ACCOUNTABILITY IN PRACTICE: A REPORTING TOOL ON INCIDENTS

The case of "Commissions of Local Information" (CLI) for the nuclear activities in the West of France.

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Abstract

The accountability literature has grown significantly in the past decades, specifically on the role played by accounting and reporting practices. It is argued in this paper that although quite powerful, the concept of accountability includes several weaknesses. Dewey's inquiry will be studied as a way to alleviate some of those weaknesses. Building on the results of an empirical study performed within the nuclear industry's Commissions of Local Information (CLI) in the West of France, this paper explores an accountability reporting tool in practice: the role played by the feedback report on incidents in the constitution of a community of inquiry to investigate the safety of nuclear activities is explored. The paper argues that, despite recent claims of transparency and opening to society in the whole nuclear sector, there is no significant shift in the accountability practices in this precise case and that the reporting tool on incidents does not enable CLI members to grasp situations at stake. A key finding is that such an accountability reporting tool triggers inquiries but does not enable CLI members to lead their inquiries successfully and finally, it contributes to the upholding of a certain form of opacity.

Keywords

Accountability, Incident Feedback, Inquiry, Pragmatism, Reporting tool

Introduction

The idea that organizations should provide their stakeholders with accounts of their activities has been studied by a number of authors under the notion of accountability: such concept has attracted much attention in the study of organizations (Garfinkel, 1967; Harre, 1979; Silverman, 1975, Roberts and Scapens, 1985). Recently, there have been numerous proponents of greater corporate accountability: as companies grow in size, power and spread, their impact on the environment and communities increases as well (Adams, 2004). This greater demand for corporate accountability is especially vivid for high-risk industries. One of the main purpose of accountability is to provide mechanisms through which all those affected by an organization's actions can ask for an account to its managers regarding these actions and to hold managers of organizations for the social, environmental and economic outcomes (or impacts) arising from the actions of their organization (Unerman and O'Dwyer, 2006). Accountability can take several forms: it can be seen as giving explanations through a "credible story of what happened, and a calculation and balancing of competing obligations, including moral ones" (Boland and Schultze, 1996, p. 62). Particularly interesting for the purpose of this paper, accountability encompasses both the "account" itself and the process followed in providing this account to stakeholders (Adams, 2004). Also, accountability literature is growing on the role played by accounting and reporting in organizations (Yaacob et al., 2013).

Nuclear power is one of the only "techno-scientific" debate that has been subjected to such a long contestation worldwide (Topçu, 2013) and the nuclear industry is often the target of activists mainly because there are serious concerns about its environmental impact, its safety and the handling of radioactive wastes (Banerjee & Bonnefous, 2011). The context of Nord-Cotentin in the West of France (Normandy) is particularly interesting as it is one of the most nuclearized area in the world. The construction of a reprocessing plant for radioactive wastes at the end of the 1960s together with the concentration of nuclear activities in the area resulted in the upsurge of activist campaigns who contested the whole French nuclear industry. Moreover, several events that occurred in Nord-Cotentin at the end of the 1970's reinforced those activists and the first Commission of Local Information (CLI) was created in 1981 to make a bridge between nuclear industries and the public. Recently, several stakeholders of the nuclear field - in particular IRSN[1]

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[1] IRSN is the French public expert in nuclear and radiological risks.

- insisted on the fact that an informed and educated public on nuclear stakes and problems constituted a major condition to improve nuclear sites' global safety[2]. Moreover, Banerjee and Bonnefous (2011) have shown that external stakeholders – among which civil society – had the ability to both constrain and enable the growth of the industry.

In this paper, the case of Nord-Cotentin's CLI will be explored: CLI's main goal is to obtain and communicate information, to discuss the day-to-day functioning of nuclear power plants and to ensure that operators assure maximum safety in their nuclear operations. CLI are composed of local elected officials, scientists, environmental associations' representatives, trade unions' representatives and local economy actors. During CLI meetings, various subjects are discussed thanks to diverse materials such as reports, presentations and tools, among which the report on incident tool.

Generally, incidents and accidents constitute sensitive subjects for the whole nuclear community as any incident (even small irregularities) echoes Chernobyl and Fukushima's nuclear catastrophes and rapidly becomes media's headlines. Within these CLI, legally, the operator has to communicate a synthesis of each incident to ASN[3], IRSN and to the CLI in a short period of time. Then, during General Assemblies, operators provide CLI members with a presentation of each significant incident, after which questions and debates ensue. It is important to understand that there are different types of stakes: radioprotection stake can result on health issues for populations versus safety stake can result in a major accident. Those two main risks are also different in the expertise needed to cope with them. Overall, feedback on incidents is primordial as it establishes a link between past, present and future, constituting a learning curve, if the process is successful.

This study examines in detail how accountability is practiced by an organization in charge of nuclear operations through a particular tool to report on incidents to the public. To do so, this paper performs a pragmatic review of this organization's accountability practices and the debates following such communications. Also, the paper tries to understand the role played by the report on incidents in the constitution of a public.

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[2] In 2009, IRSN published a charter, advocating the opening to civil society.
[3] ASN is the French Nuclear Safety Authority.

The concept of accountability will be reviewed in this paper to position the research as this theory enables to understand well several issues of governance within nuclear industry: in particular, it enables to grasp major claims of stakeholders. A critical view of accountability will then be adopted and some of the major weaknesses of this stream of research will be exposed. Afterwards, pragmatism and Dewey's concept of inquiry will be reviewed to introduce the paper's theoretical framework and to give potential answers to such weaknesses. In the third section, the empirical setting will be presented: the particular context (culture, history, geography, politics…) of Nord-Cotentin's CLI as well as the characteristics of the tool will be considered in this paper and a thick description (Geertz, 1973; Schwandt, 2001) will be provided to present details, contexts, emotions of actors and their interrelations with one another. Then, with a few narratives, this paper will aim at reviewing the reporting practices of nuclear operators: the feedback report on incidents will be considered in its context. Also, its role in the constitution of a public will be discussed. In the fourth section, the findings will be presented and discussed: it will be shown that although the report on incidents goes in the direction of more accountability and transparency, paradoxically, it is rather counterproductive in practice to the understanding of incident feedbacks and contributes to the upholding of a certain form of opacity.

The theoretical contribution of this paper is to propose a new understanding of the notion of accountability thanks to the pragmatist concept of inquiry: the account cannot be taken for granted as existing as such and needs to be constructed through an inquiry. Dewey's notion of inquiry enables to adopt a processual, dynamic and dialogic view of accountability – traditionally considered in the literature as static and often limited to financial subjects. The tool studied in this paper – i.e. the feedback report on incidents – is an illustration of this notion of processual accountability and helps to conceptualise the notion of inquiry.

Theoretical Background

Classical perspectives on accountability

Scholars have offered numerous definitions of accountability: in its broadest sense, accountability can be defined as the giving and demanding of reasons for conduct (Garfinkel, 1967; Harre, 1979; Silverman, 1975, Roberts and Scapens, 1985) and taking responsibility for one's actions (Fry, 1995). Accountability is about the rights of society and the relationship emerging

between an accountable organization (the accountor) and the accountee (Gray et al. 2006). Thus, at its heart, accountability includes an ethical- or value- based dimension (Umerman and O'Dwyer, 2006): "accountability is a social acknowledgement and an insistence that one's actions make a difference both to self and others" (Roberts, 1991, p. 365). Accountability entails that the moral agent is capable of accounting for her action or omission and accepts its consequences, including those not foreseen (Argandona and Hoivik, 2009). Furthermore, the moral agent must be capable of accounting not only for what she does, but also for the moral reasons justifying the action (ibid).

Systems of accountability indeed embody a moral order and can be described as a complex system of reciprocal obligations (Roberts and Scapens, 1985; Dixon et al., 2006). As such, accountability has both an external dimension - characterized by the obligation to meet certain standards of behavior - and an internal one - characterized by a felt responsibility expressed through individual action and organizational mission (Fry, 1995; Ebrahim, 2003). Therefore, the accountor has duties of disclosure and transparency and must accept the observation of the accountee. In the same line, Dhanani and Connolly (2012) stress that transparency is an important feature of accountability and it is crucial that disclosures intended to public are complete, truthful and objective. Along this line, Ramanna's (2013) definition of corporate accountability is adopted as a general definition for studying accountability in the empirical context of this paper: "the obligation of a corporation entrusted with a duty to others to explain its performance of that duty". As emphasized by Ramanna (2013), corporate accountability is accomplished (at least partially) through the production of accountability reports, thus accountability involves reporting - including formal and informal reports such as press releases and presentations - what may be called in the accounting literature 'disclosures'. In the same line, Saxton and Guo (2011) map the different means of accountability according to their different purposes, among which accountability for finances which uses financial tools; accountability for performance which focuses on performance targets and their achievement and so on. Yet, accountability reports might include several non-financial indicators such as carbon units, water units and solid-waste units (Ramanna, 2013).

Attempts of organizations to account for social, environmental and economic impacts have become much more common recently: the idea is to find a way on how to organize and manage organizational activities without harming ecological, social or economic domains (Bebbington, Unerman and O'Dwyer, 2014). Consistent with such claims for more accountability in

organizations and society, numerous scholars have studied accountability in the context of NGOs (Dhanani and Connolly, 2012, 2014; Unerman and O'Dwyer, 2006; O'Dwyer and Unerman, 2007, 2008) and some of them have divided the concept of accountability in several different sub-sections depending on its main objective. Three of these sub-sections are particularly interesting for the present research. Firstly, *social accountability* has been described as being "accountability for broader societal impacts" (O'Dwyer and Unerman, 2007). Social accountability focuses on accountability for socially-oriented outcomes and impacts, including impacts that these organizations have on other organizations, individuals and the wider environment (Edwards and Hulme, 2002; Najam, 1996; Unerman and O'Dwyer, 2006). Secondly, in a slightly different manner, *holistic accountability* has been described (O'Dwyer and Unerman, 2008) as accountability to a much broader range of stakeholders, embracing mechanisms concerned with the long-term achievement of organizational mission. Along with the stakeholder theory literature, advocates of holistic forms of accountability argue that every individual has a word to say in decisions on matters which might impact upon them, irrespective of the power which that individual holds in relation to others (Unerman & Bennett, 2004). Furthermore, they also argue the more individuals are impacted by those kinds of decisions, the more they should be able in participating in decisions over them (Unerman & O'Dwyer, 2006). Finally, what some authors call *procedural accountability* is also particularly interesting to explore the object of study of this empirical research (i.e. the reporting tool on incidents). Procedural accountability relates to internal organizational operations and studies whether those processes and procedures are designed in accordance with societal norms and beliefs (Dhanani and Connolly, 2012).

In this paper, the focus will be on holistic accountability as solely this concept enables to embrace all stakeholders gravitating around the nuclear sector: large-scale communities potentially impacted by a subject together with public institutions who regulate nuclear activities. The concept of holistic accountability can be seen as "strategic" in that organizations are expected to be accountable for the impact they have on their environment over the long term (O'Dwyer and Unerman, 2007, 2008; Cordery et al., 2010). Furthermore, organizations may obtain more legitimacy when they deploy different accountability mechanisms that show that the values and activities of the organization are adequate to stakeholders' expectations (Gray et al., 1995). Hence, an organization that is accountable to its stakeholders can draw some benefits out of it, in particular when its activities can bring harmful impacts, such as those at stake in high-risk organizations,

because stakeholders will claim for more transparency. External stakeholders can have great power towards such high-risk organizations: for instance countries such as Germany, Belgium and Sweden have implemented policies to phase out nuclear power, mainly because of safety concerns expressed by their citizens (Banerjee & Bonnefous, 2011). Although much of the literature on holistic accountability have focused on specific contexts of NGOs, this paper assesses that contexts where holistic accountability apply are not reduced to NGOs. Along with Gray et al. (2006), this paper argues that there is considerable similarity in the essential nature of accountability in both for-profit and not-for-profit organizations. Indeed, all entities may be held responsible and accountable for the impacts caused directly or indirectly by their activities to stakeholders.

Generally, in the literature, scholars differentiate between the need to be accountable on financial subjects (shareholders, for-profit organizations) and the need to be accountable on "civil-society" subjects (NGO, NFPO). This paper argues that some for-profit organizations – like those in the nuclear sector but not solely - may be accountable for other subjects than financial subjects, such as the safety of their operations, or the use of resources for instance. Relationships between companies in the nuclear sector and their stakeholders is indeed not a purely economic one, and as such, reflects more complex attitudes and interactions (Gray, et al., 2006). Indeed, complex organizations are bound to face challenges of accountability (Ebrahim, 2005) and mechanisms of accountability can help organizations regain legitimacy in case of major crises on the one hand and when series of small episodes progressively erode trust and confidence on the other hand (Dhanani and Connolly, 2012). Finally, attention to transparency has regained recently as a result of a growing recognition of diverse interests and values of stakeholders (Ebrahim, 2005). It is particularly the case in the French nuclear sector: transparency towards the public is a major objective of the regulating agencies and the state as they suppose that the implication of broader publics on questions of governance of nuclear safety might improve the sites' global safety.

The concept of holistic accountability can hence be widened to all types of organizations, and might prove especially useful in the context of highly complex organizations that can have potential impacts to large-scale publics because of their activities, such as companies in the nuclear sectors for instance. Given these potential impacts, those organizations are due to give account of their activities to broad ranges of stakeholders. This paper follows the call of Unerman and O'Dwyer (2006) to study the accountability of other forms of entities that NGO and argues that

despite the mounting public, governmental and corporate interest in issues of NGO accountability: firstly, it can be extended to other forms of accountability and secondly, there are few empirical studies of accountability mechanisms in other settings – such as high-risk organizations for instance. While prior research focus on NGOs, this study focuses on such an empirical gap and extends the analysis of accountability mechanisms in the context of the nuclear sector in France – organizations which have to account for their activities to the regulating authorities and increasingly to broader stakeholders such as civil society.

Towards a pragmatist approach on accountability

To summarize what has been discussed in this section, the concept of accountability as described in the literature has numerous different characteristics: it is external as an account is given to somebody outside the accountor, it implies social interactions and rights of authority and finally, it is linked with control (Uhr, 1993; Mulgan, 2000) and reporting. In this paper, it is argued that all those characteristics of accountability contribute to a static view of this concept and that a more dynamic - or processual - view of accountability might be beneficial. Actually, a number of authors have described accountability as a dialectical activity: accountees require indeed accountors to answer, explain and justify while they question, assess and criticize (Mulgan, 2000). This dialectic characteristic of accountability is also highlighted by Day and Klein (1987) who stress that accountability is a social activity that requires shared expectations and common languages of justification. They emphasize that the dialogue between the different actors involved is at the heart of accountability. In a similar manner, accountability has been described by some authors as a process: Argandona and Hoivik (2009) argue in this sense that in a dynamic and highly interdependent world, accountability is not fixed and pre-determined, but fluid and constantly changing. Accountability arises indeed within a community and accordingly to its inherent norms: accountability, in this view is both conditional and relative: it evolves through time and changes from one community to another and even within the same community. From this perspective, accountability is all about being responsive towards evaluating stakeholders' interests (Painter-Morland, 2006).

This paper argues that despite the will of some scholars to discuss the processual characteristic of accountability, a major weakness of this concept is that scholars usually take for granted that the object of accountability – i.e. the account – exists as such. Yet, accountability does

not consist only in static disclosures: the account only exists when actors have constructed it through both exploration and comprehension processes. Perhaps, the accountability concept is not adequate to study situations in which the object is indeterminate and unexpected, such as when dealing with incident feedbacks. As will be shown in the next section, Dewey's concept of inquiry precisely enables to study such situations and hence to alleviate the major weakness of the concept of accountability. Indeed, it is argued in this paper that viewing accountability as a process is only permitted if stakeholders fully understand what is reported to them and thus if they participate in the elaboration of this report, as a community of inquirers. Finally, this paper argues that this dialectic characteristic of accountability would be better understood with a different vocabulary: "accountability" may be too static and referring instead to notions as "account-giving" or "account-delivering" could help to enhance the dynamic and dialectic dimension of this notion. The processual characteristic of accountability is indeed crucial and might be linked rather with the opening of a dialogue between the different stakeholders on a given subject than with giving accounts on frozen result.

Taking into account these processual characteristics of accountability, a reporting tool on incidents will be studied as a dialogical tool - a process to integrate the various voices of the different stakeholders within a dialogue and to co-construct the account in a dialectic way - rather than a one-way reporting tool. When an incident occurs in a nuclear site, the situation is uncertain and indeterminate. To understand the situation at stake - and in order to pursue action - the actors need to perform an exploration. Yet, traditional notions of accountability and reporting propose static frameworks in which the emphasis is laid upon observed results, instead of the comprehension process - sometimes contradictory - and on past commitments, rather than on the exploration of an unpredictable future. Another weakness of the notion of accountability lies in the fact that, generally, accountability implies a dichotomic organization of time: for instance there is an action, then an evaluation of results, and finally a report to potential stakeholders. Dewey's notion of inquiry precisely permits to alleviate this dichotomic vision of time: inquiry indeed starts with a doubtful situation and focuses on exploratory processes, including experimentation phases, resulting to a more processual vision of time.

In the next section, Dewey's notion of inquiry will be briefly reviewed as it enables to adopt a processual, dynamic and dialogic view of accountability and thus alleviates the concept of

accountability's main weaknesses. Indeed, it will be shown that the account does not exist in itself and cannot be taken for granted as such, but it must be constructed through an inquiry.

Dewey's Concept of inquiry

In this paper, the pragmatist concept of inquiry (Dewey, 1916; 1938) will be adopted as an overall concept and methodological lens. This concept of inquiry does not correspond to an epistemology of scientific truth but to an epistemology of comprehension for some purposeful action (Kern & Lorino, forthcoming). It implies that all proposals, theories and principles should be treated as working hypotheses and as such, submitted to constant investigation and experimentation.

> "When we say that thinking and beliefs should be experimental, not absolutist, we have in mind then a certain logic of method, not, primarily, the carrying on of experimentation like that of laboratories. Such a logic involves the following factors: First, that those concepts, general principles, theories and dialectical developments which are indispensable to any systematic knowledge be shaped and tested as tools of inquiry. Secondly, that policies and proposals for social action be treated as working hypotheses, not as programs to be rigidly adhered to and executed. » (Dewey, 1925, pp. 202-203)

For clarity purposes, the concept of inquiry will be here presented as a sequence of events but its main strength lies in the facts that those events intermingle with one another, leading to a powerful process. The inquiry starts with a doubtful situation: indeterminate, imprecise and incoherent: the course of activity is disrupted (Lorino, Tricard and Clot, 2011) as the situation does not correspond to habitual schemes of meaning. The inquiry is indeed triggered by the disruption of habits: when customary patterns fail to generate expected outcomes and the situation appears to be neither intelligible, nor actionable (Lorino & Mourey, 2013). Through the process of inquiry, the aim is to end at a situation determinate, precise and coherent (Dewey, 1938). It is the inquiry process that will transform this unstable situation into a "problematic" situation (Journé, 2007; Lorino & Mourey, 2013) and this problematic situation is the inquiry process's first - and nonetheless crucial – step. The problematic situation is a catalyst that helps the community to form and motivates it to launch inquiries (Shields, 2003).

In a second step, the inquiry must build a problem, as it is not given. Such a problem can be rebuilt during the course of the inquiry (Dewey, 1938; Kern & Lorino, forthcoming). The definition of the inquiry's problem is a determining dialogic process: when a problem is defined, actors orientate their inquiry to solve it, which triggers new problem definitions and so on. This process is hence crucial for the success of the inquiry: for instance, when actors define a wrong problem, the inquiry can fail as it will lead actors on the wrong track and they will potentially miss important hints.

The third step involves "working hypotheses" – i.e. possible explanations for the problematic situations - in order to build a possible narrative account of the situation using an abductive mode of reasoning. Here, abduction can be seen as a form of logical inference that tries to create a plausible narrative account of a situation (Lorino, Tricard and Clot, 2011), mixing intuition and reasoning, creative and logical thinking (ibid). Hence, scientific attitude and logical reasoning (Shields, 2003, 2004; Lorino & Mourey, 2013) are other key components of the inquiry: once the problem is formulated, the inquirers bring working hypotheses, test these hypotheses, which induces more working hypotheses and more action. Such an experimental attitude reflects the willingness to tackle the problematic situation at stake, using working hypotheses that guide the collection of data and facts and their interpretation (Shields, 2003). However, this logico-scientific thought not only involves theory and methods, it also involves imagination: producing new hypotheses - after having tested some propositions - cannot be reduced to a pure mental act (Lorino & Mourey, 2013) as it induces a type of reasoning that is neither inductive, nor inductive, but abductive.

Such a process becomes a global method that results in communities of inquiry, if widely applied as a major knowledge principle. Shields (2003; 2004) illustrates this community of inquiry with the Buddhist parable of the three blind men and the Elephant. In this parable, three blind men touch an elephant to learn what it is like: each blind man feels a different part of the elephant. For Shields, the community of inquiry and its three main principles - namely problematic situation, scientific attitude and participatory democracy – would reinforce each other and enable the three blind men to talk to each other and move around the elephant, to get a sense of what it 'really' is. Without its mobilization, the three blind men all end up with a completely different sense of what

an elephant is, depending on which part of the elephant they touched (it is a rope – tail; it is a fan – ear; it is a tree – leg).

Finally, the community of inquiry is linked through participatory democracy (Shields, 2003, 2004): it means that the inquiry process is shaped by the interaction of the community and the facts: as in the Buddhist parable, the cooperative discussion between the three blind men gives them more chance to get a sense of what an elephant is, and prevent them from being trapped inside their limited selves. This notion of community does not necessarily mean that inquirers have all the same views and on the contrary: it is important that there exist pluralism even if, in order to collaborate on an inquiry, the inquirers need to have common conceptual horizons (Lorino & Mourey, 2013). The composition of the community of inquiry can widen in the course of inquiry (Kern & Lorino, forthcoming) and involve progressively actors who once seemed distant from the inquiry.

Empirical Setting: The Nord-Cotentin CLI

- Context of nuclear power in France and creation of CLI

Worldwide, the opposition between pro- and anti-nuclear has now existed from the 1970's (Topçu, 2013). Both sides have political, historical, economical, ideological or geopolitical claims and the French anti-nuclear movements have seen – quite helplessly - the nuclear industry progressively develop itself, to become France's major source of energy. Hecht (1997) showed that the choice of the light water technology made in the early 1970's by a small number of actors framed the development of the French nuclear industry and excluded other scientific and technical options, spurring in turn emergent "orphan" groups that decided to lead investigations and explore alternative options (Callon and Rabeharisoa, 2008).

Furthermore, a policy of secrecy (Topçu, 2013) has dominated the whole industry for a long time: the inhabitants of Nord-Cotentin were told at first that the plant was meant to manufacture potato mashers, saucepans and many other things. This policy of secrecy is linked with the military tradition of nuclear activities: most organisations having a role to play in the nuclear activities strictly applied those principles of discretion. As a former CEA engineer depicts:

he and his colleagues were asked in the early 1970s, not to answer any questions from outsiders that could potentially lead to polemics.

> *"I belonged to the CEA School during the 1971 great electro-nuclear program; when we were asked not to respond to the allegations that were made outside the CEA and could potentially lead to polemics. […] Then, I did eight years in the military industry and there I had no right to speak." (Expert, former CEA and Areva)*

The context of Nord-Cotentin[4] is particularly interesting as it is one of the most nuclearized area in the world with four nuclear sites including a reprocessing plant (Areva la Hague), a nuclear power plant (Flamanville), a storage centre (Andra) and Cherbourg's arsenal (where nuclear submarines are constructed). Due to both the concentration and diversity of nuclear activities in the area, activist campaigns soon rose to contest against the nuclear industry. The upsurge of environmental associations occurred simultaneously with the upsurge of other activists in the area, including several scientists such as Monique Sené[5]. Nord-Cotentin soon became one of the bastions of the anti-nuclear struggles. Actually, the anti-nuclear debate was concentrating itself on the reprocessing plant in Areva la Hague: the anti-nuclear activists thought that if they could stop its functioning, it would inevitably lead to the end of the whole nuclear industry in France.

Although these strong mobilisations occurred in Nord-Cotentin, not all the region's inhabitants were against the implementation of these nuclear sites. Farmers, fishermen and a few owners of secondary residences did join the activists' struggle while storekeepers, elected representatives and workers – in particular former miners – were favourable to the project. Nord-Cotentin was in fact chosen for these implementations in part because the population was supposed to be conciliatory: isolated, unfit for any agricultural or maritime development due to the strong sea currents, likely to be subjected to depopulation, the nuclear sites could be considered as a chance for the region (Zonabend, 1989). Moreover, Cherbourg's arsenal was settled in 1960 and soon became the major source of employment of the area and a real pride for the inhabitants, paving the way for further nuclear developments in the region. Finally, the CEA proposed to

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[4] Nord-Cotentin is a peninsula in Normandy that forms part of the Nortwest coast in France. Nord-Cotentin lies wholly within the department of Manche, in the region of Lower-Normandy.
[5] Monique Sené is a nuclear physicist, and although she is not an opponent of nuclear power *per se,* she is a high-profile critic of the French nuclear power programme.

farmers high prices to buy their lands, accompanied by well-paid job offers in the nuclear sites (for them and their sons), which reduced contestations.

> *"Population had mixed feelings at first but they bought the lands and gave people a job,*
> *then their children started to work in la Hague's site." (CLI member, Herqueville mayor)*

They also made mayors, public figures and parish priests visit Marcoule nuclear site. All these persons were finally convinced that the plant was a good thing for the region and the population accepted it rather passively (ibid). Thus, the referendum organized in la Hague to decide the construction of the reprocessing plant turned out to be positive.

Although the settlement of nuclear sites in Nord-Cotentin was finally decided, some people kept on struggling against the nuclear industry and several events at the end of the 1970's reinforced those activists and associations. At first, several small incidents remained unexplained by the competent authorities and Mr Darinot (Cherbourg's MP and mayor) was worried that those incidents could impact the population and he showed his determination with the creation of the CSPI in 1981 - (SpecialCommission Spéciale Permanente d'Information) that became 'Commission Locale d'Information' or CLI subsequently. French Prime Minister, Pierre Mauroy, soon supported this initiative and published a circular in December 1981 exposing the State's will to improve nuclear industry's transparency.

-   <u>CLI's mission and functioning</u>

Since 2002 the French Institut de radioprotection et de sûreté nucléaire, IRSN, ("Radioprotection and Nuclear Safety Institute") aim has been to further open up the meetings to civil society and in 2009, it decided to edit a charter that exposes its will to act towards more transparency and opening. These orientations of IRSN strategy (supported by the State) were confirmed with the creation in 2008 of a Haut comité pour la transparence et l'information sur la sécurité nucléaire HCTISN ("High committee for transparency and information on nuclear safety"). Thus, it is a recognized objective of both the whole nuclear sector and the State to open up more to society: the aim is indeed to arrive at a shared comprehension with civil society of complex stakes, hazardous situations and potential avenues to overcome these problems. This paper (and more generally this dissertation project) fits into this particular mindset of opening to civil society.

Since the TSN[6] law in 2006, a CLI must be implemented next to each nuclear site. While this law institutionalizes the CLI in France and gives them a legislative status, the three main nuclear installations of Nord-Cotentin had set up those commissions much earlier and even served as models for designing the law. Each CLI in France is today composed by four different colleges: local elected officials (chair of the department, regional councillors, mayors, etc.), skilful representatives (scientists who have an expertise in those nuclear activities or sites or local economy actors), environmental associations' representatives and trade unions' representatives. In Nord-Cotentin, each commission includes around 40 to 50 members: some of them are part of the three different CLIs. The aim of the CLI is to participate in the safety debate, which is likely to be facilitated with the pluralistic composition of its members who all have very different opinions and backgrounds: they challenge each other and lively debates are launched. Indeed, most members have a spirit of inquiry

There are three to four regular general assembly meetings of each CLI a year and the agenda is decided by the commission's members during the board meetings that take place a few weeks before the general assembly and that sets their agenda. Members of the CLI also attend inter-CLI meetings in Paris with members of other CLIs on specific subjects (dismantling, post-accident situations…). If deemed necessary, the members can also call for ad-hoc and/or exceptional meetings and form work groups on specific subjects. Any subject relating to the operation and safety of the installation, to the protection of the population and the environment can be considered and discussed during the meetings. The general assembly meetings are open to public and anyone interested can attend, even if people rarely come. The rule of the CLI concerning non-members is simple: anyone can attend and ask questions on the order of the day of the general assembly. Yet, if non-members want to ask other questions, they need to send their questions to the president a few days before the General Assembly. Whereas the public rarely comes to General Assemblies, media – in particular regional press - always come.

The CLI has premises in Cherbourg accessible to all members, in which archival data are stored. They also have a part-time secretary who comes to all the meetings and is based in the

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[6] The TSN law concerns transparency and security of nuclear installations: it reasserts the role of ASN - the Nuclear Safety Authority, an independent authority whose task is (on behalf of the State) to regulate nuclear safety. The TSN law also makes the CLI compulsory next to each nuclear sites and contributes to reinforcing the existing CLI.

Conseil Général in Saint-Lô: her mission is to communicate to CLI members the information coming from all stakeholders; to organize meetings, general assembly or travels like the one in Japan; to publish and communicate to Nord-Cotentin inhabitants the CLI newsletter and to fill in (with the CLI members' help) the website. Moreover, a full-time expert has worked for the CLI since its beginning: at first it was a doctor and now it is a former nuclear submariner.

- The feedback report on incidents

Feedback on incidents is primordial as it establishes a link between past, present and future, constituting a learning curve, if the process is successful. Incidents and accidents classification also constitutes sensitive subjects for the whole nuclear community as any minor anomaly echoes major accidents such as Fukushima and Chernobyl: during the general assemblies, members of the CLI generally ask a lot of questions on these subjects.

In France, the operators of all nuclear sites and installations must communicate each incident to French nuclear authorities and to CLI's president in a short period of time[7] (usually within 48 hours) using the INES scale[8]. Then, ASN remains responsible for the final classification of the incident, which will be presented to CLI members during the next general assembly. Operators then have to answer to CLI members' questions. Thus, members of the CLI are informed whenever an incident occurs and they can ask questions on the handling of the incidents and on its ranking: either by mail before incidents are presented by the operator or after the presentation during the assembly.

Concretely, the tool consists of a synthesis of the incident made by the operator a few days after the incident, a synthesis of the incident by the French Nuclear Authority (ASN) and the material for the oral presentation (with schemes and pictures) of the operator. The tool is at first a communicational tool, however it has evolved through time as the starting point of inquiries, as will be shown a bit further in the paper. Indeed, members of the CLI could just passively listen to the operators' feedbacks but they try to dig in most incidents and to follow them up. Despite this initial will to inquire, several mechanisms intervene and most of the time, inquiries are aborted or infelicitous.

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[7] For the full process of incident classification, please refer to appendixes.
[8] For the INES scale, please refer to appendixes.

- <u>Research methods</u>

This paper studies a reporting tool of accountability in practice in the French nuclear sector: this tool serves to communicate with the public on incident feedbacks. As a management scholar, the author of this paper wondered in her investigation whether CLI members have sufficient means to understand the incident feedbacks provided by the operator; what are the tools and techniques used to make this feedback; and what are the necessary conditions to set up a real dialogue in order for the CLI members to grasp the situations at stake. To do so, the author adopted a longitudinal case study methodology and the data discussed below are derived from a three-year field study[9] in the Nord-Cotentin CLI. This particular geographical case was chosen because Nord-Cotentin is one of the most nuclearized area in the world with a great diversity of nuclear activities and its CLI were supposed to be among France's more active CLI. As such, it represents a very rich research setting.

The empirical research period covered five full years of reviews of incidents (from 2011 onwards[10]) thanks to archival data (past minutes, incident feedback materials, recordings of general assemblies…), observations and in-depth interviews. All general assemblies between 2011 and 2015 were indeed transcribed and analysed. The methodology of this paper includes a review of all INES level 1 incidents that have occurred in Areva la Hague site in the past few years and a thorough investigation of some of them. During the five years studied, 18 level 1 incidents occurred on Areva la Hague site and among those incidents three of them were studied in depth. Those three incidents were chosen specifically because their presentation in front of the CLI gave rise to debates between CLI members. The aim was to understand what happened exactly, how the incident was managed by the nuclear site operators, how it was investigated by the different stakeholders, what were the ensuing recommendations so that it does not happen again, how it was classified by both the operators and the ASN, how it was communicated to the CLI, etc. Although a particular emphasis was laid on those three incidents, all level 1 incidents, during the 2011-2015 period, were investigated[11].

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[9] This field study was performed during the data collection stage of the authors' dissertation.
[10] The year 2015 is to be completed with the last incidents.
[11] Synthesis of all incidents to be added in the results part.

During this period, some General Assemblies were also observed and recorded and recent documents were reviewed. This was specifically useful to understand CLI members' expectations on accountability practices and the means to understand incident feedbacks at their disposal at the present moment. Most of the documents studied are public and available on websites of the ASN and the CLI but for each incident, a declaration is made by the operator that has limited circulation – CLI's board members receive them. Etude des CRES (confidentiels) possible grâce à l'IRSN. Additionally, 23 in-depth interviews[12] with key members of the CLI and with some employees of regulatory agencies (ASN, IRSN) were conducted: those interviewees were selected to understand the diverse views on incidents' reports.

This paper borrows the approach of the pragmatist concept of inquiry (Peirce, 1931; Dewey, 1938; Lorino et al., 2011) mobilizing an abductive mode of reasoning, in which narratives, reasoning and action were interlaced. The idea was to set up an ongoing dialogue between actors, taking in consideration their differences to nurture the investigation. A specific endeavour was made by the author to interview key informants of various backgrounds and viewpoints and both historic and present witnesses.

Preliminary Results

In a nutshell, the results of this paper show that, while under certain conditions, the feedback report on incidents constitutes a trigger for the inquiry process, it actually hinders the community of inquiry for several reasons.

Although there are numerous good signs that go in the sense of more accountability, it will be shown with the following narratives that despite the stated will of most actors to make the public participate in the feedback on incidents processes, this accountability practice sometimes hinders the dynamic of inquiries and even contributes to the upholding of a certain form of opacity. First, the tool does not give members sufficient keys to launch their inquiries, often overlooking some major elements. Secondly, such a tool does not constrain members to take into account organizational factors, which sometimes result in inquiries that are confined on technical subjects, far from the main issue. Finally, the tool does not give CLI members notice of what really happened, in particular because of internal blockages. In fact, when the inquiry concerns technical

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[12] 10 additional interviews will be performed in the coming months.

issues based on members' skills, the operator and the CLI lead detailed inquiries. On the contrary, when it concerns managerial issues, the inquiries do not come to successful conclusions.

The inquiry process is narrative in nature (Kern & Lorino, forthcoming) and thus it is relevant to present a few narratives from the field to show the dynamics of the tool under study and its role in the inquiry process. The narratives presented here were selected because they represent different types of situation: different incidents on different sites, different members of the community of inquiry… The three narratives concern incidents that occurred in Areva la Hague nuclear reprocessing plant, its communication to CLI members by Areva and ASN and the inquiry following it. [13]

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[13] Those incidents are still under study at the moment.

Bridge Crane incident

The bridge crane incident occurred in Areva's T1 workshop where shearing and dissolution operations are conducted. In those facilities, there is a system to evacuate nuclear wastes from unattainable zones to conditioning workshops thanks to a forklift truck and a bridge crane. The bridge crane has a maximum lifting capacity of 3.2T and it has been noticed on May 2011, 24th that the bridge crane was used on two occasions (March, 30th and May, 16th) to lift CBFK containers weighing up to 5.2T which is above both limits of the bridge crane facility and of the room's slab. Moreover, it has been noticed that the very use of the bridge crane to lift these CBFK container – which is the result of a recent modification in the organisation of waste transport in the shearing and dissolution workshop – was non-compliant as empty, they weigh 4.2T. Even if there was no consequence on employees, environment and machines, these two operations jeopardized the sites' global safety. Areva decided to rank this incident on level 1 of INES scale and this ranking was confirmed by ASN.

Chronologically, after the bridge crane incident was noticed on May 2011, 24th, this is how the communication to CLI members happened:

1.   Areva informed CLI's President Michel Laurent in a short period of time (less than 48 hours).
2.   On May, 31st, ASN published on its website an incident report, which gave little further details of the analysis of the incident.
3.   The day before the General Assembly, Areva sent to CLI members its presentation of significant events for the period (usually it is supposed to be a few days earlier) that was the material for their oral presentation.

During the general assembly of the CLI, Areva presented the incident with a technical angle – with, among others, much details on testing threshold of lifting facilities - giving very little details on the incident itself. Areva omitted to mention the fact that there had been a modification in the organisation of waste transportation in the shearing and dissolution workshop, which was one of the main cause of this incident. It is the representative of ASN who mentioned this change in organization in the course of the discussion - it was also mentioned in ASN's report on its website.

After Areva's presentation, the inquiry starts with a series of technical questions, reconsidering some of Areva's assertions, with the objective to understand why the maximum weight was exceeded twice. Expert 1 knows well those installations.

Expert 1: I am amazed for two main reasons. First, you mentioned that the bridge crane was tested at 1.5* its maximum lifting capacity. But I want to remind you that this threshold holds for static exercises, yet you worked in dynamic conditions and thus the threshold is 1.2* and not 1.5*. Secondly, I am wondering how a CBFK container can exceed its normal weight: in general it's very precise and there is no mistake.

Member 1: Aren't there security systems on these kinds of bridge crane that will warn the operator of an overload?

Areva gives technical clarifications on threshold and alarm systems and follows other questions on those subjects, especially on the triggering threshold of alarm systems and on the maintenance system of alarms. On technical subjects, Areva plays its role and the inquiry functions.

Expert 1: I want to highlight the fact that the alarm system went off the second time at 17% above its net weight. 17% it is noteworthy. So, as Member 1 asked, is it a problem of slide of values: the system was

not checked sufficiently. Or, on the contrary, is it because we considered that the system could be modified: as it is often the case in workshops, we move a bit the security thresholds for automatic systems, not to be bothered when we manipulate loads.

Areva: The bridge crane and its security system were checked in July 2010, during its annual regulatory inspection. This system was not modified or as you said tampered with. It is not at all the way people use equipment in workshops.

[…]

Member 1: The persons who used the bridge crane have undoubtedly received trainings, but isn't there a problem with their training?

Areva: People who use the bridge crane have skills for it, as all people who use bridges: one cannot use bridge cranes without skills and authorizations.

Expert 1 tries to bring working hypotheses (the voluntary modification of security threshold) to elucidate the problematic situation and to continue the inquiry. Then, member 1 questions the trainings and Areva blocks on two occasions any attempt to interfere with managerial subjects. The inquiry stops.

Expert 1: I am still amazed that there is such a gap on values: the bridge crane and CBFK containers have both been used for the past 20 years on a regular basis.

Areva: No, the bridge crane usually does not lift CBFK containers: they are handled by forklift trucks: it was the first time we had used the bridge crane for this type of manipulation.

Expert 1: If we changed method, how were sure that everything was checked? When we handle heavy loads, it is not anodyne!

Areva: And it is the reason why the incident was ranked on level 1 on INES scale.

Member 2: I have used these CBFK containers and I recall that their net weight is clearly indicated on it, as is the weight of the waste packages. Thus, it was easy to know that the overall weight exceeded the lifting capacity.

Areva: Once again, we used in abnormal manner the bridge crane and this is why the incident was ranked at level 1 of INES scale.

Expert 1 and Member 2 try to pursue the inquiry with new elements drawn from their expertise and experience, asking further questions. Areva blocks twice this inquiry process with the argument of the ranking that is thus seen as a punishment. At some point, ASN intervenes.

ASN: The problem comes from the very use of the CBFK container itself as it has a net weight of 4.2T. [...]There has been a modification of the organisation of the wastes' transportation with an aim to improve the organisation but it turned out that using CBFK containers was not consistent with the workshop's constraints. [...] One needs to pay closer attention to the fact that when practices are modified, there is a preliminary risk analysis on all potential risks. [...] Level 1 on INES scale is justified because there has been a failure in the risk evaluation.

At this point, the community of inquiry should concentrate upon this new hint, however nobody jumps on it. The inquiry is not conclusive.

Concretely, Areva came to the General Assembly with a very limited communicational tool: a brief description of the incident, a few pictures and the ranking of the incident on the INES scale. The incident analysis performed by Areva was not communicated to the CLI, even an abridged version of it. At the beginning hence, members have very little clue to understand the causes of the incident: they discover it during the discussion. They start their inquiries on technical points thanks to their expertise[14] and their acquaintance of the field. When questions concern technical issues, Areva answers quite precisely and members are able to make their inquiry progress. In those cases, there is an inquiry dynamic: members reconsider each fact brought by Areva, questioning technical elements and bringing working hypotheses to try to explain the situation. Members who intervene after Areva's presentation all have a specific expertise on the subject and they remain in this type of expertise, which is a shame for the inquiry purpose.

What is also particularly interesting in this narrative is the role played by ASN: its representative says at some point: "Level 1 on INES is justified because there has been a failure on risk evaluation." Thus, ASN clearly highlights the fact that there was a failure in risk evaluation, which is not anodyne at all. Indeed, risk evaluation is a crucial stake for nuclear activities in general: operators must perform risk evaluations before undertaking any modification in their organization. Such a process is primordial as it guarantees that before any modification, all important risks were reviewed to ensure maximum safety in conducting nuclear operations. However, CLI members do not react on this point – although crucial for the inquiry – Aand SN's representative does not insist either, as if he did not consider as essential that CLI members seize this point. The inquiry stops with the INES ranking used as a final answer.

Moreover, whenever questions concern managerial issues (the training of the operators, the voluntary modification of security thresholds or the change of organisation), Areva blocks the inquiry process appealing to authoritarian statements - such as the skills and authorizations necessary to handle bridge cranes, or the ranking at level 1 on INES scale. In these cases, the ranking is seen as a deserved punishment and the inquiry is blocked: even if members sometimes try to go further, it is not successful.

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[14] Some members indeed partake in the CLI because of their specific expertise in nuclear activities or nuclear sites.

The discussion after the presentation of the incident highlights the fact that some elements are missing for CLI members to grasp the situation at stake such as details on the changes in the organization of waste transportation in the shearing and dissolution workshop. The main question of the inquiry should indeed have been: ***why the risk evaluation was wrongly done?*** Yet, the main objective of the inquiry was lost because the inquiry got stuck in a specific sort of expertise. It is thus an example of CLI members not playing their role of an "informed" public as they did not raise one of the most important point of the incident. To conclude, the inquiry knew very early stages but turned out to be infelicitous.

Humidity content in plutonium containers incident

On 2013, September 9th, an incident occurred in the workshop R4 – where takes place the purification and packaging of plutonium – when the authorized humidity content within a safety enclosure was exceeded.

Areva provides the CLI with numerous technical details on the plutonium purification and packaging processes in this R4 workshop.

Areva: Plutonium oxide powder is packaged in big boxes that are placed in containers. To test the quality of the product, we perform analyses and during the whole conditioning process, we take samples that are analysed to check quality and compliance with standards. To guarantee a good quality of the product, as well as safety, we have to match a criterion of humidity: operations need indeed to be conducted within a very dry air. On this day, there was a flaw during this process and some air of the room got into the container and we exceeded the criterion of humidity. Such criteria are monitored by specific alarms but, on this day, we misinterpreted the alarm. However, although the humidity content was above the threshold during 3 to 4 hours, we made analyses on the samples and results were good.

Member 1: I would like to have a little more information on what you call "misinterpretation of the alarm". If I understand well, the alarm was detected late and when it was detected, it was misinterpreted and I would like to understand why. What did you do to rectify this?

The inquiry starts: the situation is indeterminate and imprecise: Member 1 asks for further details with the aim to discover the reason why the alarm detection was late and misinterpreted.

Areva: I was probably a bit quick on this point. (...) On this day, there were a lot of fire alarms arriving on the same control station and actually this alarm came in the midst of these fire alarms. On this day, we were performing fire tests in this workshop and thus this humidity content alarm went unnoticed. And we noticed it a few hours later, when the next shift arrived.

Areva brings a new element of the incident: the humidity content alarm went unnoticed because on this day there was a fire test and numerous fire alarms were arriving on the control station. This new element was absolutely necessary to understand well this situation and becomes the new track of the inquiry.

Member 1: Does it call into question the fire tests during operating phases? We can indeed imagine that one day a more important alarm could go unnoticed.

Member 1 continues the inquiry and tries to rebuild the problem with the new element in mind: he formulates a hypothesis: "what if the alarm was more crucial for safety?" This new element also led to questioning the management of fire tests during operating phases. The inquiry continues.

Areva: Actually it can always happen but you need to know that measures that are crucial for safety have specific alarms arriving on the main security board: we can detect these alarms in priority. Today, there is nothing to be changed concerning the architecture of the alarms in control stations, neither on how they are managed.

Areva blocks any attempt of the members to interfere on managerial subjects. The inquiry stops.

> *Member 1: Fukushima - and all major accidents - highlighted the fact that accidents happen when the situation is heavily damaged: in those cases it is easy to do some misinterpretations. I would like to have the recommendation of ASN: shouldn't we modify the fire tests? Don't we take an unnecessary risk?*
>
> Based on past events, Member 1 continues the inquiry using the facts: accidents happen in heavily unpredictable situations. He asks for the ASN's recommendation, used as an expert in this case.
>
> *ASN: As always, the operator has conducted a detailed analysis and we have just received it. We will soon conduct our own analysis and when it is done, we will see if we need to ask for specific applications.*
>
> ASN's representative stops the inquiry and any attempt to interfere on the managerial side.
>
> *Areva: After the incident, one of the measure we took was to raise awareness among workers: under unusual circumstances, such things can happen and we need to make sure that usual operations are under control when we do special operations.*

This narrative illustrates that there is a will of the CLI – or at least of one of its member in this case - to inquire and to grasp the situation at stake. Yet, his will to inquire was maybe reduced when he realized that he was the only one to participate. The incident as it is presented to the CLI, at first raises a major question: why was the alarm detected so late and misinterpreted? This is the triggering point of the inquiry. The objective of this inquiry is then to answer to this question and the purpose is driven by the will of the CLI to ensure that the operator conducts nuclear operations as safely as possible. With the new hint given by Areva, members realize that the day of the event, fire tests were performed and there were a lot of alarms on control stations. The inquiry restarts with this new hint and leads to questioning the management of fire tests during functioning operations. However, the inquiry dynamic is stopped by both Areva and ASN: in this case it is clear that they are both reluctant to let the CLI interfere on managerial subjects. Thus, the inquiry is aborted.

Before the presentation, CLI members had at their disposal Areva's presentation's material and ASN incident declaration on its website. What is surprising is that Areva mentions at first neither the fire tests, nor the main risk of a high humidity content in plutonium contents. The main risk of high humidity content is that it can lead to water radiolysis and in turn to explosions. Yet, this main risk - as well as the fire tests - is mentioned in ASN's report, which was obviously not read by CLI members: otherwise it undoubtedly would have conducted the CLI to ask further

questions on water radiolysis. In this case again, the report on incident tool is not sufficient, as it does not give members sufficient details to lead their inquiries.

Fall of a vitrification kiln Incident

This incident occurred in Areva's T7 workshop where vitrification operations take place. To obtain a stable compound that is suitable for ultimate disposal, radioactive wastes go through such vitrification processes, which enables to embed those materials in a glassy matrix, which is easier to store. In the vitrification workshops, there are three vitrification chains: two are in operations and one is always under long-span maintenance. The incident occurred on the vitrification chain under maintenance. On this day, operators were performing a test to verify the functioning and readjustment of sensors on a lifting equipment. Indeed, containers are lifted up to the cell, through the lifting equipment, and there are several sensors that enable to arrive at the good position and to stop the machine before the good position is exceeded.

After the vitrification kiln fell in the cell on May, 10th, this is how the communication to CLI members happened:

1. Areva informed CLI's President Michel Laurent in a short period of time (less than 48 hours).
2. On May, 18th, ASN published on its website an incident report, which gave little further details of the analysis of the incident.
3. The day before the General Assembly, Areva sent to CLI members its presentation of significant events for the period - usually it is supposed to be a few days earlier – that was the material for their oral presentation.

During the presentation, Areva starts with general facts on the functioning of the vitrification process and describes rapidly the incident with two pictures of the equipment. Although there was no consequence on the installation's safety, Areva recognizes that such an incident should not happen and that it is due to an inadequate operational mode: there was indeed a chassis on the lifting platform that came in interference with the kiln and the procedure did not take into account this precise case. For this reason, Areva proposed to rank the incident at level 1 on INES scale.

Areva: To perform the test on the sensors, operators did a few adjustments and in order to check if those adjustments were working well, they lifted the lifting platform, on which there was a chassis, it exceeded the maximum position and came in interference with the kiln. The lifting platform pushed the kiln out of its hinges and when it came down, the kiln fell in the cell. This kind of preheating kiln weighs approximately 350 kilogrammes and it fell of about 5 meters.

After Areva's presentation, the inquiry starts directly with a question about the inadequate operational mode.

Expert 1: There is something that escapes me: this workshop started in 1994, so 17 years ago. You tell us that the procedure was inadequate, so was it modified at some point? Or maybe we never did this kind of operation? Why do we find an inadequate procedure in 2011 for a workshop that functions since 1994?

Areva: We performed this kind of operation 2 or 3 times before so it does not mean that the operational mode was completely obsolete or inadequate but under certain circumstances, such problems could happen. On this day, we were precisely testing a sensor and it did not function: it was justly the object of study. Since this incident we did a review of this procedure, integrating this precise case. […]

Expert 1: I still have a comment: usually, when we perform those tests, we are under an automatic mode and in this precise case you used the manual mode. Under the manual mode, you can modify certain securities precisely to do those kind of delicate operations. I do not understand that in this case we did not foresee this precise problem.

The inquiry continues when expert 1 brings a new element important to the inquiry: operations were conducted under a manual mode, which made him highlight that the problem of the procedure is maybe not the most crucial one. He indeed stresses that under a manual mode, operators should beware and rely on other facts than procedures. Areva answers on this point providing the inquirers with a new fact.

Areva: On this day, we were indeed testing the sensors and you know well the workshops, in a vitrification cell, it is not that easy to have a complete view of the operations. Once again, it is the conjunction of the operational mode with the presence of the chassis and with the circumstances of the test on this day that induced the incident. […]

Areva brings a new element for the inquiry: there are problems of visibility for operators in the vitrification cells. Apparently expert 1 is aware of this problem, but it is probably not the case for the rest of the CLI. However, this problem of visibility might be of particular interest for the inquiry, since it could raise new questions.

Expert 1: I thank you for those clarifications but it means that operators either lacked information or training, at least it is my opinion.

Areva: Operators were skilled operators of T7 and they did apply the procedure and this is the reason why we modified it: it could under certain conditions, lead to this kind of incident. […]

The inquiry continues when expert 1 insists on the fact that despite the visibility problem, the operators, when working under a manual mode, should consider potential problems that are outside procedures. Thus, he formulates a working hypothesis: maybe operators lack of experience or training. But Areva blocks the inquiry on this point: it is not the fault of the operators but of the procedure. This answer does not enable to answer Expert 1's main question on why operators did not anticipate that the kiln would fall.

Member 1: What highlights this incident is that it is first due to a conception problem: it is indeed surprising that even in manual mode, the lifting platform does not stop before unhooking the kiln. But the major problem for me is the procedure: it reveals that it was never tested during test phases, otherwise this problem would have appeared. Maybe ASN could check in its coming audit that all operational modes were tested. In this case, it has almost no consequence, but in other cases it can alter a lot the safety of installations.

Areva: I can assure you that all operational modes are tested during trial phases. […]

Member 1 intervenes with a new working hypotheses: "What if the major point was that operational modes had not been tested before." The inquiry continues with this point that is crucial for the safety of operations. Yet, Areva is definite: all operational modes had been tested. But it does not make the inquiry progress

Member 1: Isn't it because of a modification on the lifting equipment that made the operational mode obsolete?

Areva: No there was no modification on the lifting equipment.

Member 1 brings up another working hypotheses: "Then if the procedure was tested, maybe it is because there was a change in the lifting equipment." Areva rejects this hypothesis and the inquiry stops.

This narrative illustrates once again that there is a will of the CLI to inquire and to understand what happened. The inquiry process starts with Expert 1 who wants to understand why the procedure was inadequate. This seems indeed to be the main reason of the incident: in the ASN report, it is mentioned that this risk of fall was not specified in the operational mode of the sensors adjustment. The objective of the inquiry is twofold: firstly members want to understand why the kiln fell on that day and secondly why the procedure was inadequate. Expert 1 continues the inquiry and challenges Areva: for him, despite the lack of an adequate procedure, the operators should have foreseen what would happen, as they were working under a manual mode. This becomes the new track of the inquiry. He uses his experience to assess that, when working in manual mode, operators cannot rely only on procedures. This new track gives CLI members a new hint for the inquiry: Areva reminds CLI members that operators are working with limited visibility. Expert 1 rejects this argument and brings a working hypothesis: "what if there was a problem with the training or skills of the operators". As in the two other narratives, when members of the CLI try to question managerial issues (the incompetence of the operators) Areva blocks the inquiry.

The inquiry rebounds with Member 1 who challenges the test of the procedures and appeals to the authority of ASN: "Maybe ASN could check this point in the coming audit." Yet, Areva is definite on this point and assures that all procedures had been tested during trial phases. In this case, the inquiry does not succeed because members of the CLI lack information: for instance it could have been interesting to include in the reporting tool the previous version of the procedure and the modified version. Also, it could have been interesting to include the feedback of the operators themselves to obtain their reactions after the fall of the kiln. In this case, the ranking on INES scale is also used as a punishment: "Since we had an inadequate procedure, we decided to rank the incident at level 1." However, the ranking at level 1 is not used to stop the inquiry: it is only mentioned once.

Discussion

The different narratives illustrate that the reporting tool on incidents is a trigger for members to launch their inquiries: they have at their disposal some information and the inquiry process starts. A few CLI members have the will to start an inquiry dynamic and thus to discover, develop and maintain CLI's identity as a community of inquiry at the service of civil society as regards nuclear safety. Those members reassert that inquiry is part of their mission: trying to dig

up some incidents - when deemed necessary - and showing their will to comprehend the circumstances and ensuing measures, which results generally to better skills for the entire community. Inquiries often involve the co-existence of divergent views and, as was shown through the different narratives, the dialogue between the different stakeholders is sometimes virtuous thanks to a communicational frame with common languages, common horizons and common worlds.

However, Dewey's inquiry implies to reconsider completely the tool and the feedback on incidents: as studied in this present research, civil society is not involved at all in incident's inquiries and as shown in the three narratives, inquiries led by CLI members a posteriori are rather infelicitous. Several hypotheses can explain such failures:

- Very often, CLI members lack important information. In their report, operators and nuclear authorities omit details, maybe taking for granted that CLI members are aware of them. Indeed, Areva often comes with a very limited tool and eludes major hints. Reports on ASN websites are also quite limited and they are apparently not read before the General Assembly.

- Members' expertise – most of the time very technical - confines inquiries on technical aspects. Most members seem to focus their attention on specific expertise with which they are familiar, missing thus essential questions in domains they less know. Maybe members feel they should not intervene on other subjects than those they are confident with. Also, technical questions are rather well accepted by Areva and they answer to them easily providing numerous technical details: it seems rather comfortable for both CLI members and operators to stay in this sort of expertise.

- INES ranking is often wrongly used and serves as a shield by Areva to block the inquiries. The ranking might as well be used as an instrumental element, heuristic, served to develop the dynamics of inquiry.

- Maybe members do not want to intervene on managerial subjects, not to question Areva's management and they might suspect that Areva will not cooperate. Managerial issues might represent implicit boundaries of the inquiry.

- They also might lack managerial skills to intervene on those subjects: there is indeed no expert on managerial issues in the CLI although human and organizational factors are very

complex and difficult to understand. Maybe CLI is not "fit" to tackle managerial subjects due to its composition and to its members' culture. Yet, dealing with safety issues, without questioning its management is impossible.

- CLI members might have major methodological shortcomings: they should indeed ensure that all pertinent questions are embraced with a kind of "constant vigilance", spotting any important hint that could potentially trigger new inquiries. Indeed, CLI members could identify for each major incident what skills they would need to pursue their inquiry - just as in a crime investigation. Maybe there is a lack of abductive skills within the members of the CLI.

- CLI members often complain about their lack concrete means to lead their inquiries: the technical expert who works for the CLI might partake in the incident inquiry with the operator beforehand and report to CLI members.

- Some members of the CLI may also consider that ASN is there to keep everything under control so they do not find it necessary to intervene and to participate in the community of inquiry.

- Areva's representative seems to be often on the defensive, and some CLI members seem to incriminate him. An inquiry indeed often arouses the expression of different views that are essential for the inquiry providing that there is no incrimination: inquiry should focus on practices rather than on actors. Such incrimination is rather counterproductive for the inquiry dynamic: to be successful, the inquirers should all be on the same level with the common will to make the inquiry progress. When one rewards or punishes, it is always in comparison to a certain standard, and when such a standard exists, the inquiry already occurred. For instance, when members try to investigate managerial subjects, an incriminating register is used and the ranking on INES scale is used to stop the inquiry.

- Operators and state regulators do not seem to recognize the CLI as legitimate inquirers. In order to conduct successful inquiries: all participants of the CLI should consider themselves as co-inquirers, exactly as in the Buddhist parable of the three blind men and the elephant (Shields, 2003, 2000). It means that members of the CLI together with representatives of Areva and ASN should all be in an inquiry approach, willing to make the inquiry progress. Yet, as was shown with the three narratives, Areva obviously does not want to share a certain level of feedback with CLI members, especially on managerial

and organizational subjects. On those subjects, an inquiry is hence almost impossible. The operator is a company and is surely concerned by preserving its managerial autonomy: they may be worried that if the inquiry dynamic interferes, they would lose their managerial autonomy. Also, what is surprising is that ASN representatives sometimes play the game, but they also sometimes go in Areva's sense and block the inquiry. However, this report on incidents is useful only if it leads ASN and Areva to change their opinion.

As shown in the literature, the concept of accountability has several limits: Dixon et al. (2006) show thanks to their study of a Zambian microfinance organization that it is difficult to reconcile different types of accountability when they have different power bases and resources. Similarly, Ebrahim (2005) argues that accountability mechanisms are likely to reproduce the relations of power previously existing within an environment: in this sense accountability will be used to satisfy best the interests of dominant actors. In the same stream, it is shown in this paper that nuclear operators agree with regulators to be more accountable towards the public, under certain conditions. When it concerns managerial issues for instance, those actors tend to block accountability mechanisms.

It is important to highlight that the reporting tool on incidents is not neutral, as it gives structure to the dialogue. As such, it could be a great help for members to lead detailed inquiries on incidents if it was a boundary object (Star and Griesemer, 1989) i.e. a mediating artefact able to promote the sharing of common referents across different parties with different views and thus create and maintain coherence (Briers and Chua, 2001; Barrett and Oborn, 2010) among CLI members. Indeed, the reporting tool on incidents could consist in a heuristic tool, enabling CLI members to communicate and cooperate despite their differences in order to construct a co-comprehension of situations, in complex situations in which there are several views at stake (Weick's sense making). Most of the time, the reporting tool on incidents does not help members to successfully lead their inquiries and even contributes to a certain form of opacity. It does not fulfil its mission to provide members with elements for them to grasp the situation at stake: the tool could precisely contribute to this "constant vigilance" if it made members scan all potential questions - possibly with a checklist. It could also specify to operators what type of analysis they should provide to CLI members. For instance, the point on risk evaluation has not been at all mentioned in the report on incident tool. In this precise case, if it had been clear in the tool that the incident came from the change in organization and the lack of risk evaluation following this

change, CLI members would have undoubtedly debated it. The tool could also constrain the operator to play the dialogic game.

Finally, this paper makes one central theoretical contribution: it proposes a critical perspective on accountability thanks to the pragmatist concept of inquiry. Dewey's notion of inquiry enables to reject the common hypothesis in the accountability literature according to which an account exists as such. An account needs indeed to be constructed through an inquiry. Such a notion of inquiry leads to a new and refined perspective on accountability, more processual, dynamic and dialogic. The study of the reporting tool on incidents enable to illustrate this notion of inquiry and of accountability.

Conclusion

In this paper, it was demonstrated that the tool used to perform this feedback on incidents certainly triggers the dynamic of inquiry but finally it hampers inquiries to come to successful conclusions. What could have been the transformation by CLI members of a "one way" communicational tool into a dialogical inquiry tool does not happen: inquiries are in most cases selective or aborted. Designing a tool that enables a kind of "constant vigilance" on incidents feedback, providing members with an exhaustive account of the situation at stake might help this community of inquiry. Indeed, it seems that there is a common will of the nuclear sector's actors to go in the sense of more accountability towards the public, in particular there is a will to help the public to take part in the governance of nuclear activities – resulting in the institutionalization of the CLI in France. These will materialize for instance in the fact that operators have the obligation to share incident feedbacks with CLI members. Yet, such feedbacks should enable them to lead their own inquiries, necessary to grasp the problems at stake and play the role of an "informed" public.

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Appendix

Process of incident classification:

1. An incident occurs.

2. The operator assesses the incident, referring to specific evaluation grids and proposes a classification for this incident on the INES scale (mostly 0 for small deviations; 1 for anomalies; 2 for incident and up to 7 for major accidents).

3. Meantime, the operator proceeds to the analysis of the incident.

4. If the incident is significant, the operator needs to declare it to the ASN, to the General Council and to IRSN in less than 48 hours.

5. The general council informs CLI's president and other members of the CLI who can, if deemed necessary, ask further questions to the operator.

6. ASN reviews the incident and decides (or not) to ask IRSN for an expertise.

7. IRSN reviews the incident and starts the expertise.

8. If deemed necessary, ASN and IRSN go on the field to investigate the incident (possibly with interviews of actors).

9. IRSN hands its expertise over to ASN.

10. ASN classifies the incident, sometimes increasing the classification done by the operator.

11. The incident is presented in the General Assembly of the CLI with schemes, pictures, and explanations of the incidents.

12. CLI members ask questions and ensues a debate…

INES scale:

After Chernobyl and in order to better inform the population about nuclear incidents, France decided in 1987 to develop rating scales of nuclear incidents, by analogy with the classification of natural phenomena such as earthquakes, wind or avalanches[15]. The first scale was put in place in 1987 by the CCSIN (French High Council for Nuclear Safety and Information) and when the International Nuclear and Radiological Scale Event (INES) was created in 1991 by the IAEA (International Atomic Energy Agency), ASN played a crucial role. Since 1991, there have been several revised versions of INES: in 2002, ASN proposed to take into account radiation protection events (irradiation, contamination), affecting workers in particular. In 2008, the IAEA published a revised version of the scale enabling events occurring in the areas of transport or leading to human exposure to radioactive sources to be better taken into account.

Today, the INES scale is applied by more than 60 countries and is intended to facilitate the perception by the media and the public of the significance of nuclear incidents and accidents. In order to classify them, those incidents and accidents are ranked from 0 (below scale) to 7 (major accident) and they are considered from their impacts on three different areas (see figure in appendix): (1) the impact on the people and the environment; (2) the impact on the radiological barriers and controls; and (3) the impact on defense-in depth.

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[15] Source: ASN website on INES scale (www.asn.fr)

GENERAL DESCRIPTION OF INES LEVELS	PEOPLE AND ENVIRONMENT	RADIOLOGICAL BARRIERS AND CONTROL	DEFENCE-IN-DEPTH
7 MAJOR ACCIDENT	Major release of radioactive material with widespread health and environmental effects requiring implementation of planned and extended countermeasures.		
6 SERIOUS ACCIDENT	Significant release of radioactive material likely to require implementation of planned countermeasures.		
5 ACCIDENT WITH WIDER CONSEQUENCES	Limited release of radioactive material likely to require implementation of some planned countermeasures • Several deaths from radiation.	Severe damage to reactor core • Release of large quantities of radioactive material within an installation with a high probability of significant public exposure. This could arise from a major criticality accident or fire.	
4 ACCIDENT WITH LOCAL CONSEQUENCES	Minor release of radioactive material unlikely to result in implementation of planned countermeasures other than local food controls • At least one death from radiation.	Fuel melt or damage to fuel resulting in more than 0.1% release of core inventory • Release of significant quantities of radioactive material within an installation with a high probability of significant public exposure.	
3 SERIOUS INCIDENT	Exposure in excess of ten times the statutory annual limit for workers • Non-lethal deterministic health effect (e.g., burns) from radiation.	Exposure rates of more than 1 Sv/h in an operating area • Severe contamination in an area not expected by design, with a low probability of significant public exposure.	Near accident at a nuclear power plant with no safety provisions remaining • Lost or stolen highly radioactive sealed source • Misdelivered highly radioactive sealed source without adequate procedures in place to handle it.
2 INCIDENT	Exposure of a member of the public in excess of 10 mSv • Exposure of a worker in excess of the statutory annual limits.	Radiation levels in an operating area of more than 50 mSv/h • Significant contamination within the facility into an area not expected by design.	Significant failures in safety provisions but with no actual consequences • Found highly radioactive sealed orphan source, device or transport package with safety provisions intact • Inadequate packaging of a highly radioactive sealed source.
1 ANOMALY			• Overexposure of a member of the public in excess of statutory annual limits • Minor problems with safety components with significant defence-in-depth remaining • Low activity lost or stolen radioactive source, device or transport package.
0 BELOW SCALE	NO SAFETY SIGNIFICANCE		