an actant that does not create meaning.

SRN (preparing a drip on a nearby lab bench)**:** Yes I think we could say that, admission was not easy.	Figure of the actant patient confirmation.
HP: Oh, yes, but be careful here. It is important to not say immediately he is demented; he just came from the emergency ward where it is wild. It is possible they gave him a shot and that it is not in the file. It is also possible that he is confused by the bustle and undernourishment… This could be plenty of things. You need to be careful it is maybe a symptom… it is important to not reduce the patient to that.	The figure of the patient is redirected to the actor, able to contribute to his treatment by creating meaning. He might only be diminished.
They review the file, and the HP invites the SRN and intern to join him in the patient's bedroom.	
HP: Hello Mr. M. So, how are you going? (looking cheerful)	
The **patient** (laughs while staring at him)**:** I don't know where you are going.	
HP: Do **<u>you</u>** feel **<u>pain</u>** somewhere? (emphasizing "you" and "pain" with his voice while pointing with his finger and miming pain with his face)	
The **patient** nods his head. The **HP** shows his finger to the patient and press on different places on his body. After several tries, the patient grimaces further to pressure on the lower abdomen.	The HP solicits the patient as an actor and invites him to behave as such by taking part in his own treatment.
HP: Does it hurt?	
The **patient** (nods)**:** Yes.	
The **HP** and the rest of the **caregivers** leave the room and say goodbye to the patient The **HP** then explains to the SRN and intern that this is a reliable trick to continue to communicate about the patient's pain. During lunch, the **intern** tells his colleagues about the situation and the performance.	
"Then he showed he was in pain by grimacing. I did not	The figure of the patient as an actor crystallizes itself

believe that, that was crazy! Mr. M. helped us even though he seemed to be totally elsewhere." Some days later, another intern tells him that he tried the trick successfully on another patient.	in the nursing staff and produces lasting reliability.

Box 6: Demented patient ventriloquized as an actor

Here, the caregivers (SRN, intern) animate a figure of an actant patient who does not create sense about the situation and constrains actions toward his own treatment; i.e. "he is not cooperating and almost never speaks"; "admission was not easy to do." As in our first case, the reliability of treatment risks being reduced not only due to the patient's dementia, but due to his representation as an actant rather than an actor in the caregivers' discourses.

Nevertheless, the HP rejects this figure of the actant patient because he thinks it is too simplistic. He insists on the various external reasons that can cause this apparent lack of cooperation: "He just came from the emergency ward, where it is wild. It is possible they gave him a shot and that it is not in the file. It is also possible that he is confused by the bustle and undernourishment… It could be plenty of things." In his discourse, the HP refutes the actant figure proposed previously. Instead, he uses a figure of the patient as an actor by "excusing" his behavior and by insisting on the patient's potential participation in the meaning creation: "it is important not to reduce the patient to that."

The caregivers then go back to diagnosing. The figure of the patient actor mobilized in the HP's discourse is found in the care organization as the HP, using his trick, manages to get the patient's cooperation and propose a more accurate diagnosis than the previous one. It is interesting to note that this trick also modifies the intern's way of animating Mr. M.'s figure in his own discourse. Indeed, during lunch, he emphasizes the actor characteristic of Mr. M., whereas he initially animated this figure as an actant: "Then at this point he showed he was in pain by grimacing. I didn't believe it, it was crazy! Mr. M. helped us even though he seemed to be totally elsewhere."

The impact of this swing of figure from the actant to the actor for care organization is immediate. Initially, the caregivers showed discouragement regarding the patient's

participation. This discouragement could lead to a loss of reliability in treatment because it might reduce the solicitations and not permit the emergence of the three processes fostering organizational high reliability culture in care (Vogus, Sutcliffe and Weick, 2010). Yet by mobilizing the patient's figure again, this time as an actor, the HP fosters these three processes and enables the creation of organizational high reliability.

First, the HP strengthens the different interests around the patient's safety. He reminds the other caregivers that the patient is capable of cooperating, and enables the patient to create meaning about pain using a communication medium adapted to the context. In this way, he is enabling and enacting HRO culture by linking the various specialties around "the finger" as an operational solution (nursing or not, the patient remains the specialist of his own pain sensation).

His trick is subsequently adopted by an intern, who successfully re-uses it with another patient. There is indeed an improvement of the practice, as it was adjusted to the context of a different patient, in a different room, who has a different disease. The practice of producing safety in care has been adopted by another specialty and refined to be used in another context (elaborating) after feedback on the practice between caregivers. As Vogus and al. (2010) advance, "When elaborating is focused on patient safety, two themes emerge: the centrality of reflection and the centrality of feedback."

Synthesis of the results

We sum up our results in the following table (see Table 1). This table shows how ventriloquism may serve or disserve organizational reliability. Particularly, a comparison of the two fields highlights the impact of the figure "as an actant" in the production of high reliability. Ventriloquizing a human as an actant penalizes the production of reliability. Contrarily, ventriloquizing a non-human as an actant sustains the production of high reliability. It is interesting to see that the same form of figure has a different impact on organizational reliability depending on the ontological nature of the object of activity. This highlights the importance of shaping ventriloquism practices to produce HRO.

We sum up our results in this table:

<table>
<tr><th></th><th>Object of activity: Non-Human

Naval defense industry</th><th>Object of activity: Human

Short-term geriatric ward</th></tr>
<tr><td rowspan="2">Figure is an actor

It acts by itself for unexplained reasons</td><td rowspan="2">Not Studied</td><td>Sustains HRO</td></tr>
<tr><td>Demented patient shows with his finger where his pain is situated despite his aphasia, and fosters the reliability of the diagnosis.</td></tr>
<tr><td rowspan="2">Figure is an actant

It is actively involved in the situation</td><td>Sustains HRO</td><td>Penalizes HRO</td></tr>
<tr><td>The heat exchanger is presented in the talk as exposing production and heavy handling to many risks. They are detailed in a discussion to foster the reliability of the decision.</td><td>Demented patient is hostile to the nursing staff, fights with the nurse and delays the next care. The nurse complains about this to the other caregivers.</td></tr>
<tr><td rowspan="2">Figure is an object

It is passively involved in the situation</td><td>Penalizes HRO</td><td rowspan="2">Not studied</td></tr>
<tr><td>Heat exchanger is summed up as its serial number by the managers of both activities. It causes mistakes in operations management.</td></tr>
</table>

Table 1: Ventriloquism sustaining or penalizing HROs depending on the nature of the object of activity and the figure employed to represent it in the talk

Contributions

Theoretical Contributions

Previous studies highlighted the importance of communication in HROs but did not explore the subject deeply. Our work contributes to the HRO literature by showing how talks about an object of activity can foster or hinder production of high reliability. We also contribute to the CCO literature, particularly about ventriloquism (Cooren, 2010), by highlighting its critical aspect. We bring some keys to understanding human and non-human multiple agentivities (Cooren, 2006) while specifically addressing the performativity of their representations on reliability production. We contribute to the patient-centered-care perspective developed in the medical literature that highlights the importance of the patient as an actor of his own care (Bauman, Fardy and Harris, 2003; Stewart, 2001) by analyzing his or her participation through a communicational approach. Finally, our work shows how actors' talks "animate" non-humans that compose their work environments.

Methodological Contributions

Journé (2008) offers an interesting and reliable method to collect data about "attentive interactions" between actors (Weick and Sutcliffe, 2001). His dynamic observation system is also relevant to capture the talking acts in situations that produce reliability. Our use of the ANT concepts is an invitation to explore, in ethnographic studies, sliding in the forms of figures in actors' talks, which facilitates the researcher's immersion and acceptance in the field. It also seems to help restore the investigated culture through its language rules (Van Maanen, 2011).

Practical Contributions

The ventriloquism table about human and non-human objects of activity that we introduce could help managers bring reliability to their organization. It is important for these managers to take a look at ventriloquism practices, and how they and their collaborators talk. Our work highlights risks and interests for different forms of figures, according to the nature of the object of activity during the ventriloquism activity. It seems essential to adapt talks to the nature of the object of activity to foster the performativity of the talk in terms of organizational reliability.

References

Akrich, M., *Les objets techniques et leurs utilisateurs, de la conception à l'action.* Raisons pratiques, 1993(4): p. 35-57.

Arborio, A.-M., *L'observation directe en sociologie: quelques réflexions méthodologiques à partir de travaux de recherches sur le terrain hospitalier*, Recherche en soins infirmiers, 2007(90): p. 26-34.

Arborio, A.-M., Fournier, P., *L'observation directe: L'enquête et ses méthodes*. 3rd edition, 2010, Armand Collin.

Bauman AE, Fardy HJ, Harris PG. Challenges for improving patients' experiences of health care. Med J Aust 2003;179:253 – 6

Beaud, S., *L'usage de l'entretien en sciences sociales, Plaidoyer pour "l'entretien ethnographique"*, Politix, 1996(35): p. 226-227.

Callon, M., *Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay*, in *Power, action and belief: a new sociology of knowledge?*, J. Law, Editor. 1986, Routledge: London. p. 196-223.

Cooren, F., *The Communicative Achievement of Collective Minding, Analysis of Board Meeting Excerpts*. Management Communication Quarterly, 2004, n°17(4), p517-551

Cooren, F., *The Organizational World as a Plenum of Agencies*, in *Communication as Organizing: Empirical and Theoretical Approaches to the Dynamic of Text and Conversation*, F. Cooren, J. Taylor, and E. Van Every, Editors. 2006, Routledge. p. 81-100.

Cooren, F., *Ventriloquie, performativité et communication. Ou comment fait-on parler les choses.* Réseaux, 2010(163): p. 34-54.

Demoures Geneviève , "Paroles de déments parole aux déments", *Gérontologie et société* 3/ 2003 (n° 106) , p. 111-128

Dodier, N., *Les Hommes et les machines: La Conscience collective dans les sociétés technicisées*. 1995: Métaillé.

Engeström, Y., Learning by Expanding: An Activity-Theoretical Approach to Developmental Research. 1987:Orienta-Konsultit

Fairhurst, G. and F. Cooren, *Organizational Language in Use: Interaction Analysis, Conversation Analysis and Speech Act Schematics*, in *The SAGE Handbook of Organizational Discourse*, D. Grant, et al., Editors. 2004, SAGE Publications Ltd: London. p. 131-153.

Garfinkel, A., *Studies in Ethnomethodology*.1967, Englewood Cliffs: Prentice-Hall.

Grosjean, S., *Saisir la dynamique organisationnelle: quand intersubjectivité et interobjectivité s'entrelacent.* Sciences de la Société, 2008 (74): p. 43-63.

Honoré, L., *Travail en situation et prise en compte du risque: le cas des services de réanimation néonatale*. Management & Avenir, 2015 (75): p. 89-107.

Journé, B., *Collecter les données par l'observation*, in *Méthodologie de la recherche en sciences de*

gestion, Réussir son mémoire ou sa thèse, M.-L. Gavard-Perret, D. Gotteland, C. Haon and A. Jolibert, Editors. 2012, Pearson, p. 165-206.

Journé, B., Raulet-Croset N. Le concept de situation: Contribution à l'analyse de l'activité managériale dans un context d'ambiguïté et d'incertitude. M@n@gement, 2008, **11**(1): p. 27-55.

LaPorte, T., Consolini, P. *Working in Practice but Not in Theory: Theoretical Challenges of "High-Reliability Organizations".* Journal of Public Administration Research and Theory, 1991, **1**(1): p. 19–47.

Latour, B., *On Interobjectivity.* Mind, Culture and Activity, 1996. **3**(4): p. 228-245.

Latour, B., *Reassembling the Social: An Introduction to Actor-Network-Theory* Clarendon Lectures in Management Studies. 2005: Oxford University Press.

WHO, Dementia, A Public Health Priority. 2012: WHO Press

Mucchielli, A., *Psychologie de la communication*.1995, Paris: PUF.

Orlikowski, W. and S. Scott, *Sociomateriality: Challenging the Separation of Technology, Work and Organization.* The Academy of Management Annals, 2008. **2**(1): p. 433-474.

Piette, A., *Ethnographie de l'action, L'observation des détails*. 1996, Paris: Métailié.

Rochlin, G., T. La Porte, and K. Roberts, *The Self-Designing High-Reliability Organization: Aircraft Carrier Flight Operations at Sea.* Naval War College Review, 1987. **40**(4): p. 76-90.

Schoeneborn, D., et al., *The Three Schools of CCO Thinking: Interactive Dialogue and Systematic Comparison.* Management Communication Quarterly, 2014. **28**(2): p. 285-316.

Shannon, C.E. and W. Weaver, *The Mathematical Theory of Communication*. 1949, Urbana, IL: University of Illinois Press.

Star, S., *Ceci n'est pas un objet-frontière! Réflexions sur l'origine d'un concept.* Revue d'Anthropologie des Connaissances, 2010. **4**(1): p. 18-35

Stewart M. Towards a global definition of patient centred care. BMJ 2001;322:444-445.

Tillement, S., C. Cholez, and T. Reverdy, *Assessing organizational resilience: An interactionist approach.* M@n@gement, 2009. **12**(4): p. 230-265.

Van Maanen, J., *Tales of the Field: On Writing Ethnography*. 2nd ed. 2011: University of Chicago Press. 190.

Vogus, T., K. Sutcliffe, and K. Weick, *Doing no harm: Enabling, enacting, and elaborating a culture of safety in health care.* Academy of Management Perspectives, 2010: p. 60-77.

Weick, K. and K. Roberts, *Collective Mind in Organizations: Heedful Interrelations on Flight Decks.* Administrative Science Quarterly, 1993. **38**: p. 357-381.

Weick, K.E. and K.M. Sutcliffe, *Managing the Unexpected: Resilient Performance in an Age of Uncertainty*. 2nd Edition, 2007, San Francisco: Jossey-Bass.

Yin, R., *The Case Study Crisis: Some Answers*. Administrative Science Quarterly, 1981, 26(1): p. 58-65.