

**BRUMADINHO DAM DISASTER: EXPLORING REGIMES OF JUSTIFICATION IN ORGANIZATIONAL MISCONDUCT**

**HELNA ALMEIDA DE ARAUJO GÓES**

UNIVERSIDADE FEDERAL DO PARANÁ (UFPR)

**GERMANO GLUFKE REIS**

UNIVERSIDADE FEDERAL DO PARANÁ (UFPR)

Agradecimento à órgão de fomento:

This work has been developed with the support of the coordination for the improvement of higher education personnel- Brazil (CAPES) - financing code 001.

# BRUMADINHO DAM DISASTER: EXPLORING REGIMES OF JUSTIFICATION IN ORGANIZATIONAL MISCONDUCT

## ABSTRACT

“Unexpected”, “unforeseen”, harmful, and complex events, such as disasters, challenge the society’s taken-for-granted perceptions of an organization. We apply Boltanski and Thévenot’s justification theory to identify the orders of worth employed by Vale on the rupture of the Brumadinho dam. We aim to analyze how Vale provided justifications to give sense and (attempt to) repair its image in a complex social situation, Brazil’s worst working tragedy and one of the world’s worst environmental disasters. We apply a qualitative analysis strategy to interpret the justifications displayed in Vale’s public statements, sourced from secondary data and we compare these to public justifications accounted in newspapers to evaluate arguments that have surfaced in Brazil’s public debate from January until December of 2019. The results demonstrate that both Vale and the media prioritized similar worlds while employing them with dissonant interests. Our analysis shows that when a catastrophic event takes place, an organization may give sense and attempt to repair its image by disseminating messages related to technical information and reparation procedures, thus, taking less responsibility for the “unforeseen and unimaginable” disaster. Moreover, we aim to contribute to the misconduct studies by enlarging our understanding of how organizations mobilize justifications during and after a disaster.

**Keywords:** Misconduct; Justification theory; Vale.

## 1 INTRODUCTION

On January 25th, 2019, Brazil’s most significant working tragedy and one of the world’s worst environmental disasters (Darlington et al., 2019; Ragazzi & Rocha, 2019; Souza & Fellet, 2019) took place in Minas Gerais, Brazil. The disaster accounted for 270 deaths, destroyed communities and had an unaccountable impact on wild fauna and flora (Ragazzi & Rocha, 2019; Canofre, 2020). A rupture caused the disaster in a dam at the *Córrego do Feijão* iron ore mine owned by Vale, one of the world’s top three mining companies at that time (Els, 2020). Vale was also involved in the previous Mariana dam disaster – that took place on November 5th, 2015, caused by a dam collapse that killed 19 people and devastated the local community and environment (Fernandes et al., 2016). In facing such a disastrous event, organizations seek to employ justification in an attempt to give sense and to repair its image.

The corpus of research related to decision-making during times of crisis offers diversified approaches (Kunreuther & Bowman, 1997; Madsen & Desai, 2010; Nutt, 2010; Weick, 1988). Situations of high consequences may threaten the organizations’ survival and demand complex interpretations. The decisions and actions taken by an organization during a crisis should provide adequate justifications, i.e., justifications that make sense (to the public), to control the situation and mitigate its adverse effects (Weick, 1988). We bring a sociological framework into the studies of misconduct to suggest an alternative approach to the comprehension of a catastrophic event (Perkiss & Moerman, 2020). In this account, our research question is: How did Vale employ justifications on the Brumadinho dam disaster to give sense and (attempt to) repair its image?

To interpret such justifications, we apply Boltanski and Thévenot’s framework (2006) to identify and categorize their orders of worth in the case study of Vale organizational misconduct. The justification theory reinforces the actors’ agency by stating that their decisions and actions demand justifications. Justifications are needed because, during the interaction of – human and non-human – beings, dispute or disagreement arises, and actors seek to legitimate

and validate justifications to reach an agreement/outcome. A situation of agreement is required to coordinate different beings and their activities and interests without appealing to violence in social life.

Actors – by employing their moral and cognitive capacity to make judgments – refer to a higher common principle, in order to evoke ideals justice and the common good and thus, establish an agreement or a compromise and end a dispute (Dodier, 1993; Thévenot, 2002). An actor may be related to one or more worlds for short or long periods of time. According to the sociology of conventions, it does not make sense to study long periods, since the social reality and the justifications employed are dynamic (Dodier, 1993; Thévenot, 2002). Therefore, we focus on the justifications employed by Vale during the year of 2019, starting from the day of the rupture of the Brumadinho dam.

Our inquiry is based on a qualitative single case study since our research question demands an interpretative methodology correlating the phenomenon with its context (Baxter & Jack, 2008; Stake, 1995). We collected and transcribed videos and news reports published on the organization’s official website. We interpreted and categorized justifications employed by Vale in light of the displayed orders of worth. Then, we compared these with arguments prioritized in Brazil’s public debate collected from newspapers’ articles.

The results provide a perspective of how Vale gave sense to a disaster caused by actions of misconduct and demonstrate that the industrial and market justifications are more emphasized in the event that had significant implications regarding human lives and environmental costs, besides the economic and social impacts. Meanwhile, Brazil’s public debate gravitated on emphasizing impacts on the environment and the local community and the unfolding of investigations and reparation procedures.

The present article is divided into the following sections: (1) we review the literature used to analyze the case, (2) we describe the methodology and the case study and, (3) we describe and analyze the findings and, (4) we discuss the results and present our study’s contributions and limitations, proposing future research.

## **2 SELECTED APPROACHES APPLIED TO BRUMADINHO DAM RUPTURE**

When it comes to studying organizational crisis caused by misconduct, there is a wide range of research streams, applied theories and diverse lexicon used to describe the same concepts, that may cause some confusion (Hersel et al., 2019). We focus on three main topics to study the case of Brumadinho dam rupture: disaster, misconduct, and crisis. Then we show how the justification theory may be used to analyze this case.

### **2.1 Organizational approaches**

Influenced by the studies on the Bhopal disaster (Kunreuther & Bowman, 1997), the Deepwater Horizon oil spill event (Matejek & Gössling, 2014), the case of Phelps Dodge and Blackwell, Oklahoma (Messer & Shriver, 2009), the nuclear accident in Germany that involved Vattenfall Europe (Patriotta, Gond, & Schultz, 2011) and Mariana dam disaster (Ceni & Rese, 2019), we seek to identify other theoretical lenses that could be applied in order to interpret organizational sense giving processes in cases of mistakes, misconducts and disasters – what Vaughan (1999) called “the dark side of organizations” – and their consequences. The Brumadinho dam rupture can be considered a disaster according to Vaughan’s (1999) definition:

Disaster is a type of routine nonconformity that significantly departs from normative experience for a particular time and place. It is a physical, cultural, and emotional event incurring social loss, often possessing a dramatic quality that damages the fabric of social life [...] Mistake and misconduct often

occur in the prehistory of accidents and disasters, the latter two distinguished from mistake and misconduct by the social cost and quality of surprise. (p. 292)

Considering Vaughan's argument that "Mistake and misconduct often occur in the prehistory of accidents and disasters, the latter two distinguished from mistake and misconduct by the social cost and quality of surprise."(p.292), the Brumadinho dam rupture is considered to be a case of organizational misconduct due to the evidence that the company was aware that the Brumadinho dam was unsafe (Ragazzi & Rocha, 2019; Jamasmie, 2020) and reoccurrence after the Mariana dam disaster.

Henceforth, the primary reference on organizational misconduct and corrective actions is based on the review of Hersel et al. (2019), and by combining their definition with Greeve, Palmer and Pozner's (2010), organizational misconduct is understood "as an illegal, unethical, irresponsible behavior by an organization that transgresses a line separating right from wrong and that harms its stakeholders" (Greve, Palmer, & Pozner, 2010, p.56; Hersel et al., 2019, p.549).

For the purpose of this study, Hersel et al.'s (2019) typology of organizational misconduct is used to characterize this case as an environmental violation since the event demonstrated that the disaster harmed both the society and the environment, wherein the main stakeholder groups affected were, the local and national community as well as the natural environment. Such violations "typically benefit the firm through cost savings or increased efficiency relative to legal or ethical alternatives" (Hersel et al., 2019, p. 553).

We also share Bundy and Pfarrer's (2015) interest on studying how an organization perceives and responds during and after a crisis and we use their definition of a crisis as "an unexpected, publicly known, and harmful event that has high levels of initial uncertainty interferes with the normal operations of an organization and generates widespread, intuitive and negative perceptions among evaluators" (p. 345). Therefore, we use the terms "crisis" and "disaster" as synonyms.

Bundy and Pfarrer (2015) categorize three main types of social evaluation in their framework: (1) social approval, (2) legitimacy and, (3) reputation. Social approval is related to the perception of general affinity toward an organization. Legitimacy is related to the assessment of an organization's appropriateness following social norms and values. And reputation, related to the assessment of an organization's ability to deliver value. From the analysis of the videos and news reports from Vale's official website, we noticed that the company addressed all three types of social evaluation as demonstrated in the results and discussion sections.

Moreover, there are some key elements to understand an organizational decision-making process during a crisis: (1) high levels of uncertainty inside and outside the organization, (2) evaluators quickly begin to associate the event with an organization, especially when it is perceived controllability and severity in the situation, as it happens in disasters and, (3) social approval is of vital importance to the organization's survival (Bundy & Pfarrer, 2015). In Vale's case, those key elements are negatively increased with the organization's context: Vale was associated to two dam disasters in a period of three years, one defined as the worst environmental disaster (Mariana) and the other defined as the worst working tragedy (Brumadinho) of Brazil's history (de Freitas et al., 2019; Oliveira & Mendes, 2019; Ragazzi & Rocha, 2019).

We use an interpretative analytical frame to analyze a case with high levels of uncertainty and complexity, a situation of crisis influenced by actions of misconduct. This is the link between the aforementioned organizational approaches with justification theory since such conditions enable distinct forms of interactions among actors that seek to overcome the state of ambiguity and uncertainty by employing justifications (Blokker, 2011).

## 2.2 How justification theory may be used in misconduct studies

The justification theory framework analyzes situations of disagreement wherein justifications are employed to reach an agreement/outcome in non-violent and legitimate ways, among different actors. Thus, it provides a model to analyze actors' behaviors, particularly discourses and actions (Boltanski & Thévenot, 2006).

We apply this framework to study a case of organizational crisis, caused by actions of misconduct of the third mining company in the world (Els, 2020), Vale, during the Brumadinho dam disaster in 2019. More specifically, the justifications that the company evokes in an attempt to give sense and (attempt) to repair its image.

Agreement and/or end of a dispute is reached by evoking justifications grounded on higher common principles. These principles relate to the ideals of justice and the common good, superior to individuals and that enables concordances between them. Those forms of the common good are called *worths*, and they are used to evaluate greater or lesser capacity to attribute value to these situations by individuals. Situations of agreement and disagreement are not static; they are dynamic and alternate, sometimes there are situations of group acquiescence, sometimes of non-conformity. (Boltanski & Thévenot, 2006).

Interactions between actors require the use of justifications in order to coordinate actions in non-violent ways in social life. The “common good” principles are the tool that enables coordination in social life. Actors engage in public spaces to negotiate and/or defend socially accepted definitions of “the common good” (Patriotta et al., 2011). Thus, reaching an agreement or compromise is a dynamic process in which often competing rationales are continuously (re)evaluated (Boltanski & Thévenot, 2000).

To analyze the types of justification employed by actors in situations of dispute, justification theory proposes six traditional worlds – namely domestic, inspired, of fame, civic, market and industrial. Each world is defined by characteristics regarding the higher common principle, subjects, and objects of value, value relations, tests, forms of evidence and failures (Boltanski & Thévenot, 2006). Moreover, we add the “green” (Giulianotti & Langseth, 2016; Thévenot, et al., 2000; Thévenot, 2002) to the six traditional worlds in our research, because the Brumadinho dam disaster is considered to be an environmental violation caused by organizational misconduct as previously stated (Hersel et al., 2019).

The **inspired world** is unstable and fragile. Inspiration is motivated by deep emotions whose main subjects are the visionaries. The **domestic world** is based on tradition and hierarchy, in which the hierarchically superior individuals have more value than the subordinates. An analogy that most resembles this world is the family led by patriarchal figures, observing rules of good manners, honor, and respect (Boltanski & Thévenot, 2006).

The **world of fame** is defined by public opinion; greater value requires a public recognition by the media. The **civic world** is based on collectivity and the common good in which laws and rights unify individuals. Featured by competition and rivalry, the **market world** attributes greater value to those who are winners and who have greater wealth. The **industrial world**, in turn, is defined by science and technology where the main attributes that give value to the individual are efficiency, productivity, reliability, and professionalism (Boltanski & Thévenot, 2006).

The **green world** focuses on principles concerning the harmony with nature, considering that eco-friendly actions are related to the general good of humankind and its development. This world is usually used in combination with one of the other six and it addresses clean or non-polluting, renewable, recyclable sustainable issues. The green world is bounded with time and space concerns since it directly mentions problems that future generations might face (Thévenot, et al., 2000).

The Brumadinho dam disaster is an insightful case as it combines several features of

dispute and it is also fruitful to study multiple understandings of the “common good”. Higher principles of common good acts as a normative tool and are directly linked to concepts of morality, justice and legitimacy (Perkiss & Moerman, 2020). Moreover, Boltanski and Thévenot reason that in “*the brick of chaos*” – the Brumadinho dam disaster – beings endure disruptive damages, for example, the loss of their home, family members and employment, in which worlds are put to test, demanding and employing, and therefore, publicly negotiating, different orders of worth to reach some sort of outcome to the situation (Boltanski & Thévenot, 2006).

### 3 METHOD

We followed the single case study strategy that has been used in previous research regarding actors’ justifications in light of Boltanski and Thévenot’s (2006) theoretical developments (see Arts, Buijs, & Verschoor, 2018; Giulianotti & Langseth, 2016; Gladarev & Lonkila, 2013; Ignatius, Delaney, & Haapasaari, 2019; Ignatius & Haapasaari, 2018; Patriotta, Gond, & Schultz, 2011; Perkiss & Moerman, 2020). Our inquiry was based on interpretative methodology analyzing the phenomenon with its context (Baxter & Jack, 2008; Stake, 1995). We used the orders of worth framework as a set of analytical codes to analyze the collected data.

Content analysis strategy of textual data in written forms of communication was applied because it enables the researcher to exam patterns, i.e., justifications, in public documents. Thus, we evaluated written data on Vale’s website, while also bearing in mind the context of the event and the public debates that emerged in 2019 – from newspaper articles. Even though this study is limited to analyze the justifications employed by Vale in its communication with different stakeholder groups, such as its employees, the local and national community, its shareholders and the government; data from the media was also analyzed to have a broader overview of the event.

Since we were interested in studying the justifications that Vale employed during and after the disaster, secondary data from the organization’s official website was collected, particularly, from a page called “Reparation” that was created by the organization to communicate the decisions and actions taken regarding the disaster to the public. Two tabs were selected, one with all the videos related to the dam as well as to other dams, and the news tab. The total of the collected data corresponded to 39 videos and 225 news reports from the period of January to December 2019. All videos were transcribed and from the total of the news reports, 4 were discarded, because they were no longer available online.

The selection of such data was due because Vale displayed its institutional justifications during and after the crisis to the public by publishing news reports and videos informing about the organization’s main decisions and actions. The newspaper articles were used to establish a pattern of the main topics discussed in the media and to compare those with Vale’s justifications patterns. Data from the media was collected by using a single search engine, Google News. The search terms were “Brumadinho dam disaster” OR “Brumadinho disaster” OR “Brumadinho”– written in Portuguese. All duplicates were hidden. Articles that were not available online and blog posts were disregarded. We applied a list of keywords based on Boltanski and Thévenot’s framework (2006) to identify the employed orders of worth to run our interpretative analysis (see Patriotta et al., 2011).

Identified textual units (e.g., “rescuing the local fauna”) were assigned to each order of worth. The software QDA Miner Lite was used since it provided a free and adequate solution to codify and analyze qualitative data (Chomczynski, 2008; LaPan, 2013). Some examples of textual units are displayed in Table 1.

## INSERT TABLE 1 ABOUT HERE

Data from both Vale and the media were divided into three periods: (1) from the day of the disaster until April 2019, (2) from May to August 2019, and (3) From September to December 2019. Four patterns of topics emerged from our sample: technical information, investigation and legal procedures and cooperation, repairment procedures and problems with other dams. The patterns found are reported and analyzed in the next section.

### 3.1 Case Selection

Vale's origin dates to June 1942, when the President of Brazil at the time, Getúlio Vargas sanctioned a decree creating the company, named at that time as *Companhia Vale do Rio Doce*. The company was created in order to provide raw inputs for Brazilian steel companies. After the 1960s, the company internationalized its products by expanding to foreign markets such as the Japanese. During the Brazilian military dictatorship, in the 1970s, Vale reached the top world leaders regarding the exportation of iron ore. In 1997, the company was privatized and in 2007, its name was changed to Vale S.A. Nowadays, Vale S.A. is a private company, with operations in five continents, ranked as one of the top mining companies in the world (Vale S.A., 2012). Vale bought the *Córrego do Feijão* mine complex in 2001 to meet Europe's increasing demand. The dam I (B1) was one of the main structures from the complex and it was a sort of inactive disposal waste. Its high was equivalent to a 29 floor-building (86 meters tall) its length was equivalent to seven soccer fields (720 meters)<sup>1</sup> (Ragazzi & Rocha, 2019).

The study focuses on Brazil's biggest working tragedy and one of the worst environmental disasters (Darlington et al., 2019; Souza & Fellet, 2019; Ragazzi & Rocha, 2019) that took place on January 25<sup>th</sup>, 2019 involving one of the top three mining companies in the world (Els, 2020) at the time. The episode happened three years after the Mariana dam disaster involving Samarco, a joint venture of Vale and BHP Billiton. The Mariana dam disaster killed 19 people, destroyed local communities and it is considered one of the worst world's environmental disasters (Ragazzi & Rocha, 2019). In the words of Vale's CEO at the time, Fábio Schvartsman on the same day of the tragedy:

“This time it is a human tragedy because we are talking about a likely large number of victims. [...] Possibly, the environmental damage will be much less, and the human tragedy, terrible.” (Ragazzi & Rocha, 2019; Duarte, 2019)

Both events, especially the former, triggered national debate regarding the safety and proper regulations of mining installations, hashtags such as *#nãofoiacidente* and *#novamariana*<sup>2</sup> flooded social media as top trends (Ragazzi & Rocha, 2019). We chose the case of Brumadinho dam disaster based on some components of the tragedy: (1) at the time of the tragedy, Vale was the world's biggest producer of iron ore; (2) in the first month of searches, there were 179 deaths, 131 missing persons and 138 homeless persons (de Freitas et al., 2019), totalizing 270 deaths; (3) toxic mud that could fill 5.000 Olympic pools flowed downhill that impacted in the biodiversity of the region; (4) the mud destroyed more than two dozen buildings (Darlington, et al., 2019); (5) impact on public health by the spread of diseases such as diphtheria, tetanus, hepatitis A and B, measles, mumps, rubella and yellow fever; and (6) socio-economic impact on local communities (Romão et al., 2019).

In addition, a worldly publicly known recent case involving a well-established organization enabled access to a significant amount of secondary data. A disastrous event with high levels of uncertainty, ambiguity, and complexity, caused by misconduct that further

worsened its ambiguity and uncertainty of the situation is a fruitful case to be analyzed using the justification theory framework.

The Brumadinho dam disaster instigated the fire department to carry out the largest rescue action in the history of the country and the corporation. Likewise, the Mariana dam disaster, there were previous signs and failure in the Brumadinho dam, as appointed latter by the investigations. Also, similarly to the Mariana case, the risk calculation made before the disasters concluded that was preferable, from the financial and criminal accountability perspectives, the practice of environmental violations than the cost of fixing the problems of the dams (Ragazzi & Rocha, 2019).

The dam I (B1) safety classification months before the disaster was categorized as an emergency, meaning that the probability of rupture was above the acceptable standard. Also, before the disaster, the safety factor was below the minimum tolerable and still a Declaration of Stable Condition (DCE) was given to the dam. The dam contained too much water, aggravated by the installation of horizontal drains that injected water in the structure, accelerating the process of internal erosion and provoking the rupture of the dam.

Right before the disaster, the piezometers – sensors that measure water pressure in the soil - presented inconsistencies. Adding to these signs, the fact that Vale's administrative structure, including the employees' restaurant, was built in an area that was foreseen to be impacted in the case of a rupture. The alert siren was not alarmed. The disaster was set to take place (Ragazzi & Rocha, 2019). What further contributed to our case selection is that according to de Freitas et al. (2019):

In Brazil, there are 769 mining dams, and the two which led to the worst disasters in the country's history and among the largest in the world were classified as low risk. [...] In the disasters caused by Vale and Samarco, it became clear that emergency plans existed only on paper and that warning and alarm systems were nonexistent and ineffective. (p. 5)

## 4 RESULTS

### 4.1 How did vale employ justifications after the Brumadinho dam disaster to give sense and (attempt) to repair its image?

Videos and news reports available at Vale's website were analyzed separately. From the videos, the prioritized evoked worlds are the industrial, market and green. From the news reports, evoked worlds are the industrial, market and civic. Thus, industrial and market arguments were prioritized by Vale. This may indicate that Vale's strategy to give sense to the crisis by evoking arguments related to efficiency, functionality, professionals and employees' actions, plans, measures (within normality), security (of the dams), and compensation measures (to victims).

The main idea of the arguments disseminated by Vale is related to reporting what the company is doing to repair the damage by providing compensation and housing and health support to victims, running safety simulations with local communities, abiding by regularity measures, collaborating with law enforcement agencies, providing information to society and spreading its plans to reinforce security. A possible interpretation is that Vale attempted to repair its image after the crisis by communicating decisions and actions – related to the industrial and market worlds – focused on transmitting reliability to the company.

In addition, in the videos, Vale attempts to spread a message that stresses concerns with the victims and the environment while addressing public concerns and doubts – green and civic worlds. Meanwhile, in the news reports, Vale attempts to spread more formal messages communicating the technical and legal steps taken.



The green world is employed in a combination with industrial and market worlds to evoke arguments mainly related to the measures taken in order to reassure stability to human beings and the environment. Peculiarly, regarding the green world, and especially in the videos in the period from January to April 2019, it seems that justifications related to the local fauna and flora were prioritized when compared to justifications related to the victims (their families) and the local community, for example, “*we are prioritizing animals that are in a position to be rescued in a healthy manner [...]*”, “*[...] receive animals of all species, dogs and cats, wild animals, these animals have a structure to receive prompt care.*” and “*A River Water Treatment Plant in Ribeirão Ferro Carvão is already being tested. [...] aims at cleaning and the sand removal [...]*”.

The market world is mainly employed to evoked arguments related to civic justifications such as collective compensation measures and cooperation with law enforcement agencies, for example:

*“[...] we announced donations of 5 million reais for the Civil Defense, 4 million reais for the Military Police, plus a new pact from the Finance Ministry here in the state, of a new special regime that will bring an additional contribution of 550 million reais in the safe of the state of Minas Gerais, In addition, AMID, the Minas Gerais mining association, has signed a 3-month contribution of R\$ 100 million to mitigate the financial impact [...]*”

The civic world is intertwined with the market and inspired justifications regarding the compromises and the agreement that were made by describing the legal and financial steps taken. Also, feelings are evoked when attempting to declare its solidarity with all those that were harmed, for instance: “*I want to declare my solidarity [...] to help the people who have been affected. It's something that hurts my soul, all I didn't want in my life was for something like this to happen.*”

The world of fame is somewhat connected to the domestic and industrial worlds when addressing to speculations or misinterpretations, and also when attempting to trustfulness, e.g. “*Gentlemen, Vale is a very serious company, we have made a huge effort from the point of view of leaving our dams in the best possible condition [...] especially after Mariana.*” and “*That is why us [...] need to avoid speculation, which will increase people's level of psychosocial insecurity.*”

The domestic and inspired worlds are somewhat employed. Regarding the news reports, it provides an interpretation that Vale used this type of source as a formal channel to communicate technical decisions and actions taken – mixed with industrial justifications – during and after the crisis. While, in the videos, Vale engaged in subjective relation with stakeholders by appealing to messages related to emotions, transparency, responsibility, dialogue, and duty and thus, attempting to repair its image by giving sense as a trustworthiness organization to its stakeholders.

Our interpretation corroborates the ones found by Oliveira and Mendes (2019) that (1) Vale presented itself as a reliable organization by continuously informing the measures taken, and the plans and decisions that were made and that the organization is doing all that it is possible in order to mitigate the negative consequences of the disaster, especially regarding the victims, thus presenting itself with a positive image, (2) the accountability for the disaster is softened, Vale does not take responsibility for its occurrence and continuously relate it to the terms “accident”, “disaster” and “tragedy” and also exposes that the dam was in accordance with the in-force regulations, and, (3) in the videos, Vale, represented by its president and employees, attempts to provide a message of empathy and vulnerability (Oliveira & Mendes, 2019).

## 4.2 What main topics emerged in the public debate after the Brumadinho dam disaster?

From January to April 2019, the media mainly focused on reporting and updating information related to the rescue operation – e.g.: *“According to the fire department, at least 231 people are dead and 40 missing.”* – and to the unfolding of investigations – e.g.: *“Federal Police says Vale knew about the problems with sensors at Brumadinho dam.”*

The prioritized orders of worth from this period are the civic, market and inspired. The civic world is evoked to provide (1) information about legal investigations, (2) information on the collective will requests for improved regulatory measures, and also accountability on the disaster and, (3) collective actions of a tribute of the victims – in a combination with inspired justifications. The market world is evoked to detail (1) information on donations, (2) Vale’s financial losses and (3) information on blocked values due to investigations – in a combination with civic justifications. Feelings towards the victims, the injured and survivors are evoked – inspired world. Technical information on the disaster and its impacts, as well as reparation actions, are discussed – industrial world. Impacts on the environment and local community are described in a combination with technical information while calling forth for empathy from the public.

The world of fame is employed to inform on Vale’s reputation loss and to highlight Vale’s distinct role in Brazil and the world, and it is used to aggravate deviant behavior of the company, investigated by the authorities (civic world) and also to inflame negative emotions from the society (inspired world), especially after the Mariana dam disaster. No textual units from the domestic world were found in this period. This may be due to the fact that in the months following the disaster, public debates did not gravitate on arguments about Vale’s trustworthiness, honesty and transparency.

From May to August 2019 the media mainly focused on providing technical information on the undertaken decisions and actions, e.g. how the donations were going to be distributed reparation procedures regarding recovering local fauna and flora and unfolding from the investigations.

Industrial, civic and market are the prioritized orders or worth from this period. In addition, market justifications on increase in employment are intertwined with reparations actions (from the industrial world) – e.g.: *“Currently, about 1,300 workers are working on the interventions, more than 700 of them from Brumadinho and the region.”*

The inspired world is still evoked to provide information on the victims, but to a less extent than the prior period – e.g.: *“While 24 families are still searching for their missing relatives – [...]”*. The domestic world is slightly employed to evoke trust in Vale’s reparations actions – e.g.: *“We structure our work based on the principles of integral reparation, following the human rights protocols of the UN [...]”*.

The green world is mainly employed in a combination with industrial justifications to details the undertaken operation to recover the environmental damage – e.g.: *“[...] daily monitoring on the river continues, today at 66 places [...]”*. But it is also employed to display concern on the spreading of diseases worsened by the disaster – e.g.: *“[...] of diseases such as zika, chikungunya, yellow fever and dengue fever - which did not exist in the community before the tragedy [...]”*.

No textual units from the world of fame were found in this period. Probably, because the focus on this period is on providing technical information on (1) finding what caused the rupture – e.g.: *“The criminal process that investigates the causes of the collapse of the dam runs in confidentiality[...]”* and *“The Civil Police analyze the impact of detonations in the complex[...]”*, (2) what is being done to repair the damages – e.g.: *“The mining company will have to build a new water collection system on the Paraopeba River[...]”*, and (2) what is being

done to hold accountable those responsible for the disaster – e.g.: “[...] *I want the people responsible to be punished, I want Vale to have an exemplary punishment*”.

Regarding the period from September to December 2019, public debate concentrated on updating the information concerning (1) the rescue operations (and the total of victims found), (2) reparation procedures to reduce local damage and (3) investigation progress with an emphasis on evidence of Vale’s misconduct – e.g.: “[...] *indications that the tragedy "is not due to any fraud or negligence on the part of the technicians, but to the decision to use a potentially dangerous technique, for economic reasons, as regards the choice of the construction site.*”. No textual units of domestic and of fame worlds were found. The other worlds – namely, green, civic, market, industrial, and inspired – are employed similarly as the prior period.

## 5 DISCUSSION

More than a year later, there is evidence confirming that Vale had known about the safety issues of the dam I for years before the disaster. The cause of the disaster is also known, there was too much water inside the dam (Jamasmie, 2020).

The disaster fostered both national (Após desastre em Brumadinho, 2020) and international debate on practices of iron ore extraction and safety regulations and well as fostered the international investigations on the status of 726 tailing dams (Jamasmie, 2019). Rescue operations are still executed, as there are still missing victims (Buscas por vítimas, 2020; Pimenta, 2020). Vale’s CEO, at the time, board members and employees as well TÜV SÜD were criminally charged (Jamasmie, 2020; 2019). The impacts on the local community and the environment are not still solved (Rios de Brumadinho, 2020). Besides, problems with other dams are publicly known (Ragazzi & Rocha, 2019).

“Unexpected”, “unforeseen”, harmful, and complex events, such as disasters, challenge the society’s taken-for-granted perceptions of an organization. It is currently known that the Brumadinho dam disaster was neither unexpected nor unforeseen. It certainly was harmful and challenged society’s perception of both Vale and mining regulatory practices (Câmara aprova projeto, 2020). The Brumadinho dam disaster could have been prevented, especially after being preceded by the Mariana dam disaster three years earlier, due to the organization’s decisions of cost savings actions (Senra, 2019) and also decisions of overlooking warnings given by technicians before the disaster that the dam’s safety factor was below the minimum accepted value, according to international standards (Ragazzi & Rocha, 2019).

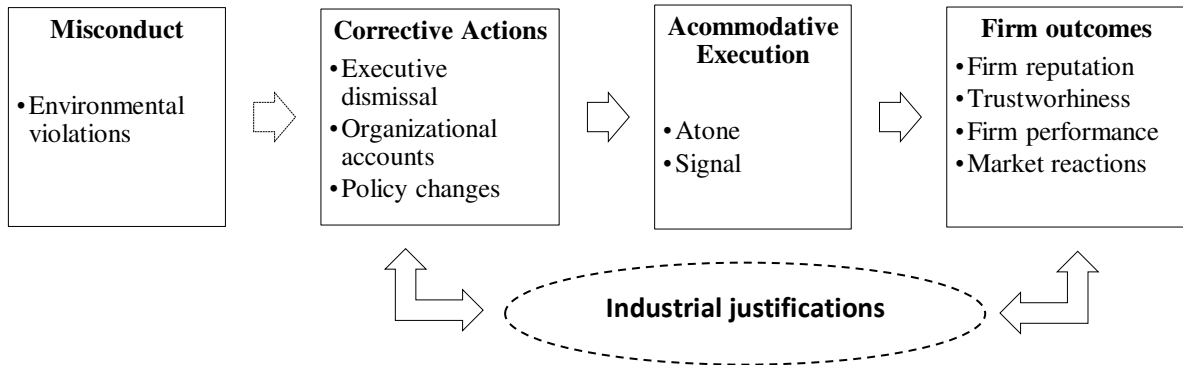
Our study explored the justifications provided by Vale regarding the Brumadinho dam disaster, comparing them to the main topics on Brazil’s public debate in 2019, contributing to an understanding of how co-existing accounts contributed to an ordered outcome of the disaster. Our research question was: How did Vale employ justifications on the Brumadinho dam disaster to give sense and (attempt) to repair its image?

Our sample demonstrated that Vale prioritized industrial, market, green and civic justifications, whilst public debates focused on civic, industrial, inspired and green justifications. Although both parties employed these worlds, their goals and interests are dissonant, as detailed in the previous section (see Table 1). For instance, Vale employs the civic world to evoke collaboration with investigating authorities, while the media evokes it to provide information on the unfolding of investigations. Also, Vale employs the industrial world in an attempt to take less responsibility for the disaster; the media evokes it to provide more information on ongoing reparation procedures.

From the analysis of the news reported in Vale’s official website, it is possible to relate some of its corrective actions to the ones proposed in Hersel et al.’s (2019) review – see Figure 1. During the event, the company adopted the following corrective actions: (1) executive

dismissal due to its replacement of some of its president, Fabio Schvartsman and other executives (Ragazzi & Rocha, 2019; Canofre, 2020), (2) organization accounts, the organizations used corporate communication strategies to repair its image by employing an accommodative response based on rebuilding, compensation strategies and, (3) policy changes, once the company announced that internal changes were needed and would be enforced after the event, especially changes related to safety issues (Hersel et al., 2019; Ragazzi & Rocha, 2019).

**Figure 1**  
*Corrective actions and justifications employed by Vale*



Note: Adapted from Hersel et al. (2019, p. 565)

Analyzing the context after the Brumadinho dam disaster, we infer that the corrective actions were adopted mainly with accommodative objectives that “seek to address stakeholder claims and alleviate their concerns in a substantive way” (Hersel et al., 2019, p. 565). Vale attempted to (1) atone concerns by offering explanations and expressing solidarity – inspired justifications, (2) signal their intentions and plan regarding future changes on dams’ safety and emergency procedures – industrial justifications. These actions, reinforced by industrial justifications, aimed to restore Vale’s image as a trustworthy company. In sum, the company focused on rebuilding trust and repairing its image with different stakeholder groups by employing industrial and market justifications.

In addition, our interpretation from Vale’s justifications is aligned with Bundy and Pfarrer’s argument (2015) that organizations with higher levels of social approval, take less responsibility when facing a crisis (Bundy & Pfarrer, 2015). Vale’s statements, from our sample, demonstrate an attempt to engage with dissociation of the responsibility with the disaster by using the ideas of accident, tragedy, and “unexpected” technical failures (Oliveira & Mendes, 2019). By claiming that all technical and safety issues of the dam were in accordance with regulatory requirements and by claiming that the disaster was something “unforeseen” and “unimaginable”, Vale took into account the burden of the social approval, thus taking less accountability for the disaster.

Our study also reveals a discrepancy between Vale’s policies – available at institutional documents such as sustainability reports – and misconduct practices – evident in the investigations. For instance, Vale’s 2019 Sustainability Report<sup>3</sup> reinforces the organization’s concerns in addressing reparation procedures following the disaster, while establishing narrower ties with the local community by promoting dialogue channels. In addition, it also expresses measures to adhere to environmental and social good practices.

Meanwhile, investigations shed light on misconduct practices such as disregard on previous signs and failure in the Brumadinho dam – e.g., piezometers inconsistencies, the dam I’s safety factor was below the minimum tolerable and still a Declaration of Stable Condition (DCE) was issued – and taking into consideration that the practice of environmental violations

was preferable – from the financial and criminal accountability perspectives – than the cost of fixing the problems of the dams (Ragazzi & Rocha, 2019).

Future research possibilities may arise from including other stakeholder groups involved in the disaster to analyze how they interpreted the event and/or how they reacted to the exposed justifications employed by Vale (de Almeida, Jackson Filho, & Vilela, 2019; Marcus & Goodman, 1991; Messer & Shriver, 2009; Phillips, Barney, Freeman, & Harrison, 2019). It may also be fruitful to use multiple search engines.

Thereon, Patriotta et al.'s study (2011) could be replicated. The authors analyzed the justifications employed by different stakeholder groups in the case of a nuclear accident from an institutional lens, in order to understand how the justifications influenced organizational legitimacy. Also, Perkiss & Moerman's approach (2020) could also be replicated on the construction of narratives of the Brumadinho (and Mariana) dam disaster (s) contributing to an understanding of “how multiple co-existing accounts contribute to an ordered society” (p.11).

Additional possibilities may be to study how stakeholders punish or not an organization following misconduct by analyzing how they negotiate different justifications (Barnett, 2014; Greve & Teh, 2016). It is also possible to correlate such an approach with discussions on business ethics implications (Arnold, Audi, & Zwolinski, 2010; Bazerman & Sezer, 2016). Further studies could also analyze the justifications employed by Vale in 2020 and compare these with the ones employed in 2019 in order to shed some light on how firms handle and attempt to overcome contradictions between CSR practices and misconduct behavior.

Based on these considerations, this study aims to contribute to the organizational studies by enlarging the understanding concerning the types of justifications employed by an organization to give sense to a disaster and attempt to repair its image. Our study was able to provide an interpretation of how Vale and the public debate in Brazil coexisted in 2019 and how it contributed to an “ordered” outcome. Hopefully, future insights may be fostered by this study to provide an alternative lens when studying the way organizations account for and behavior in moments of crisis, preceded by misconduct.

#### Notes

<sup>1</sup> See Vale. (n.d.). Brumadinho. Retrieved July 2020, from <http://www.vale.com/esg/en/Pages/Brumadinho.aspx>.

<sup>2</sup> Translation: #itwasn'tanaccident and #newmariana

<sup>3</sup> See Vale S.A. (2020). *2019 Sustainability Report*. Retrieved from <http://www.vale.com/brasil/PT/sustainability/relatorio-de-sustentabilidade-2019/Paginas/default.aspx>.

#### REFERENCES

- Após desastre em Brumadinho, segurança em barragens de minas é reforçada. (2020, January 22). *Estado de Minas*. Retrieved from [https://www.em.com.br/app/noticia/internacional/2020/01/22/interna\\_internacional,1116092/apos-desastre-em-brumadinho-seguranca-em-barragens-de-minas-e-reforca.shtml](https://www.em.com.br/app/noticia/internacional/2020/01/22/interna_internacional,1116092/apos-desastre-em-brumadinho-seguranca-em-barragens-de-minas-e-reforca.shtml).
- Arnold, D. G., Audi, R., & Zwolinski, M. (2010). Recent Work in Ethical Theory and Its Implications for Business Ethics. *Business Ethics Quarterly*, 20(04), 559–581. Retrieved from <https://doi.org/10.1017/S1052150X00004784>.
- Arts, I., Buijs, A. E., & Verschoor, G. (2018). Regimes of justification: competing arguments and the construction of legitimacy in Dutch nature conservation practices. *Journal of Environmental Planning and Management*, 61(5–6), 1070–1084. Retrieved from <http://dx.doi.org/10.1080/09640568.2017.1319346>.
- Barnett, M. L. (2014). Why Stakeholders Ignore Firm Misconduct: A Cognitive View. *Journal of Management*, 40(3), 676–702. Retrieved from <https://doi.org/10.1177/0149206311433854>.
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: study design and

- implementation for novice researchers. *The Qualitative Report*, 13(4), 544–559. Retrieved from <https://nsuworks.nova.edu/tqr/vol13/iss4/2>.
- Bazerman, M. H., & Sezer, O. (2016). Bounded awareness: Implications for ethical decision making. *Organizational Behavior and Human Decision Processes*, 136, 95–105. Retrieved from <http://dx.doi.org/10.1016/j.obhdp.2015.11.004>.
- Blokker, P. (2011). Pragmatic sociology: Theoretical evolution and empirical application. *European Journal of Social Theory*, 14(3), 251–261.
- Boltanski, L., & Thévenot, L. (2006). *On Justification: Economies of Worth* (trans. Cat). Princeton, NJ: Princeton University Press.
- Boltanski, L., & Thévenot, L. (2000). The reality of moral expectations: A sociology of situated judgment. *Philosophical Explorations: An International Journal for the Philosophy of Mind and Action*, 3(3), 208–231. Retrieved from <https://doi.org/10.1080/13869790008523332>.
- Bundy, J., & Pfarrer, M. D. (2015). A burden of responsibility: The role of social approval at the onset of a crisis. *Academy of Management Review*, 40(3), 345–369. Retrieved from <https://doi.org/10.5465/amr.2013.0027>.
- Buscas por vítimas em Brumadinho devem voltar em junho, segundo Bombeiros. (2020, May 12). *Diario de Pernambuco*. Retrieved from <https://www.diariodepernambuco.com.br/noticia/brasil/2020/05/buscas-por-vitimas-em-brumadinho-devem-voltar-em-junho-segundo-bombeiros.html>.
- Câmara aprova projeto que aumenta exigências sobre segurança de barragens - Notícias. (2020, May 19). *Portal Da Câmara Dos Deputados*. Retrieved from <https://www.camara.leg.br/noticias/662700-camara-aprova-projeto-que-aumenta-exigencias-sobre-seguranca-de-barragens>.
- Canofre, F. (2020, January 22). MP denuncia ex-presidente da Vale e mais 15 por mortes em Brumadinho. *Folha de Londrina*. Retrieved from <https://www.folhadelondrina.com.br/geral/mp-denuncia-ex-presidente-da-vale-e-mais-15-por-mortes-em-brumadinho-2979913e.html>.
- Ceni, Jéssica C.; Rese, N. (2019). Mud's fairy tale: a discussion about storytelling typology. *Cadernos de Linguagem e Sociedade*, 20(2).
- Chomczynski, P. (2008). Software Review: QDA MINER - the mixed method solution for qualitative analysis by Provalis Research. *Qualitative Sociology Review*, IV(2). Retrieved from [http://www.qualitativesociologyreview.org/ENG/archive\\_eng.php](http://www.qualitativesociologyreview.org/ENG/archive_eng.php).
- Darlington, S., Glanz, J., Andreoni, M., Bloch, M., Peçanha, S., Singhvi, A., & Griggs, T. (2019, February 9). Brumadinho Dam Collapse: A Tidal Wave of Mud. *The New York Times Company*. Retrieved from <https://www.nytimes.com/interactive/2019/02/09/world/americas/brazil-dam-collapse.html>.
- de Almeida, I. M., Jackson Filho, J. M., & Vilela, R. A. de G. (2019). Reasons for investigating the organizational dynamics of the Vale tailings dam disaster in Brumadinho, Minas Gerais State, Brazil. *Reports in Public Health*, 35(4), e00027319. Retrieved from <https://doi.org/10.1590/0102-311X00027319>.
- de Freitas, C. M., Barcellos, C., Asmus, C. I. R. F., da Silva, M. A., & Xavier, D. R. (2019). From Samarco in Mariana to Vale in Brumadinho: Mining dam disasters and public health. *Reports in Public Health*, 35(5), e00052519. Retrieved from <https://doi.org/10.1590/0102-311X00052519>.
- Dodier, N. (1993). Review article: Action as a combination of 'common worlds'. *The Sociological Review*, 41(3), 556–571.
- dos Santos, Rodrigo S. P.; Milanez, B. (2019). *Horror em Brumadinho é culpa da Vale, dizem especialistas. Mas o que é a Vale?* Retrieved from

- <https://doi.org/10.13140/RG.2.2.15130.08648>.
- Duarte, R. (2019, January 25). “Dessa vez é uma tragédia humana”, afirma presidente da Vale. *Saiba Mais*. Retrieved from <https://www.saibamais.jor.br/dessa-vez-e-uma-tragedia-humana-afirma-presidente-da-vale/>.
- Els, F. (2020, July 15). *Monster rally adds \$250 billion to global top 50 mining companies*. MINING.COM. Retrieved from <https://www.mining.com/top-50-biggest-mining-companies/>.
- Fernandes, G. W., Goulart, F. F., Ranieri, B. D., Coelho, M. S., Dales, K., Boesche, N., ... Soares-Filho, B. (2016). Deep into the mud: ecological and socio-economic impacts of the dam breach in Mariana, Brazil. *Brazilian Journal of Nature Conservation*, *14*, 35–45. Retrieved from <https://doi.org/10.1016/j.ncon.2016.10.003>.
- Giulianotti, R., & Langseth, T. (2016). Justifying the civic interest in sport: Boltanski and Thévenot, the six worlds of justification, and hosting the Olympic games. *European Journal for Sport and Society*, *13*(2), 133–153.
- Gladarev, B., & Lonkila, M. (2013). Justifying Civic Activism in Russia and Finland. *Journal of Civil Society*, *9*(4), 375–390. Retrieved from <https://doi.org/10.1080/17448689.2013.844450>.
- Greve, H. R., Palmer, D., & Pozner, J.-E. (2010). Organizations gone wild: The causes, processes, and consequences of organizational misconduct. *Academy of Management Annals*, *4*(1), 53–107. Retrieved from <https://doi.org/10.1080/19416521003654186>.
- Greve, H. R., & Teh, D. (2016). Consequences of organizational misconduct: Too much and too little punishment. In *Organizational Wrongdoing: Key Perspectives and New Directions* (pp. 370–403). Retrieved from <https://doi.org/10.1017/CBO9781316338827.014>.
- Hersel, M. C., Helmuth, C. A., Zorn, M. L., Shropshire, C., & Ridge, J. W. (2019). The corrective actions organizations pursue following misconduct: A review and research agenda. *Academy of Management Annals*, *13*(2), 547–585.
- Ignatius, S., Delaney, A., & Haapasaari, P. (2019). Socio-cultural values as a dimension of fisheries governance: The cases of Baltic salmon and herring. *Environmental Science and Policy*, *94*, 1–8. Retrieved from <https://doi.org/10.1016/j.envsci.2018.12.024>.
- Ignatius, S., & Haapasaari, P. (2018). Justification theory for the analysis of the socio-cultural value of fish and fisheries: The case of Baltic salmon. *Marine Policy*, *88*, 167–173.
- Jamasmie, C. (2019, December 2). Two members of Vale’s board step down in connection to deadly dam disaster. MINING.COM. Retrieved from <https://www.mining.com/two-members-of-vales-board-step-down-in-connection-to-deadly-dam-disaster/>.
- Jamasmie, C. (2020, February 21). Internal probe confirms Vale knew Brumadinho dam was unsafe. MINING.COM. Retrieved from <https://www.mining.com/internal-report-confirms-vale-knew-brumadinho-dam-was-unsafe/>.
- Kunreuther, H., & Bowman, E. H. (1997). A Dynamic Model of Organizational Decision Making: Chemco Revisited Six Years after Bhopal. *Organization Science*, *8*(4), 404–413. Retrieved from <https://doi.org/10.1287/orsc.8.4.404>.
- LaPan, C. (2013). Review of QDA Miner. *Social Science Computer Review*, *31*(6), 774–778.
- Madsen, P. M., & Desai, V. (2010). Failing to learn? the effects of failure and success on organizational learning in the global orbital launch vehicle industry. *Academy of Management Journal*, *53*(3), 451–476.
- Marcus, A. A., & Goodman, R. S. (1991). Victims and Shareholders: the Dilemmas of Presenting Corporate Policy During a Crisis. *Academy of Management Journal*, *34*(2), 281–305.
- Matejek, S., & Gössling, T. (2014). Beyond Legitimacy: A Case Study in BP’s “Green Lashing.” *Journal of Business Ethics*, *120*(4), 571–584.

- Messer, C. M., & Shriver, T. E. (2009). Corporate responses to claims of environmental misconduct: The case of Phelps Dodge and Blackwell, Oklahoma. *Deviant Behavior*, 30, 647–668. Retrieved from <https://doi.org/10.1080/01639620802589814>.
- Nutt, P. C. (2010). Building a Decision-making action theory. In *Handbook of Decision Making* (pp. 155–196). Chichester: John Wiley & Sons.
- Oliveira, V. V. D., & Mendes, C. M. (2019). Entre o Inteligível e o Sofrimento: Análise da Comunicação Oficial da Samarco e da Vale Imediatamente Após o Rompimento das Barragens em Mariana (2015) e Brumadinho (2019). *XIII Congresso Brasileiro Científico de Comunicação Organizacional e de Relações Públicas*.
- Patriotta, G., Gond, J.-P., & Schultz, F. (2011). Maintaining legitimacy: Controversies, orders of worth, and public justifications. *Journal of Management Studies*, 48(8), 1804–1836. Retrieved from <https://doi.org/10.1111/j.1467-6486.2010.00990.x>.
- Perkiss, S., & Moerman, L. (2020). Hurricane Katrina: Exploring justice and fairness as a sociology of common good(s). *Critical Perspectives on Accounting*, 67(102022).
- Pimenta, G. (2020, June 24). Vale deverá ressarcir mais de R\$ 13 milhões aos cofres de MG por trabalho de resgate em Brumadinho. G1. Retrieved from <https://g1.globo.com/mg/minas-gerais/noticia/2020/06/24/vale-devera-ressarcir-mais-de-r-13-milhoes-aos-cofres-de-mg-por-trabalho-de-resgate-em-brumadinho.ghtml>.
- Phillips, R. A., Barney, J. B., Freeman, R. E., & Harrison, J. S. (2019). Stakeholder Theory. In *The Cambridge Handbook of Stakeholder Theory*. Cambridge University Press.
- Ragazzi, L., & Rocha, M. (2019). Brumadinho: A engenharia de um crime. Editora Letramento.
- Rios de Brumadinho seguem com marcas de desastre ambiental, diz ONG. (2020, January 24). ISTOÉ Independente. Retrieved from <https://istoe.com.br/rios-de-brumadinho-seguem-com-marcas-de-desastre-ambiental-diz-ong/>.
- Romão, A.; Froes, C.; Barcellos, C.; Silva, D. X.; Saldanha, R.; & Gracie, R. (2019). Avaliação dos impactos sobre a saúde do desastre da mineração da Vale (Brumadinho, MG)[Internet]. Rio de Janeiro.
- Senra, R. (2019, February 28). Brumadinho, a história de uma tragédia que poderia ter sido evitada. BBC News Brasil. Retrieved from <https://www.bbc.com/portuguese/brasil-47399659>.
- Souza, F., & Fellet, J. (2019, January 29). Brumadinho é maior acidente de trabalho já registrado no Brasil. *BBC News Brasil*. Retrieved from <https://www.bbc.com/portuguese/brasil-47012091>.
- Stake, R. E. (1995). *The art of case study*. Sage.
- Thévenot, L. (2002). Conventions of co-ordination and the framing of uncertainty. In *Intersubjectivity in Economics: Agents and Structures* (pp. 181–197). Routledge.
- Thévenot, L., Moody, M., & Lafaye, C. (2000). Political Practice and Culture in French and American Environmental Disputes. In *Rethinking comparative cultural sociology: repertoires of evaluation in France and the United States* (pp. 229–272). Cambridge: Cambridge University Press.
- Vale S.A. (2012). *Vale: Nossa História*. Retrieved from <http://www.vale.com/brasil/pt/aboutvale/book-our-history/paginas/default.aspx>
- Vale S.A. (2020). *2019 Sustainability Report*. Retrieved from <http://www.vale.com/brasil/PT/sustainability/relatorio-de-sustentabilidade-2019/Paginas/default.aspx>.
- Vaughan, D. (1999). The dark side of organizations: Mistake, Misconduct, and Disaster. *Annual Review of Sociology*, 25, 271–305.
- Weick, K. E. (1988). Enacted Sensemaking in Crisis Situations [1]. *Journal of Management Studies*, 25(4), 305–317.



**Table 1***Codes and examples of keywords and textual units*

<b>Codes</b>	<b>Examples of keywords</b>	<b>Examples of textual units from Vale's data</b>	<b>Examples of textual units from newspaper articles</b>
<b>Green</b>	influence or danger on the environment and human health, impacts on fauna and flora	"[...] work to rescue the local fauna.", "[...] work of psychological support to the victims [...] in case of disaster"; "[...] to prevent and correct damage to the environment";	"[...] the predators of the insects have died, there will be an increase of insects. And with that increases the risk of diseases caused by these vectors [...].", "[...] says there were more than 370.000 probable cases of dengue fever in Minas Gerais in 2019.", "The level of copper in the waters [...] to 600 times the level allowed for rivers used for human supplies [...].";
<b>Market</b>	compensations, services, employees, stocks	"Vale will make a donation to all families who have lost loved ones [...] donation of 100 thousand reais [...]", "[...] we'll keep the payment on the financial compensation [...]", "[...] the majority of those affected are our own employees [...].";	"[...] the mining company's shares collapsed 24.5% in the Brazilian stock market, representing a loss of more than R\$ 70 billion [...].", "According to the mining company, the job opportunities are expected to reach 2.5 thousand [...]", "[...] that 272 families of victims [...] received a donation of R\$100,000 each.";
<b>Civic</b>	rules, law, legal and formal steps, rights, collective will, empathy	" I want to say from my solidarity [...] Valley will do what is possible and impossible to help the people who have been hit.", "[...] Vale has collaborated with the law enforcement authorities[...]", "[...] an agreement with the authorities of the state of Minas Gerais that allows Vale [...]."	"The Civil Police of Minas Gerais and the Federal Police are investigating the causes [...] three Vale employees involved in the licensing of the dam and two outsourced engineers [...] were arrested.", "The crime called ecocide was approved [...].", "Some information provided by Vale to ANM does not match the internal documents of the mining company.";
<b>Of Fame</b>	Public opinion, recognition, audience, reputation, rumor	"[...] to avoid raising speculations..."; "[...] there is a very large misconception that the Vale is doing nothing.", "[...] because in the last few days, a series of speculations have been made from [...].";	"[...] this is the greatest rescue operation ever done in Brazil [...].", "Vale is the largest global producer and exporter of iron ore.", "[...] the accident should increase the miner's reputational risk.";
<b>Industrial</b>	efficiency, reliability, specialists, plan, security management, report, information, causes	"The aim is that [...] decommissioning speeded up [...]", "[...] to ensure the safety of other dams [...]", "[...] about 50 professionals work [...]", "[...] the improvement of the product. To ensure greater efficiency [...]", "All measurements were found to be within normal limits.";	"[...] a survey of the conditions of 3,386 dams that have been classified as "high potential associated damage" or "high risk.", "To deal with the risk, the Reject Containment Plan was made, divided into three sections.", "According to a report by professionals hired by Vale, the dam ruptured due to liquefaction [...]."
<b>Inspired</b>	creativity, idea, emotions, feelings	"[...] I have no words to describe my suffering [...]", "[...] that was an enormous tragedy, it took us totally by surprise. I am completely torn with what happened [...]."; "We developed a technology [...] that didn't exist until then.";	"We mourn the tragedy of Brumadinho [...].", "The tribute took place [...] dumping rose petals [...].", "While 24 families are still searching for their missing relatives [...].", "We say they're 21 jewels [...].It even gives the troops a new impetus.";
<b>Domestic</b>	trustworthy, honest, faithful, transparency, duty, seriousness	"Trust and believe that there's a team [...]."; "[...] pass on my enormous solidarity [...]."; "[...] you can count on me [...]."	"We structure our work based on the principles of integral reparation, following the human rights protocols of the UN [...]."