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Review

The constitution and effects of safety culture as an object in the discourse of accident prevention: A Foucauldian approach

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ABSTRACT

Safety culture is part of a larger discursive practice shared by scholars and practitioners in the field of accident prevention. It appears in various institutional documents, such as scientific and accident reports, industry-related statistics, manuals, and legislation. We examine the constitution of safety culture and its effects as a form of knowledge based on a Foucauldian archae-genealogical approach. Our analysis lays out the historical conditions for the emergence of the object, the scientific approaches for its delimitation, and its regular characteristics. We also describe four effects of the object in the discourse: a focused aspect of organisational culture that implies a normative homogeneity of values, beliefs, and behaviours; a disciplinary enforcement of workers' safety behaviours; a biopolitical control of organisations; and a form of governmentality that connects the conduct of individuals with organisational norms.

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1. Introduction

Safety culture, in formal social-scientific terms, is an object of knowledge. As such, it is part of a larger discursive practice of accident prevention, together with other objects like technical failure and human error. In the last three decades, safety culture has increasingly become the focus of attention of many scientific disciplines, such as anthropology, sociology, psychology, management, and engineering, in order to explain organisational safety issues. It follows a tendency toward more 'socio-technical' and 'systemic' oriented approaches to safety. In part, this is a result of the political need to explain large organisational accidents combined with an *a priori* knowledge on organisations. Safety culture has attained an important status in the discourse of accident prevention, since it is used as explanation for accidents (e.g. Starbuck and Farjoun, 2005) and safety management performance of organisations (e.g. Hudson, 2007).

As a discursive practice, this object is part of a vocabulary shared by individuals and institutions (e.g. investigation reports, statistical information, manuals, legislations). Both recognise the need for a 'good safety culture', which often presupposes a kind of consensual agreement of values, beliefs, and behaviours in relation to risks at the workplace (Antonsen, 2009a; Edwards, Davey, Armstrong, 2013). Individuals are called upon to be responsible for safe behaviour and, at the same time, organisations are invoked to be responsible for assuring the proper engagement with safety at the organisational level (Sibley, 2009). At the industry level, regulators define a set of practices that organisations should comply with (e.g. IAEA, 2002a,b). The characteristics of the object are strategically taken as reference for 'measuring', 'describing' and 'comparing' the safety culture of individuals and organisations (Antonsen, 2009b; Boin and Schulman, 2008; Griffin and Neal, 2000; Lu and Tsai, 2010).

Notwithstanding controversies in the literature about conceptual definitions, methods, and measurements of safety culture (e.g. Glendon and Staton, 2000; Guldenmund, 2000; Cox and Flin, 1998; Haukelid, 2008), it is easy to agree that as an object of knowledge it is part of a discursive practice materialised in the way institutions (including academia, industry, regulators, juridical branch, etc.) operate with it. The analysis of the object, as part of a discursive practice, "allows to de-neutralise contemporary and taken-for-granted truths and encourages a reflexive ethic-political thinking on OHS [organisational health and safety] issues" (Rasmussen, 2010, p. 476).

Despite its embryonic stage in the field of safety, the Foucauldian approach has been increasingly adopted as an analytical framework for studying discursive practices in management and organisation studies over the last decades (Barratt, 2008). Based on identified 'periods' of Foucault's work, this approach encompasses two perspectives of investigation, his so-called archaeology and genealogy (Foucault, 1980). In the former, Foucault developed a comprehensive and systematic way of examining how certain discourses gave rise to particular objects of knowledge claimed as 'truth'. In the latter, he focused on exploring the effects of power and subjectivation that particular discourses have. Foucault introduced the notion of power as a 'strategic exercise' for the control of individuals (which he called 'disciplinary power'), populations ('biopolitical power'), and as a form of control that ties individual conduct to organisational norms ('governmentality') (see Foucault, 2004). Even though organisation and management theorists have mainly focused their researches on genealogical issues of disciplinary power (Rowlinson and Carter, 2002), these perspectives can be combined into a 'Foucauldian archae-genealogical approach' in order to investigate both the constitution of particular forms of discourse and the effects of this knowledge (Knights, 2002).

In this study, we examine safety culture as an object in the discourse of accident prevention based on this Foucauldian archae-genealogical approach. The archaeological part allows a description of (a) the constitution of the object, considering the historical conditions of its emergence, the scientific approaches delimitating it, and the specifications that currently supply its characteristics. Once safety culture is characterised from an archaeological perspective, the genealogical part focuses on a description of (b) the effects that the object has as a form of knowledge, a disciplinary and biopolitical power, and a form of governmentality that connects the conduct of individuals with organisational norms. While the archaeology shows that safety culture comes from certain knowledge constructions and its rules – providing an adequate basis for the genealogical analysis – the genealogy explores some of the effects it has with interesting insights for the safety management of organisations and workers in it.

2. Constitution of the object from an archaeological perspective

Archaeology is way to analyse a given discourse, including the system of formation and transformation of its objects, concepts, and statements (Foucault, 2002a). It helps to describe how knowledge is produced, what characteristics it has, and what may be spoken of in the discourse considering its conditions of existence. In this study we limited the focus on the 'constitution of objects' – an important part of the archaeological project – taking safety culture as an object in the discourse of accident prevention.

Objects, such as 'human error' or 'safety culture', are artificial distinctions historically constituted and not 'scientific discoveries' of natural objects (Foucault, 2002a). Indeed, as many safety scholars have long remarked, an object like "human error" is an artificial distinction, an attribution, a human judgment – not an objective fact with immutable properties across observers or situations (Dekker, 2005; Hollnagel and Amalberti, 2001; Rasmussen, 1990; Vicente, 1999; Woods and Cook, 2002; Woods et al., 2010). The emergence of an object in a discursive practice is associated with the articulation of knowledge on politically relevant events. Accidents are a special category of events that, for multiple reasons, demand technical and social explanations (Galison, 2000; Green, 2003). Social objects, in this sense, are named and described in order to fulfil this demand.

Once named, the object receives increasing attention from scientific research when it has shown its potential for explaining a particular social order. Hollnagel (2005), for example, explains how the accident of Three Mile Island, together with the growing public concern about the risks of operating nuclear power plants, set in motion a research agenda that took 'human error' as a relevant social-scientific object. Consequently, this was followed by the development of accident models sensitive to 'human error'.

Scientific disciplines, with their apparatuses of methods and epistemologies, then proceed to delimit the object by postulating its formal definitions, its conceptual systems, and its investigation approaches. Their specification provides a singular character to the object, after which more empirical data is accumulated and the object is further corrected, modified, validated, and legitimised as part of a larger discursive practice (Foucault, 2002a). In relation to human error, for example, this practice is now so strong that the search for 'error' is a normal reaction to accidents (Hollnagel, 2005). As part of this self-reinforcing process, accident prevention strategies include a wide variety of technologies, such as error management (e.g. Helmreich, 2001) and error counting and classification (e.g. Wiegmann and Shappell, 2003).

In this study, safety culture is analysed as a symptom of a discursive practice in the discourse of accident prevention. It is a social-scientific object named, delimited, and specified according

to behavioural-based approaches to safety (Tharaldsen and Haukelid, 2009). As such, it can be seen as a kind of 'discursive recodification' of other objects that are taken as 'transcendental categories', such as human error. As any other discursive object, it has been defined and investigated for analytical and practical reasons, creating a "socially authoritative interpretation of reality" (Feldman and Feldman, 2006, p. 880).

2.1. The emergence of the object

Objects in science do not come 'out of the blue'. The emergence of an object requires a combination of pre-existing knowledge and certain events or circumstances that demand new and appropriate explanations (Foucault, 2002a). In this sense, two conditions for the emergence of safety culture as an object are analysed: (a) the pre-existing knowledge, including a menu of concepts, methods, and disciplines related to the thematic of culture and organisations; and (b) the political need to explain important accidents that motivated the search for causes at any organisational level.

2.1.1. The pre-existing knowledge

Safety culture did not appear in the literature as a new scientific discovery that all os a sudden deserved to be investigated. Rather, its constitution was possible due to the existence of an important substratum of knowledge prior to the first official use of the term in the technical reports that followed in the aftermath of the Chernobyl nuclear disaster in 1986 (see INSAG, 1986, 1988, 1991). At that time, both organisational culture and safety performance were already important areas of scientific investigation.

Anthropology and sociology have studied organisational culture, at least since the 1950s, with a focus on organisational values, underlying assumptions, artefacts, rituals, norms, power, negotiations, and rites of passage. Similarly, psychological studies of organisational climate have been carried out since the 1930s (and more intensively since the 1960s). However, these psychological studies often put the emphasis on the topic of job satisfaction. In commenting on the influence of best-selling books about organisational culture in the 1980s – such as 'In search of excellence' (Peters and Waterman, 1982) and 'Corporate Cultures' (Deal and Kennedy, 1982) – Haukelid (2008) explained that these works represent mainstream ideas about organisational culture in the 1980s, when management science was declaring that, "corporation[s] with strong culture do well". These ideas, influenced by Japanese organisational philosophy, construct culture as a management tool alternative to bureaucratic control (Antonsen, 2009a). They have also contributed to seeing employees, rather than technologies, as the greatest resource of organisations and have helped to legitimise scientific work to better understand the social body of organisations.

During the 1970s, organisational knowledge was gradually integrated into the safety discourse. Based on the works of Cohen et al. (1975), Cohen (1977), Smith et al. (1978), Zohar (1980) and others, Clarke (2000) enumerates a number of social factors to influence organisational safety performance that were already known then: top management commitment; safety as a managerial priority; status of safety officers; safety training; communication between workers and managers; environmental control and housekeeping; stable workforce; good industrial relations; and standard procedures. These factors constitute an important set of characteristics of safety culture research and managerial practice still today. In this sense, many disciplines, such as management science, social psychology, anthropology, and sociology, were providing a suite of concepts, methods, and correlated objects to explain how safety was influenced by social organisational factors (Choudhry et al., 2007). Therefore, it is possible to assert that prior to the first use of the term (in the Chernobyl's reports) an important substratum of knowledge was available for the constitution of safety culture as an object.

2.1.2. The political need to explain important accidents

Accidents often show an unanticipated difference between the current beliefs about danger and the actual state of it (Mengolini and Debarberis, 2012; Pidgeon and O'Leary, 2000). In the late of 1970 and 1980s, high-visibility accidents involving risk-rich systems with reputable safety records motivated the search for explanations at an organisational level, such as the Three Mile Island (see Perrow, 1999), the Bhopal chemical accident (see Shrivastava, 1987), the capsize of MS Herald of Free Enterprise (see Sheen, 1987), the underground fire at King's Cross Station (see Fennell, 1988), the Clapham Junction rail crash (see Hidden, 1989), the Piper Alpha accident (see Paté-Cornell, 1993), and the Tenerife air crash (see Weick, 1990). Following an increasing tendency to search for causes of accidents at the blunt-end of organisations, these accidents demanded the mobilisation of organisational-related disciplines (Hale and Hovden, 1998).

As we have already mentioned, the historicity of safety culture is frequently associated with the disaster of Chernobyl in 1986 (Choudhry et al., 2007; Cooper, 2000; Guldenmund, 2000; Yule, 2003). In the INSAG's Summary Report on the Post-Accident Review Meeting on Chernobyl Accident (see INSAG, 1986), investigators mentioned culture to explain organisational failures that contributed to the accident. From an archaeological perspective (Foucault, 2002a), it does not matter if Chernobyl was the origin of the term or if its first use was precisely associated with organisational culture research at that time. Rather, the use of the term should be considered as a symptom of a discursive practice produced by the socio-technical and organisational mainstream ideas developing at that time (Hopkins, 2006). The use of safety culture in accident reports – as are various other organisational-related terms – is evidence of a substratum of knowledge that was already being mobilised to explain safety in a strategic and tactical manner. As Brown (2004, p. 98) puts it, "reports are constructed according to the conventions of the public policy in which they are located and to which they contribute – creating, clarifying, sustaining, and modifying this particular version of reality".

Accident reports and scientific articles can be ascribed, among others, as institutionalised forms of use of the object (Foucault, 2002a). This is evident in the increased reference to the term 'safety culture' after the Chernobyl disaster. Searching for the term 'safety culture' in SCOPUS, the query returns about 2500 references, most of them published after the year 2000. Less than 200 references appear between the years 2000 and 1991, and 10 references before 1991. The accident investigations of Überlingen (see Johnson, 2004), Continental Express flight 2574 (see Wiegmann et al., 2004), and Columbia (see CAIB, 2003; Starbuck and Farjoun, 2005) are examples of more recent uses of the term, both in scientific and technical publications. In this sense, the more the object is used in its institutionalised forms, the greater is its power as a 'regime of truth' (Foucault, 1977, 2002a). As an effect, safety culture now has an important status among objects in the discourse of accident prevention. As points Sibley (2009, p. 352), "[c]learly, safety culture has become the mantra for technologically complex and hazardous organisations".

2.2. Authorities of delimitation of the object

Two scientific approaches delimit safety culture as an object: (a) the interpretivist and (b) the functionalist approach. This differentiation was already made and commented upon by previous studies (e.g. Clarke, 2000; Glendon and Staton, 2000; Guldenmund, 2000; Haukelid, 2008; Sibley, 2009). We adopt the same approach here in order to describe how certain disciplines

have been acting as authorities of delimitation of the object, thereby providing its systems of specifications.

2.2.1. The interpretivist approach

The interpretivist approach is characterised by scientific disciplines such as anthropology and sociology, which are often defined as the 'home' disciplines of studies on culture. Methodologies adopted by these disciplines are usually qualitatively oriented, such as ethnography and ethnomethodology, including data collection techniques based on various forms of observations, interviews, discussions, and document analysis.

This approach defines culture as something that an organisation 'does'. It considers culture as a bottom-up, complex, emergent phenomenon; greater than the sum of its parts; resistant to reductionist analysis, measurement, and engineering. For this reason, it cannot be trained and injected into individual minds. Culture is a medium by which individuals understand identity, values, beliefs, and behaviours (Haukelid, 2008). The interpretivist approach emphasises the discovery of underlying structures of meaning within an organisation (Wiegmann et al., 2004). In doing so, researchers usually use safety culture as an 'ex-post-fact' object to explain accidents, as well as the behaviour of workers and organisations (Sibley, 2009).

The interpretivist logic often defines safety as a form of expertise connected to organisational practices (Gherardi and Nicolini, 2000). In this sense, safety culture is asserted to be a consequence, rather than a cause. It is continually redefined and negotiated in relation to a larger scope of organisational factors, processes, and goals (Gherardi and Nicolini, 2000; Gherardi et al., 1998; Sibley, 2009; Vaughan, 1999) that produce interpretation and meaning-making about danger and risk (Starbuck and Farjoun, 2005; Vaughan, 2004).

2.2.2. The functionalist approach

The functionalist approach is characterised by disciplines such as social psychology, management science, and engineering. These disciplines are often defined as fields of applied studies due to the pragmatism in their goals. Atak and Kingma (2011) point out that the studies on safety culture were initially dominated by social psychology, with analyses that take safety and culture as objectively quantifiable categories. Methodologies adopted by these disciplines are usually quantitatively oriented, including surveys, various forms of questionnaires, and multivariate data analysis (Choudhry et al., 2007; Cooper, 2000; Glendon and Staton, 2000; Guldenmund, 2000).

This approach defines culture as something that an organisation 'has'. It considers culture a complex and multidimensional object that can be measured; a top down support for management strategies and ideologies that can be changed and engineered (Cooper and Phillips, 1995; Reason, 1997). Functionalist studies focus on the practical significance of safety culture (Choudhry et al., 2007; Wiegmann et al., 2004). In doing so, researchers take safety culture as an object for understanding how social members signify risk and safety in order to generate senses of commitment, motivations, enhance social stability, and guide and shape behaviour (Gherardi et al., 1998; Lu and Yang, 2011; Sibley, 2009; Turner and Tennant, 2009).

The functionalist logic assumes that there is a relation of antecedence among behaviour, beliefs, and values: values are ascribed to be at the core of a cultural system driving beliefs, which in turn are supposed to determine behaviours (Schein, 2004; Vinodkumar and Bhasi, 2010). Thus, organisations have to make workers internalise safety both as a value and a belief, in order to foment the necessary conditions for safe behaviour. This logic legitimises 'safety first' and 'zero accident' slogans and campaigns, since it is a way to disseminate values and beliefs. At the same time it perpetuates and reinforces the idea that culture is a viable characteristic, "quality that can be managed, changed or manipulated" (Haukelid, 2008, p. 95). Edwards and Jabs (2009) warn that this approach may potentially backfire, as it can prevent workers from developing a 'dissenting view', disseminating the trust on control and maintaining false believes that systems are safe.

The functionalist approach has been criticised by interpretivist researchers for invoking culture as an "iconic concept with little of the theoretical edifice sociologists and anthropologists have built" and for "instrumental and reductionist epistemologies antithetical to cultural analysis" (Sibley, 2009, p. 342). The interpretivist approach, in return, has been condemned for not offering pragmatic solutions for safety culture improvements. However, both approaches have contributed to define a set of specifications for the object, constituting the same object in different manners, with different strategies, and possibly with different effects in the discourse of accident prevention. In the next section we examine how safety culture is specified under the authority of such approaches.

2.3. Specifications of the object

Specifications provide the object with its singular characteristics and magnitudes that individualise it and, thereby, produce it in discursive practice (Foucault, 2002b). Even though there is an on-going debate on the specifications of safety culture as a social-scientific object, we identify important discursive regularities in relation to its definitions and its statements.

2.3.1. Definitions of safety culture

Many researchers agree that there is no universal accepted definition of the term safety culture (e.g. Antonsen, 2009a; Clarke, 2000; Guldenmund, 2000; Cooper, 2000; Choudhry et al., 2007). Sometimes the term is not even defined in academic studies, as mentioned by Choudhry et al. (2007, p. 996): "Only eight (8) of the twenty-seven (27) selected studies define safety culture". There is also an on-going debate on the similarities and differences between the terms safety culture and safety climate (e.g. see Deninson, 1996). Often, safety climate is derived from the basis of organisational psychology studies (e.g. Zohar, 1980), whilst safety culture is derived from a socio-anthropological basis (e.g. Haukelid, 2008). The former is frequently described as a "temporal state measure of safety culture" (Zhang et al., 2002, p. 10), while the later is often attributed to organisational factors captured by accident investigators and public prosecutors to describe accident causation (Sibley, 2009).

The term 'safety culture' is derived from organisational culture studies, where definitions of culture vary largely, including statements such as 'the way we do things around here', 'process of fabrication of meaning', 'shared learning and practices', 'shared system of meanings', 'collective programing of the mind', etc. (e.g. see Cooper, 2000; Edwards et al., 2013; Guldenmund, 2000; Pidgeon, 1998; Sibley, 2009; Tharaldsen and Haukelid, 2009). However, a comprehensive volume of definitions summarises safety culture as 'a focused aspect of organisational culture' related to 'attitudes, values, assumptions, beliefs, behaviours' that are 'consensual, shared, and learned' by meaning-making and experience, in which a given group understand 'risks and safety' (e.g. see Antonsen, 2009a; Clarke, 2000; Edwards et al., 2013; Glendon and Staton, 2000; Guldenmund, 2000; Richter and Koch, 2004). In a state-of-the-art research review on safety culture, Choudhry et al. (2007, p. 996) state that, "most of the definitions are relatively similar in the beliefs perspective, with each focusing, to varying degrees, on the way people think and/or behave in relation to safety". Often, definitions also imply that "organisational safety culture exists on a continuum and that organisations can have

either a good or poor safety culture" (Wiegmann et al., 2004, p. 121).

It is possible to observe that safety culture is an object 'artificially detached' from a larger organisational cultural context in order to specifically address shared values, beliefs, and behaviours in relation to safety issues. This behavioural-safety oriented approach aims to promote the proper motivation, commitment, and engagement of workers and organisations with safety. Likewise, it is dedicated to understand consensual safety values, beliefs, and behaviours at the group and organisational level, rather than at the individual level. As mentioned by Schein, in an editorial note published by Hale (2004, p. 980), "if there is no consensus on key issues (...), then, *by definition*, there is no culture". Safety culture is, therefore, an object that encapsulates consensual values, beliefs, and behaviours in relation to risk and safe behaviour, but not necessarily by contrasting it with other organisational demands, such as production, quality, or cost.

2.3.2. Statements of safety culture

Despite the vast number of publications on safety culture over the last 20 years, there is still neither a universally accepted model nor a fixed number of variables to describe and measure it (Choudhry et al., 2007; Cooper, 2000; Guldenmund, 2000; Flin et al., 2000). Clarke (2000) and Guldenmund (2000), in reviewing safety culture studies, found important variations in the number of variables and content of them. Nevertheless, we identify three statements that currently seem to capture and address important attributes of safety culture as an object in the discourse on accident prevention: (a) safety is 'the' core organisational value; (b) safety requires management commitment; (c) safety requires workers' commitment.

According to Foucault (2002a) statements are 'functions' that display arrangements and unities of a discourse. They constitute a 'network of rules' that establish what is discursively meaningful. The 'archive' is the complex (and historical) system of statements that defines what may, and may not, be said. As such, Foucault's 'archaeology' is the study of the 'archive' (see Foucault, 2002a). Statements on safety culture thus show how safety is set out in relation to other organisational values as well as address fundamental needs in an organisational structure to better safety. Statements are taken not as assertions of scientific truth, but as a discursive mechanism that guides scientific and managerial practices in the name of safety culture. Since it puts scientific and managerial assumptions on the spot, understanding these statements is a necessary step for the analysis of the power effects that a discursive object such as safety culture has. These statements circulate in different industrial systems, such as healthcare, aviation, and nuclear power generation. The examples provided here are merely illustrative and similar evidences may be easily found in other risk-rich industries and organisations.

According to the first statement, safety culture is not just 'another' organisational value. Rather, it is an object for the analytical purpose of putting safety in the core of organisational beliefs in order to promote the "understanding that safety is the overriding priority" (Clarke, 2000, p. 76), "the guiding principle" (Wiegmann et al., 2004, p. 126). A set of institutional practices produce this statement, such as formally written, documented 'safety culture policies' and campaigns that sloganize 'safety first' and 'zero accidents'.

A symptom of this statement may be evidenced, for example in healthcare, in the guide 'Creating a Patient Safety Culture' by the Association of periOperative Registered Nurses. This document echoes frequently adopted policies in healthcare institutions when it states that, "[a] commitment to safety must be articulated at all levels of the organisation. Safety is valued as a top priority, even at the expense of productivity" (AORN, 2006, p. 940). Similarly, in aviation, airline safety policies often contain sentences like "safety is a core business and organisational value" (GAIN, 2002, p.ii). It enforces accountability at all levels as stated by the U.S. Nuclear Regulatory Commission (NRC, 2011, p. 34773): "safety culture is defined as the core values and behaviours resulting from a collective commitment by leaders and individuals to emphasise safety over competing goals to ensure protection of people and the environment". As an effect, safety is formally advertised as a moral commitment to make people across the multiple levels of organisations believe and behave according to it.

The second statement announces safety as a product of management commitment.

The National Patient Safety Agency in UK, for example, states, "the level of patient safety of an organisation can be improved if there is strong leadership from the top of an organisation" (NPSA, 2004, p. 39). Similarly, IAEA (1998) advocates that "without a visible and genuine demonstration of this commitment by personal behaviour and leadership by senior managers, other workers in the organisation will not be convinced of the importance of safety compared to other organisational issues" (p. 17–18). Also, in aviation, the ICAO Safety Management Manual points out:

> The ultimate responsibility for the establishment and adherence to sound safety practices rests with the directors and management of the organisation ... The safety ethos of an organisation is established from the outset by the extent to which senior management accepts accountability for safe operations and for dealing with emerging safety concerns.
>
> [(ICAO, 2009, p. 38)]

This statement is thus produced by a set of organisational practices related to continuous supervision of critical risk operations, risk analysis processes, safety training, operation monitoring, corrective actions, continual improvement of safety system, promotion of special campaigns, advertising of organisational safety values, provision of resources for safety, compliance with industrial regulations, rewarding and punishing of good and bad behaviour, coaching, participation on safety seminars and training, among others. It morally calls upon managers to engage with both the planning and the active oversight of safety activities.

The third statement asserts that safety comes from workers' commitment. Organisational practices often enforce compliance with safety working standards and operating procedures. The statement is also materialised in the use of reporting systems and workers' participation and engagement in safety related issues (e.g. committees, risk analysis teams). As emphasised, for example, in nuclear industry:

> Probably the most important indication of a good safety foundation in an organisation is the extent to which employees are actively involved in safety on a daily basis. If there is little involvement, with safety solely dependent on managers and safety specialists, it can be said that the organisation has failed to win people over to the safety effort. Conversely, when safety issues are identified and acted on by all employees as part of their normal working routine, the organisation can be said to have won over people's hearts and minds to the safety cause.
>
> [(IAEA, 2002a, p. 17)]

Workers are encouraged to engage in communication about safety issues (e.g. through reporting), self-vigilance (be aware of and careful with risks), voluntarism, honesty (in relation to errors), and actively caring for each other. As indicated by Global Aviation Information Network (GAIN, 2002, p. ii).

> Each one of us will be expected to accept responsibility and accountability for our own behaviour; Each one of us will have an opportunity to participate in developing safety standards

> and procedures; We will openly communicate information about safety incidents and will share the lessons with others; Each of us will be concerned for the safety of others in our organisation.

This calls for 'voluntarism' to engage with safety (and the reporting of safety issues), also accompanied by concerns on how to preserve the integrity of workers so as they can speak up about safety without fear of retaliation. As pointed out by a healthcare association.

> If individuals fail to report near misses and significant events, underlying systemic issues will remain unseen and unaddressed. Without a strong and just safety culture, frontline providers and management may fail to identify an event as reportable or may hesitate to report such an event.
>
> [(NAHQ, 2012, p. 7)]

The three statements not only encompass attributes of safety culture; but also, constitute it in its institutional forms (Foucault, 2002a, 2002b). The statements, being discursive 'functions', display an arrangement of elements (e.g. the level of management commitment to safety, workers participation and willingness to report) used for measuring, comparing and controlling safety culture. On the one hand, their attributes appear in scientific research for empirically operationalizing safety culture (e.g. Wiegmann et al., 2004); on the other hand, these attributes are part of industrial legislation to enforce safety culture into organisations (e.g. IAEA, 2002b). Both institutional forms are intertwined and reinforce each other in the constitution of the object, since the body of research is based on empirical observations guided by mainstream assumptions about social behaviour.

The relationship between the field where safety culture as a social-scientific object is developed (i.e. the research community) and the field where it is manifested, engineered, and evaluated (i.e. industries, organisations, social systems) creates a reinforcing cycle of research and application. Safety culture 'best practices' are defined in scientific reports, but at the same time these reports are taken as a legitimate and valid parameter for the establishment of industrial legislation for guiding and changing organisational practices. As a result, nowadays, it is quite usual to come across safety culture parameters that are reciprocally adopted in research and legislation throughout multiple domains – such as those found in guides for self-assessment of safety culture in nuclear installations (e.g. IAEA, 2002b) and in safety culture surveys in health care (e.g. Colla et al., 2005). It is a 'disciplinarisation of knowledge', since what we accept as valid knowledge is based on the parameters of 'truth' authorised by power relations (Foucault, 2004). This 'political economy of truth' is thus based both on scientific knowledge and on institutions that operate with it (Foucault, 1980). The relation is neither about the knowledge produced by academics while being applied in industry, nor the other way around. It is a regime of truth that crosses both institutions in line with mainstream ideas on accident prevention.

The attributes provide qualitative and quantitative parameters for scientifically describing the object. Interpretivist studies explore how and to what extent organisational artefacts, rituals, symbols, and practices reflect these statements (e.g. Atak and Kingma, 2011; Collinson, 1999; Edwards and Jabs, 2009). Functionalist studies focus on quantifying the degree of which the social body of an organisation perceives safety as a value, often by means of surveys and questionnaires (e.g. Ek et al., 2007; Gonaçalves Filho et al., 2010). Industrial legislations establish standards and recommend practices that explicitly address the three statements and their attributes. Scientific and industrial practices, together, establish a regime of truth that constitutes a normative mainstream where safety culture norms (i.e. rules, standards, models) are neither completely developed by the research community nor by the organisations: they are established in the interaction between both.

The statements are part of a discursive formation that constitutes and reinforces the status of the object while circulating it in different enunciative modalities, such as accident reports, institutional documents, safety statistics, consultancy work, and scientific articles (Foucault, 1997, 2004). Based on them, organisations, managers, and employees are evaluated, certified, judged, prosecuted, forgiven, blamed, made responsible. In short, this object governs them. It is, therefore, an object with important power and knowledge effects (Foucault, 1980).

3. Effects of the object from a genealogical perspective

While the archaeological perspective provides an understanding about the knowledge construction of safety culture as a scientific object, including the system and rules that generate discursive regularities on it (e.g. definitions, statements), the genealogical perspective is a way to analyse the effects of such knowledge through mechanisms of power (Foucault, 1980). It does not concern itself with the search for origins, but rather refers to the study of certain forms of power and knowledge as elements connected in discursive practices. Genealogy considers the way knowledge emerges, remains, and adapts to the discourse as part of a political apparatus of power that constitutes certain conditions of existence with effects for organisations and individuals.

In this study, we describe four effects that safety culture has in the discourse of accident prevention: (a) it implies a 'normative homogeneity' of values, beliefs, and behaviours that silences conflicts, ambiguities, and differentiations; (b) as part of a set of techniques that promote disciplined safe-behaviour of workers, it has disciplinary effects that focus on the production of a useful 'docile body'; (c) it has biopolitical effects focusing on the control of populations; and (d) based on a set of institutional techniques, procedures, and statistical control of organisations, it constitutes a form of governmentality in the way it connects individual conduct to a larger biopolitical control of the population.

The first effect is derived from a 'power and knowledge' analysis of safety culture, in which, according to Foucault, the discourse allows what may (or may not) be said in a particular domain (Foucault, 1980). The second effect is based on the notion of disciplinary power (Foucault, 1977) – one of the most adopted perspectives of Foucauldian analysis in organisational studies (Knights, 2002). The third effect is based on the perspective of biopolitical power, which is focused on technologies for the control of populations (Foucault, 1997, 2008). The fourth effect draws on the concept of governmentality – which is a complex form of power that connects individual conduct with particular forms of control of populations (Foucault, 2004). The aim here is not to identify effects in an exhaustive manner, but rather to show some of the most salient (but not exclusive) symptoms of the safety culture discourse.

3.1. Normative homogeneity

As an object, safety culture addresses a particular aspect of an organisational system. The way it is defined implies a 'normative homogeneity' of values, beliefs, and behaviours that functions to silence important conflicts. Safety is celebrated as a moral commitment, a normative choice, that crosses all levels, but not necessarily in contrast with other organisational demands, such as production, quality, or cost savings.

Several studies have shown safety as an emergent situated practice resulting from a collective process of construction of meaning. It involves complex cultural elements, including people,

technologies, and symbolic forms (e.g. Gherardi and Nicolini, 2000; Gephart, 2004; Gephart et al., 2009). Safety is neither the only aim, nor even the main goal of an organisation (Hollnagel, 2009), rather, it is the condition necessary for an organisation to produce and deliver its products and services. Vaughan (1996, 1999, 2004, 2006), for example, has shown how the effects of the faster, better, and cheaper production culture at NASA contributed with normalising beliefs about risk invulnerability to the *Challenger* accident. Likewise, Starbuck and Farjoun (2005) collected several studies on the Columbia space shuttle accident, showing how safety was intertwined with larger organisational goals, practices, technologies, and routines. In any of these cases, risk taking was not solely derived by degradation of behaviour, beliefs, and values. Safety culture, as an object to explain accident causation, is part of an analytical sacrifice, which in hindsight reduces a complex social order to a limited set of artificial elements (Dekker, 2011). Several researchers challenge this kind of retrospective reductionism with different systems of explanations, using concepts such as 'fine-tuning' (Starbuck and Milliken, 1988), 'normalisation of deviance' (Vaughan, 1996, 2006), 'practical drift' (Snook, 2000), 'efficiency-thoroughness trade-offs' (Hollnagel, 2009), or 'drift into failure' (Dekker, 2011).

Prioritising safety over business and organisational decisions (Lofquist, 2010) is to ignore features of complex cultural schemes that contribute to the collective construction of safety in organisations (Vaughan, 1999, 2006). These schemes include, among others, "heterogeneity, competitive and conflicting interests, and inequalities in power and authority" (Sibley, 2009, p. 360). Edwards and Jabs (2009) show that "mixed-organisational forms at work send mixed messages to workers" (p. 719). According to them, the way workers experience these contradictions may not be just an unintentional by-product of organisational culture, but rather it can produce the opposite of the intended effects – "the real importance of safety is ambiguous to managers and workers, while the role of productivity is absolutely clear" (p. 710).

Martin (1992) suggests three perspectives on organisational culture: integration, differentiation, and ambiguity. In doing so, she emphasises that organisational culture should not be seen as a solid homogeneous block of values and beliefs. Richter and Koch (2004) empirically identified evidences of these three perspectives.

> Quite clearly, it is not possible to detect a consistent unifying culture, which unite the members of the organisation on safety related questions. ... [S]afety culture analysis clearly showed a differentiated set of three distinct cultures. ... From the point of view of accident prevention ambiguity of intentions prevailed. ... Messages from management were ambiguous, stressing in one context machining time and wastage rates, and in another, safety perspectives (p. 714–716).

Empirical studies also show that organisational dilemmas in relation to safety emerge when employees reproduce and negotiate risks and safety measures in relation to inconsistencies and contradictions in regards to production (e.g. Rasmussen, 2013).

Safety culture can be seen, therefore, as a normative homogeneity that calls for safe behaviour. It is a discontinuous aspect of an organisational system of meaning that takes the focus away from technologies and risks (Rollenhagen, 2010). It addresses the message that safety is a matter of commitment and engagement with the proper behaviour, values, and beliefs. As mentioned by Sibley (2009, p. 356), "[r]ather than a specific organisation of roles and learning processes or a measurable set of attitudes and beliefs, safety is understood as an elusive, inspirational asymptote, and more often only one of a number of competing organisational objectives". Isolating safety culture from a complex web of organisational processes silences important conflicts by setting up an agenda of moral commitment to safe behaviour.

3.2. Disciplinary effects

Disciplinary power can be exercised through a number of instruments: hierarchical observation, normalising judgment, and examination (Foucault, 1977). Hierarchical observation puts on display the individual's behaviour in order to improve safety at a local and general level. Several forms of observation – such as safety climate assessment or safety audits – are instigated in the name of good safety culture. Likewise, several other forms of hierarchical observation, such as local supervision, video cameras, architecture and layout of the working space, or even more sophisticated forms of monitoring that include the use of flight data and voice recorders in airplane cockpits, constitute the 'modern panopticism' of safety. Workers need to be visible, and they need to know that they are. More specifically, the later is crucial for disciplinary power – workers need to know they are visible even when nobody is watching. Because the disciplinary effect is the individual's self-vigilance, surveillance is more economical than punishment (Foucault, 1977).

Several studies have shown how performance assessment of workers is a formal managerial observation technique (e.g. Swell and Wilkinson, 1992; Willmott, 1993) that often comes with the price of resistance and conflicts (Collinson, 1998). "Tying safety to performance assessments often resulted in supervisors blaming and penalising individuals – practices that were at odds with the espoused company policy of open communication" (Collinson, 1999, p. 586). Rasmussen (2013) demonstrates how safety culture sets to accommodate an obligation for workers to 'care for oneself' – a call that places the commitment and responsibility for risk on workers. Hierarchical observation measures workers as confessional, calculable objects, producing 'modes of subjectivation'. According to Collinson (1999, p. 580), "employees and middle managers tend to internalise the exposed values of these corporate controls". We believe it is even more than that: workers assume a mode of existence (i.e. a way of being, an 'identity') in relation to organisational safety, which is expressed in their movements, in what they say, and how they think.

Normalising judgement is supported by hierarchical observation techniques to make workers' behaviour susceptible to punishment or reward (Foucault, 1977). It is materialised in workers' normalisation of certain behaviours and beliefs through practices and habits, following sanctions from managers. Punishment and rewards are adopted as a way to approximate behaviour to a 'normalised state'. Rather than the established norms (i.e. standards, rules and legislations) for guiding organisations and workers within them, normalising judgement delineates a new social framework with which organisations and workers have to comply. It arises from the social and dynamic tension between what is and what is not considered as 'acceptable'. In this sense, safety culture has the effect of qualifying the organisation's and workers' behaviours and beliefs as responsible or irresponsible, normal or abnormal, good or bad, based on the established (moral) norm. This logic serves to highlight deviances, rewarding what is normal and punishing what is abnormal, in order to bring behaviour close to the norm (Foucault, 1977). As put by ICAO.

> Organisational culture sets the boundaries for accepted operational performance in the workplace by establishing norms and limits. ... Culture sets the rules of the game, or the framework for all interpersonal interactions. It is the sum total of the way people conducts their affairs in a particular social milieu and provides a context in which things happen (2009, p. 39).

Rather than formal rules or procedures, safety culture is said to put 'boundaries' on what is, and what is not accepted; it regulates the conduct of workers by calling for 'the way we do business around here'. Values, beliefs, and behaviours are judged in relation to this artificially (but also discursively) created normative homogeneity. In scientific research, punishment and rewards are practices reinforced by being described as either an important trace of safety culture – in interpretivist studies – or as an indicator of good safety culture – in functionalist studies. In an extensive review of the literature for identifying the variables for their safety culture survey in aviation, Wiegmann et al. (2004) state that.

> One of the key components of an organisation's safety culture is the manner in which both safe and unsafe behaviour is evaluated and the consistency in which rewards or penalties are doled out according to these evaluations.... A fair evaluation and reward system is needed to promote safe behaviour and discourage or correct unsafe behaviour.... An organisation's safety culture, therefore, is reflected by the extent to which it possesses an established system for reinforcing safe behaviours (e.g., through monetary incentives or public praise and recognition by management and peers) as well as systems that discourage or punish unnecessary risk taking and unsafe behaviours. However, an organisation's safety culture is signified not only by the existence of such reward systems but also by the extent to which the reward systems are formally documented, consistently applied, and thoroughly explained and understood by all of its employees (p. 127).

It is not only an example of how normalising judgment is integrated in safety culture research, but also a call on organisations to document and formalise it. Edwards and Jabs (2009) warn, however, that the safety of a worker is an anecdotal stance that can be "only symbolically and occasionally rewarded (...). As a result in practice, 'safe' is a necessary but insufficient characteristic of a worker whom will be punished if found wanting, but not necessarily rewarded if excellent" (p. 709). In an empirical study of safety reporting policies in North Sea oil installations, Collinson (1999) shows important symptoms of how safety incentives negatively affect reporting.

Hierarchical observation and normalising judgment are disciplinary techniques that come together in the examination, which makes the individual into a 'case', for himself and for others (Foucault, 1977). IAEA (2002b), for example, establishes the principle of self-assessment as an instrument of examination: "Self-assessment for all important activities at a nuclear plant ensures the involvement of personnel performing line functions in detecting problems concerning safety and performance and solving them"(p. 26). The reporting of safety can be seen as an act of confession circumscribed within the organisational safety culture framework of knowledge. Safety culture, as a normative homogeneity, is invoked as a reference to judge good and bad behaviour. It is the organisation's response to the incident that defines the line of what is acceptable and what is not, rather than its formal policies (Dekker, 2012).

Safety culture has, therefore, the disciplinary effect of increasing a worker's sense of self-care and self-responsibility. Empirical studies have also shown some of these effects (e.g. Chikudate, 2009; MacEachen, 2000; Gray, 2009; Rasmussen, 2010, 2013; Zoller, 2003). As put by Tharaldsen and Haukelid (2009, p. 376) "critical behaviours are identified and targeted for change... [P]erformance tracking and performance goals are supplemented by motivational activities and (positive) feedback systems. The right behaviour is reinforced.... The goal is to change risky behaviour into safe behaviour". These disciplinary effects are strongly manifested in the three statements that we have discussed in the previous sections and the organisational practices encompassed by them.

3.3. Biopolitical effects

Where disciplinary power focuses on technologies deployed to make individual workers behave (more) safely, biopower focuses on managing a population (Foucault, 1997, 2004, 2008). It may be observed in a set of technologies adopted to compare the safety performance of organisations, based on their safety culture characteristics, promotion of industry best practices of safety management, and motivational campaigns that sloganize 'safety first'.

Safety culture is used to compare organisations on the basis of stereotypes normatively defined according to safety culture's 'stages of development'. IAEA (2002a), for example, defines three stages of safety culture development: (first stage) safety based on rules and regulations; (second stage) safety as an organisational goal; (third stage) safety based on learning.

> When an organisation's emphasis is on procedures (...) Stage 1 is likely to be the preferred choice. Stage 2 would be the choice if the emphasis were more on planning and achieving safety goals. (...) The third stage corresponds to an organisational emphasis on continuous improvement and achieving excellence. [This] evolution (...) has influenced organisations in how they view safety culture.
>
> [(IAEA, 2002a, p. 17)]

Similarly, Hudson (2007, p. 704) proposes another model that "helps to define a pathway from less to more advanced" safety cultures based on 5 stages: pathological, reactive, calculative, proactive, and generative. These stereotypes are based on the logic that organisational safety culture can be measured based on the specifications of the object, hitherto also producing statistical parameters for industrial and managerial control. It is supposed to enable the evaluation of the extent to which the three statements of safety culture are part of an organisational life.

According to Edwards and Jabs (2009), lawsuits presume organisations to document everything possible to show a good safety culture. In this sense, a bureaucratic machinery is enforced and, in the name of good governance, training, auditing, rebuking of workers who put public at risk, and everything that could show the organisation respond quickly and generously to safety concern are documented. Workers are managed "hierarchically by means of personal testing, (...) selective recruitment, rules, and technical measures to reduce the consequences of human acts" (Rasmussen, 2010, p. 463). As an effect, safety culture is posed as part of a 'bureaucratic machinery'.

As a biopolitical instrument, safety culture impels organisations to embrace innovative safety management practices in a bureaucratic fashion (Edwards and Jabs, 2009). It contributes to preserve a bureaucratic model of organisations, encouraging them to keep working like this (Sibley, 2009). Safety management systems, said to support safety culture, are transformed into a new measure of liability, based on both the assumption of a rational functioning of organisations and the use of formal methods of control and evaluation. Organisations, in this sense, reinvent the way workers and managers are held accountable – this time for not having the proper safety culture or for not implementing safety management in accordance with legislation or the industry's best practices. "As the phenomena continually recede before efforts to control them, research advocating safety culture seems, in the end, to suggest that responsibility for the consequences of complex technologies resides in a cultural ether, everywhere or nowhere" (Sibley, 2009, p. 363).

Based on the maximisation of the body as a useful power and the minimisation of its political force, biopolitical power focuses on the control of a population (Foucault, 2008). It can be observed in the intensification of behavioural-safety campaigns, where organisations sloganize 'safety first' and try to promote 'safety awareness' as a quick-to-fix approach. It is fast and cheap to design procedures and ask workers to follow them, even though it is not necessarily the best option. Safety culture calls on organisational commitment at all levels, as evidenced in the three statements discussed in the previous section. Furthermore, as a biopolitical instrument, safety culture helps to make people believe that the bureaucratic machinery of safety works. In this sense, the greater the organisational commitment to this kind of governance, the better safety culture is supposed to be; the more safety practices and procedures an organisation has incorporated, the better its safety performance is supposed to be. Safety culture, therefore, offers a possibility for both stereotyping organisational (either poor or good) safety culture and promoting the belief that the bureaucratic model is the most viable one (Sibley, 2009). It defines a knowledge related to the government of the conduct of individuals, which Foucault (2004) called 'governmentality'.

3.4. Safety culture as a form of governmentality

Governmentality is a complex form of power that focuses on the government of populations by connecting the conduct of individuals to administrative standards (Foucault, 2004). It is found in the relation between biopolitical and disciplinary mechanisms, such as a calculated action over the relations that constitute the social body. As a form of governmentality, safety culture produces modes of subjectivation in which individuals understand themselves as part of an organisation. In this sense, safety culture is an expression of a safety management discourse that controls the conduct of individuals. It extends safety responsibility from the state to organisations, and from organisations to workers, so that everyone is engaged in self-responsibilization. Governmentality thus crosses all levels of an organisation. The central issue is not the coercive force exercised over those that are governed, but rather the different exercises of power that are connected in the name of good practice (Ramos do Ó, 2005).

Safety culture, when introduced at a site, relies on the notion that worker behaviour (e.g. complacency, human error) is the most frequent cause of accidents (Sibley, 2009). Such statements are often met without much opposition from the workforce, because "[p]revious discourses on human factors, errors and clumsiness have already placed the disciplined worker body at the centre of what incident causality and preventive OHS [(occupational health and safety)] work should be about" (Rasmussen, 2013, p. 92). In an empirical study centred on how senior managers seek the consent of other employees from behavioural-safety implementation, Rasmussen (2010) demonstrates how governmentality is exercised through strategies that combine reciprocal relations between biopolitics and discipline. These strategies enforce compliance with safety programmes, "managing and forming employees who are willing and able to assume responsibility for OHS programmes of self-regulation and self-care" (Rasmussen, 2010, p. 463). According to INSAG (1988, p. 12) "an established safety culture governs the actions and interactions of all individuals and organisations engaged in activities related to nuclear power".

During the last decades, a debate between Normal Accident Theory (NAT) and High Reliability Theory (HRT) has been exploring the controversy of the limits of safety in complex systems, such as nuclear power plants (Perrow, 1999; Sagan, 1993; Shrivastava et al., 2009; Weick, 2004). According to NAT, complex systems require, at the same time, a centralised and decentralised form of communication and decision-making in order to be safe. This, thus, results in an unsolved paradox: how to manage the (simultaneous) centralisation and decentralisation of safety related decision-making in such organisations? HRT suggests safety culture as the element that allows complex organisations to remain safe, since it assumes that shared values and beliefs would lead to similar patterns of decisions at both a centralised and decentralised level within an organisation.

> The theoretical debate (...) is important for safety culture research because there is now some emerging evidence, (...) that highlights the critical role played by organisational culture in filling gaps in formal operational procedures in the face of complex and tightly coupled task environments (...). 'High reliability' culture unites commitment to mission orientation with safety culture norms, and comprises (...) a set of fundamental values; of clan, commitment to ownership of a problem by the person who finds it first, personal responsibility for activities.
>
> [(Pidgeon, 1998, p. 207)]

Safety culture is an amalgam that connects individual decisions and behaviours into organisational standards, therefore crossing disciplinary and biopolitical domains. This connection happens in the articulation of governing techniques focused on population (such as industrial policies, best practices, and statistical data) with disciplinary instruments (hierarchical observation, normalising judgment, and examination) focused on individuals. For instance, if industrial statistics show 'non-adherence to procedures' as an important cause of accidents, then the disciplinary effect may be the increase of hierarchical observations to assess workers' adherence to procedures. At the state level, the government of organisational safety management is more efficient than the controlling organisational risks; similarly, at the organisational level, the government of individuals is more efficient than penalising them for accidents.

Safety culture calls on workers to participate and, at the same time, it advocates empowerment. From a governmentality perspective, this participation is not an autonomous act of consciousness, since workers are morally convoked to take part in safety related issues. Also, they have to exercise this participation with responsibility, which in turn means 'adhering to organisational norms'. According to INSAG (1988, p. 14):

> The response of all those who strive for excellence in matters affecting nuclear safety is characterised by a questioning attitude, plus a rigorous and prudent approach, plus communication. The desired results are achieved only if the attitudes of individuals at all levels are responsive to the safety culture framework established by management.

Safety culture also presumes empowerment of workers in safety related issues. According to Wiegmann et al. (2004, p. 127) "employee empowerment means that employees have a substantial voice in safety decisions, have the leverage to initiate and achieve safety improvements, hold themselves and others accountable for their actions, and take pride in the safety record of their organisation". In this sense, there are 'agents of consciousness' inside organisations, who are supposed to provide workers with the power they need to assure safety. At the same time, the empowerment comes with moral values related to integrity and honesty, and workers are called upon to be responsible for their acts. Safety culture, therefore, builds on a logic of self-responsibilization and, at the same time, that of making others responsible.

4. Conclusion

The archae-genealogical approach adopted in this study provided an extensive examination of safety culture as an object in the discourse of accident prevention. In the archaeological perspective described in Section 2, it was shown that, as an object, the emergence of safety culture was not due to its inherent proprieties or a positivist "reference to the ground, the foundation of things" (Foucault, 2002a, p. 53). In fact, the emergence of the object is related to politically relevant events, such as the large industrial accidents during the late 1970s and 1980s, and the pre-existence of knowledge related to organisational culture at the time the object was named. Interpretivist and functionalist approaches function as authorities of delimitation of the object by defining, describing, correcting, validating, and refuting propositions in relation to it. Safety culture thus emerged from certain knowledge constructions and rules that deserve to be known. Our archaeological approach offered a way to understand the conditions of these discursive practices, including its accumulation, transformation, and discontinuities. Safety culture is not merely seen here as a consequence of a positivist and self-correcting progress of safety science, but rather as the manifestation of knowledge based on both the tensions between academic and industrial practices, fuelled by politically relevant assumptions. Nevertheless, the aim of this article was not to discuss the ontological or epistemological nature of the object, but rather to show the existence of institutional practices related to the production of it. The discursive use of the object contributes to produce its status among other objects in the safety discourse.

In the genealogical part described in Section 3, we took the delineation of safety culture as a discursive object as a basis for examining how it encompasses a set of discursive practices that focus on governing workers and organisations. At the level of the discourse, the normative homogeneity of the definition of safety culture has a strategic role: it clips from a complex organisational context values and beliefs to call on workers for safe behaviour, shadowing and silencing conflicts related to ambiguity, differentiation, and all kinds of production pressures. In doing so, it takes the focus away from other factors, such as risks related to the environment and technology, addressing the message that safety is secured by a moral individual and collective commitment. In this sense, the three statements related to the specifications of safety culture, as shown in Section 2, constitute the regime of truth of the object and embrace crucial components used in scientific, managerial, and industrial documents. As shown in Section 3, it makes the object circulate in institutional practices, thereby reinforcing its discursive status (such as the human error of organisation in the early twenty-first century).

As an object of knowledge, safety culture has important micropolitical effects of power. It produces and legitimises a bureaucratic machinery that locks the conduct of individuals into administrative standards. In this sense, it reinvents accountability in several forms: (a) increasing the workers' notion of self-responsibilization by addressing their participation and empowerment; (b) enforcing managerial supervision and adoption of innovative 'industrial best-practices'; (c) legitimising the oversight role of industrial authorities, who will measure, compare, and regulate organisations for biopolitical control of safety.

The archae-genealogical approach presented here has important implications for research on organisational safety. First, it highlights the importance of treating safety research not dissociated of its broader organisational context that includes permanent conflicts and negotiations among several goals (safety being only one), as already advocated by several researchers (e.g. Hollnagel, 2009; Richter and Koch, 2004). Second, it emphasises the need for including the issue of power in the agenda of organisational safety studies. Other researchers have already elaborated on this, such as Antonsen (2009a), who affirms that the "issue of culture and power are so intertwined that safety culture research should incorporate perspectives of power and conflict" (p. 183). We suggest that a Foucauldian approach to power – which takes it as a strategic exercise, a productive force – provides interesting insights into how certain discursive objects are constituted and display effects of discipline, biopolitics, and governmentality.

The Foucauldian approach has been adopted as an analytical framework for other cultural, managerial, and organisational studies (e.g. Alvesson and Karreman, 2000). Even thought this perspective is still in its early stages in the field of safety, further empirical studies might potentially contribute to answer questions like: how are individuals subjectivated by the safety discourse? That is, how do they assume certain modes of existence according to this discursive practice? How do the instruments of hierarchical observation, normalising judgement, and examination operate as a disciplinary power with effects on workers' safe behaviour? How do biopolitical practices, such as statistical data, accident investigations, industry's best practices, set an agenda of governing practices of institutions and individuals in it? And what are the effects that these governing practices have on the conduct of workers, constitution of values, and notion of accountability? Certainly, answers to these and other questions might help to explore some prominent issues on the safety research agenda, such as: the social construction of safety (see Rochlin, 1999); the normalising judgement as a mechanism of normalisation of deviance (see Vaughan, 1996); reporting as a ritual of confession, responsibilization, and participation that contributes to reconfigure the notion of self-accountability (see Dekker, 2012); the role of surveillance systems in promoting, deflecting, and interpreting safe work practices and statistics (see Turner and Gray, 2009), to name just a few.

In order to answer these questions and further explore main issues on the agenda of safety research, future empirical studies could concretely adopt the Foucauldian approach for examining technologies, such as safety reporting, safety audits, or quality assurance programmes. These technologies are widely adopted by risk-rich organisations based on a functionalist fashion in order to provide both the visibility of dangers and the managerial control of them. Rather than just more managerial tools, these technologies offer a valuable setting for understanding safety as an evolving, political, negotiated order in organisations by displaying disciplinary, biopolitical, and governmentality effects. For example, they may highlight how safety reports, audits or quality assurance programmes contribute to hierarchical observations, normalising judgement, and examination; how managerial compliance, with non-adherence to the norms and rewards for production, dynamically delineates the framework on acceptable and unacceptable behaviours by replacing the 'thresholds of norms'; how statistical data and performance indicators govern organisations by offering a viable way for connecting industry high-level aims with organisational goals; and how these technologies reinforce particular modes in which individuals understand themselves as professionals.

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