Developments in Whistleblowing Research 2015

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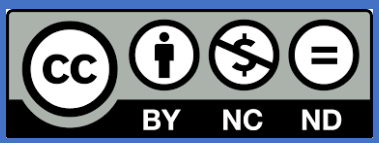

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5. Whistleblowing and Disaster Risk Reduction

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> *"Disciplined ordering of the issues may be helpful in many cases, but where the number of imponderables is great, all that may result is the cloaking of ignorance with a layer of false precision." (Turner & Pidgeon, 1997)*

Disasters can be seen as complex systems failures. Irrespective of hazard, misbehaviours generate vulnerability within the system. This chapter will argue that whistleblowing has the ability to inform about hidden vulnerabilities and reduce the risk of disasters. Given that a) whistleblowers tend to first disclose internally and b) there is limited whistleblowing research at management level, the driving question for this chapter is: to what extent is whistleblowing seen as risk reduction by managers? The chapter is structured as follows. First, we introduce the disaster management domain and identify the growing threat of complex disasters. The key concepts of hazard, risk, vulnerability, and cascading disasters, are briefly explained. Having identified the need for Disaster Risk Reduction (DRR) we next look at whistleblowing and some of the qualities it possesses and which make it relevant for our quest to save lives and resources. The following section highlights the prevalence of organisational misbehaviours in disasters, further strengthening the argument for whistleblowing as a way of reducing the risk of disasters. We will then discuss the idea of risk and its different approaches. This section is particularly relevant because understanding how risk is theorized and operationalized by various branches of the academic spectrum is absolutely necessary if we are to carry out scientific research on the whistleblowing/risk pair. The final section discusses the appropriateness of including governance in whistleblowing/risk research. We conclude with specific research questions that management can help answer.

Disasters

Definitions

Disasters represent serious disruptions of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own

resources. Until recently most differentiated between natural and man-made disasters. It has been observed that while the trigger might differ, the way disasters manifest is quite similar and this distinction is hardly ever used these days. Both The United Nations Office for Disaster Risk Reduction (UNISDR, 2015) and International Federation of Red Cross and Red Crescent (IFRC, 2015) distinguish between various types of hazards while avoiding the use of the term 'natural disaster'.

Hazards are events or physical conditions that have the *potential* to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harms or losses (FEMA, 1997). We focus here on hazards capable of forcing a disaster; cigarette smoke, though a hazard to public health is unlikely to cause an event large enough that it requires the attention of the disaster management community. A nuclear power plant failure, on the other hand, could.

Risk can have different meanings depending on the context. The variance may stem from its dual origins. The Arabic *risq* means "anything that has been given to you [by God] and from which you draw profit" (Kedar, 1970), perhaps hinting at why some use it to refer to opportunities. A more appropriate source for its use in disaster management, where it is always used with a negative connotation, seems to be the Latin *risicum*, denoting sailor's attempts to circumvent dangers. One of the simplest and most used interpretations of risk is that which equates it to the likelihood of an event materialising multiplied by its consequences, were it to occur: risk = likelihood x consequences (Ansell & Wharton, 1992).

Vulnerability is the reason why two identical events cause a minor disturbance in one country or organisation and a disaster in another. It simply represents the propensity of a system to incur the impact of a hazard. Vulnerability and *resilience* (propensity to avoid loss) are the opposite ends of an axis. The axis is made up of the extent and grade of social, political, economic and psychological means that the disaster impacted person/group/organisation/society has at its disposal so it can respond to the disaster, short and long-term (Blaikie *et al*, 1997; Coppola, 2007; Wisner *et al.* 2004; Cardona 2004).

Cascading disasters happen when two or more disasters occur at the same time, with one disaster triggering a secondary hazard. Fukushima is an example of a cascading processes where the primary hazard (earthquake) generated a secondary hazard (tsunami), which in turn created a third hazard (nuclear meltdown). These types of disasters make risk management and response and recovery operations more difficult and increase the risk of harm to victims and respondents (Coppola, 2011).

Disaster Management

Disasters have negatively affected humans throughout history. As a response, societies have made attempts to reduce exposure to the effects of these disasters, develop measures to deal with the initial impact, and recover. Irrespective of approach, all these efforts serve the same purpose: disaster management. In May 1994 UN member states developed the

Yokohama Strategy and Plan of Action for a Safer World. Below are some of the principles that the participating member states agreed to be applied to disaster management within their own countries.

1. *Risk assessment* is a required step for the adoption of adequate and successful disaster reduction policies and measures.

2. *Disaster prevention* and preparedness are crucially important in reducing the need for disaster relief.

3. *Early warnings* of impending disasters and their effective dissemination are key factors to successful disaster prevention and preparedness (ISDR, 1994).

Disaster management typically has a four-phase approach:

1. Mitigation (reducing or eliminating the likelihood or the consequences of a hazard, or both)

2. Preparedness (equipping people who may be impacted by a disaster with the means to increase their chance of survival and to minimize their losses)

3. Response (acting to reduce or eliminate the impact of disasters that have occurred or are on-going)

4. Recovery (returning to 'normal', or even better, a state of increased resilience)

Every country, every society, and every organisation is unique in terms of: a) its vulnerabilities and the root causes of these vulnerabilities, b) risk perception and the methods used to identify and analyse it, c) the structures and systems designed to manage risk, d) the statutory authorities that manage risk and the events that do actually occur, e) the mechanisms that respond to disaster events and their capacity (Coppola, 2011)

Disasters adversely affect development by diverting portions of GDP to manage the disaster consequences such as the destruction of critical infrastructure (bridges, airports, sea ports, communications systems, power generation and distribution facilities, and water and sewage plants) that takes years to rebuild. Effects are much larger for poor countries. On a global scale the number of disasters, as well as their cost, is increasing at an alarming rate. Thirty years ago, the economic impact from any given disaster rarely reached the billion-dollar mark, even after accounting for inflation. Today, several each year reach this level. By the year 2000, the cost of disasters had reached $60 billion per annum, as measured by the international reinsurance firm Munich Re.

If we take the classical view and split disasters into technological and natural, we find that since 1980, the number of reported technological disasters has increased significantly, at a much higher rate than that seen in the increase of natural disasters. Also, disasters on the whole are becoming less deadly; however, the number of people dying as a result of technological disasters is rising (See Figure 1) (Coppola, 2011)

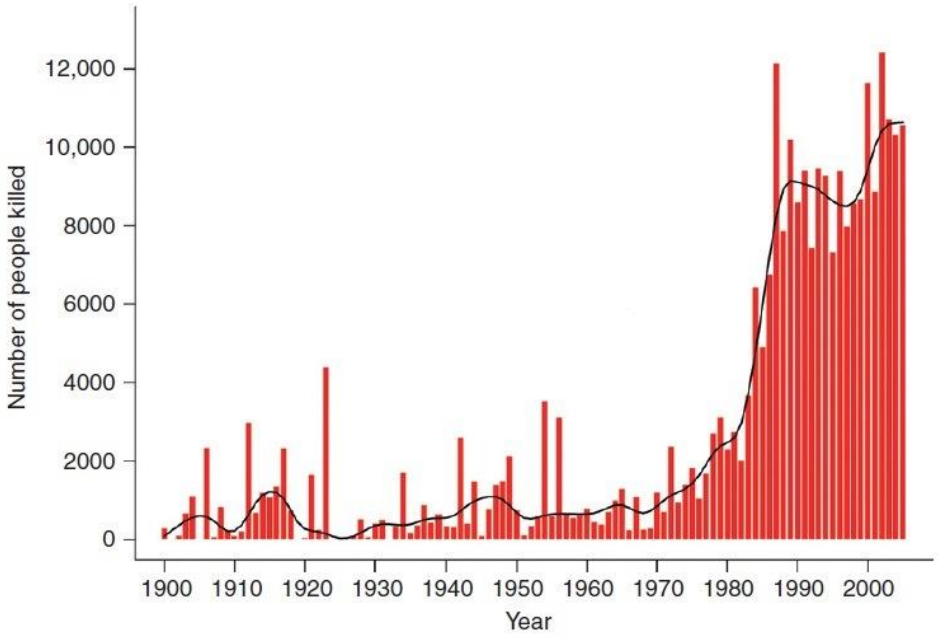

FIGURE 1 Total number of people killed in technological disasters, 1900–2005. (From the International Disaster Database, www.em-dat.net; in Coppola, 2011)

An argument can be made that there is no such thing as a natural disaster. The seismic, meteorological, hydrological, and other forces that result in natural hazards are natural processes that occur irrespective of the actions or existence of humans. Tsunamis have washed the shores of Japan since before man lived beside them. Disasters are the result of humans placing themselves directly into the path of these normal natural events. The United Nations' risk reduction document *Living with Risk* embodies this concept, saying, "While most natural hazards may be inevitable, disasters are not" (ISDR, 2004). United States Geological Survey (USGS) scientists Susan Hough and Lucile Jones aptly captured this line of thought when they wrote that "earthquakes don't kill people, buildings do" (Hough & Jones, 2002). This gives us a sense of how important mitigation, the first phase of disaster management, is, and how it becomes crucial to identify hidden vulnerabilities before they are put to the test by a hazard.

Disaster management is a complex undertaking. Nations seem to agree that risk assessment, disaster prevention and early warnings are keys to a safer world. At the same time disasters are becoming more costly and affecting more people, with variations in institutional readiness becoming more important. In this context the author next introduces the concept of whistleblowing, a sort of early warning system that can make risk assessment and disaster prevention easier.

Whistleblowing

'Whistleblowing is the disclosure by organization members (former or current) of illegal, immoral or illegitimate practices under the control of their employers, to persons or organizations that may be able to affect action' (Near & Miceli, 1985: 4). The health of institutions and modern regulatory processes depends on their ability to allow organizational insiders to speak up about wrongdoing and to take appropriate corrective measures. The subject is therefore far-reaching in terms of its complexity and consequences (Lewis et al, 2014).

Whistleblowing research has focused on the whistleblower (Bjørkelo, 2010), on the nature of the disclosure (Park & Blenkinsopp, 2009; Park et al, 2008), on the type of organisation involved (King, 1997), on retaliation (Near & Miceli, 1996; Rehg et al, 2008) and on protection offered to whistleblowers (Vandekerckhove, 2006). Cultural and legislatorial changes are pushing organisations to act, or at least to seem to act, in an ethical manner. Stakeholders' role in management decisions has increased. In spite of all this there is relatively limited research at management level (Roberts et al, 2011; Vandekerckhove et al, 2014).

Rothschild and Miethe (1999) give whistleblowing the role of watchdog for society vis-à-vis the unethical behaviours of organisations. It is a way to save lives, prevent injury and death, stop corruption, waste and exploitation. For Miceli et al (1991) it is a pro-social behaviour that can prevent or remedy organisational wrongdoing. It is inter-connected with political accountability, freedom of information and human rights making it a very complex issue and as such in need of further understanding (Latimer & Brown, 2008; Vinten, 2000; Edwards et al, 2009). Rehg et al (2008) think whistleblowing is important for organisations because of the rate at which it seems to be increasing and because the legal environment is becoming less supportive of organisations that retaliate. Disseminating information allows, for reasoned choices on significant issues, debate and wise decision making aiding the democratic process (Johnson et al, 2004).

Whistleblowing can be seen as an aid for the democratic process (Johnson et al, 2004), as a watchdog for society regarding firms unethical behaviour (Rothschild & Miethe, 1999), as an additional cost to hiding fraud (Schmidt, 2005), as a tool to monitor emerging risks (Johnson

et al, 2004), or as a way of reducing risks associated with sloppy or unethical management (DeCelles & Pfarrer, 2004; Pidgeon & O'Leary, 2000; Blagesu et al, 2005).

Whistleblowing in an organisational context has been researched since the 1970s but only recently has society validated it outside academic circles by offering whistleblowers protection. Different governments protect different types of whistleblowing against different types of retaliation. Various reasons are put forward by governments that choose to protect those that make the disclosures. Legislation usually avoids the term whistleblower, sometimes because of its negative historical connotations, particularly in countries where delation of political opponents was encouraged (Lewis et al, 2014). Some see it as a way of saving money, others as a way of averting disasters (Vinten, 2000; Ionescu, 2012). Flowing from their underlying thinking these policies protect only certain disclosures. Sometimes, as is the case in Romanian legislation (Legea nr. 571, 2004), there is a role-prescribed duty to blow the whistle (Leys & Vandekerckhove, 2014). This is doesn't appear to be feasible (Vandekerckhove & Tsahuridu, 2010) as the zero number of people brought to court for not blowing the whistle in Romania since the law was enacted in 2004 does seem to indicate. In 2012 the US has extended whistleblower protection in direct link with safeguarding *critical infrastructure* (WPEA, 2012).

The differences whistleblowing research observes between countries, industries or policy areas are relevant variations on underlying themes derived from 'the reality that corruption and malpractice can arise in any institutional setting, as can the reporting of it' (Lewis et al, 2014: 3). Whistleblowers will normally report internally to the organization before they decide to blow the whistle externally (Lewis et al, 2014). Given that the average loss that a company sustained because of fraud in 2007 was US$3.2 million and that whistleblowers were the most effective source in detecting corporate crime (Price Waterhouse Coopers, 2007), it is becoming increasingly clear there is a need to analyse the attitudes and behaviours of those who receive these disclosures. However, 'there is no research that explores managers' perceptions of whistleblowing in relation to the contributions it can make to the accomplishment of organisational objectives and [Enterprise Risk Management] ERM' (Tsahuridu, 2011).

Whistleblowing is a complex issue because of the nature of what is revealed and because of its far-reaching consequences. Though there seems to be accord in academia on its societal merits and countries increasingly legislate to protect whistleblowers there is limited research on the way managers frame this resource.

Whistleblowing Is Disaster Risk Reduction

Approaches To Disasters

The way disasters are understood by academia and practitioners varies considerably. Overall three perspectives stand out (Hilhorst, 2004). The first is a top-down approach where the hazard comes from outside society (except for technological disasters where it stems from a socio-technical realm) and poses a measurable risk to people, buildings or the environment. The elements at risk are vulnerable and by supplying them with technical know-how and financial support they will become more resilient. The aim is to reduce risk by reducing its likelihood or its consequences should it materialise (Coppola, 2007; Alexander, 2002; Wisner et al, 1999; Bankoff et al, 2004).

The second is a bottom-up approach where the hazard (though not negated) is seen as a triggering factor. Social, political and economic systems interact and generate differences in access to resources (of any kind) as well as exposure to hazards, making some vulnerable and others resilient (Wisner et al, 1999). Technical solutions are portrayed as culturally or economically inapplicable or inadequate (Cardona, 2004). The solutions are to be found at the grass roots level with local people using local knowledge to increase their resilience.

The third is a complex systems approach. Particularly with socio-technical disasters one can see how complex systems (an oil storage facility, a space ship, a nuclear power plant) that have predictable interactions between their components can suddenly and massively change structure (it all explodes) with only minute variations in their components. It‘s not the variations but the interactions of those variations that amplify to produce the consequences. When another complex system (i.e. humans) is added to this equation the number of interactions and descriptions or interpretations of those interactions greatly increases. This vast number of interactions might indicate that there can be multiple perspectives, one not necessarily excluding the other. From these perspectives corresponding solutions flow (Hilhorst, 2004). What this means is that the same issue (a disaster of one kind or another) can have multiple, equally effective, solutions. One way of finding a solution is to look at the nodes (the connection points where multiple interactions intersect). It is argued that whistleblowing’s ability to inform on hidden vulnerabilities makes it one of these nodes and, as such, a part of DRR.

The Disaster Of Misbehaviour

Two commonalities stand out when looking at the seemingly different Deepwater Horizon oil spill in the Gulf of Mexico - 2010, the Three Miles Island accident - 1979, the Exxon Valdez Oil Spill - 1989, the Piper Alpha oil rig explosion - 1988, the capsizing of the Alexander L Kielland rig – 1980, the collapse of Enron - 2001, the Bhopal gas leak - 1984, and the Space Shuttle Challenger in-flight breakup – 1986. First, the inquiries that followed them tended to contain ‘a sad litany of what went wrong, procedures bypassed and ignored, and undue risk taken’ (Vinten, 2000). Second, we observe that in many, if not all, of these cases there were

individuals that were in the know, potential whistleblowers, who may have spoken up but were over-ruled or silenced (Vinten, 2000).

One cannot blow the whistle on an earthquake. Yet when we analyse what makes us vulnerable to that earthquake, or other hazards, we find there is plenty to speak up about. The case of Fukushima is a telling one. It was a nuclear meltdown that followed a magnitude 9.0 earthquake and a 15-metre tsunami and it was quite simply an interactive complex systems failure (Hilhorst, 2004; Perrow, 1999). Some sub-systems were technical, some were psychological while others were sociological (the list if far from exhaustive). It was also typical of cascading disasters. The earthquake and tsunami acted as stressors on the system. One weak node was that Tokyo Electric Power Company (TEPCO) management falsified safety records (Reuters, 2011), making the plant vulnerable to this exact scenario. Yet again we see a clear need for whistleblowing research at management level.

Risk

The complexity of both whistleblowing and risk makes their combination rewarding for researchers interested in exploring the subject. Tsahuridu (2011: 56) notices that 'despite the overlap between whistleblowing and the identification of risk, these attempts [to improve corporate governance] appear to be independent and to have different processes and objectives.' The author agrees and would like to expand this point by showing the high variability to be found in risk construction and interpretation. It is this variability, among other things, that might lead to different processes and objectives. To make meaningful steps in scientifically linking risk with whistleblowing we first need to understand how risk is constructed and processed.

It was stated earlier that Fukushima was an interactive complex systems failure with some sub-systems technical, others psychological, while others were sociological. It seems reasonable then to mirror this complexity when analysing risk construction and interpretation, for it is only when these different perspectives complement each other can we make full use of them.

From a *technical analysis* perspective risk appears simple. One anticipates potential undesirable effects (quantifiable losses/fatalities) and then uses statistical data or modeling hoping to reveal the cause of the unwanted effect. Its function is to share or reduce risk (Coppola, 2007; Perrow, 1999, Renn, 1992; Turner & Pidgeon, 1997).There are however some very serious limitations when looking at risk this way. First, people's interpretation of undesirable effects is modulated by beliefs and values (Dryden & Branch, 2008). In other words, the same effect can be interpreted as positive by one and negative by another. If HSBC Holdings becomes insolvent because of gross mismanagement, investors and the general public will likely perceive this in a negative fashion. On the other hand, those who

bought cheap credit default swaps on account of its 'A' rating will generally agree it has been quite a good day.

Second, psycho-socio-technical systems generate vastly more complex interactions than average probabilities (Cardona, 2004; Hilhorst, 2004). It is nearly impossible to answer the question 'what determined this event' as we simply cannot replicate it. If we try this in an unbounded system, typical of all the disasters exemplified throughout the chapter, we just end up getting different results every time.

Third, numerically combining likelihood and consequences implies they both matter equally which leads to similar values for very different events (Renn, 1992).Using a quantitative tool (Patterson & Neailey, 2002) such as Risk = Likelihood x Impact one can arrive at the technically valid conclusion that long-tailed risks, low probability/high impact (Taleb, 2012), such as Fukushima are equal in value to a high probability/low impact risk. R=1x9=9x1. The fallacy here is not recognizing that falling one time from nine meters is not the same as falling nine times from one meter[1].

The *economic perspective* of risk moves from predefined lists of unwanted effects to subjective satisfaction vis-à-vis potential consequences. Risk is therefore made a part of cost/benefit analysis and thus becomes useful for individual decision making. The key word here is 'individual' because it leads to contradictory results depending on who is doing the analysing. First, we have communities and organisations that simply choose to live with the risk because the costs associated with mitigating it are prohibitive. A simplified example that highlights the cost-benefit scenario is the use of the automobile. At the moment, over a million road fatalities occur world-wide each year. This is clearly a great risk. With higher costs, car manufacturers could make the cars much safer and significantly reduce fatality rate. This would, however, make cars too expensive for the average consumer. The loss of over a million lives per year is thus accepted for the benefit of having affordable cars (Coppola, 2011).

Second, political and social dimensions influence the economics of an acceptability decision (Viscusi, 1996). Some of the most common criticisms of the process by which risk acceptability is determined are: a) Those with money and vested interests can influence the process of determining the acceptability of risk. Determining risk acceptability, mitigation spending, and regulations, is influenced by politics, so it becomes possible for interest groups to influence those decisions (Mauro, 1995). Not all companies have power, legitimacy and/or urgency on their side in their relationship with the contextual stakeholders (legal, political) but some do (Kroger, 2005, Jennings, 2003; Bratton, 2002). Salient is the balancing between conflicting stakeholders claims (Mitchell, 1997) b) Setting a monetary figure (in cost–benefit analyses) on a human life is unethical. This refers to

[1] For a similar point on risk, vulnerability, and the concept of antifragility - the property of systems to gain from stress and volatility, see Nassim N. Taleb (2012)

involuntary risks that transactions can impose on third parties (Renn, 1992). To the person whose life is placed at risk most monetary figures will seem an inappropriate trade-off. Most risk assessment studies (at least the ones publicly available) do not quote the amount of money to be saved per human life loss accepted. Viscusi (1996) puts the figure at $2.8 million per life saved as an acceptable cost. Any cost greater than $2.8 million per life fails the cost–benefit test. 3. Risk management is usually an undemocratic process (Coppola, 2011). Quite simply those who may be harmed are not identified or asked if the danger is acceptable to them.

> 'Often a determination is made as to how much "cost" it is worth to save that life, usually 2 million dollars. Cost–benefit analysis often overestimates the costs of regulation. It also tries to quantify the unquantifiable, or translate the noneconomic—pain and suffering, illness, and disease—into money. Many consider this unethical.' (Coppola, 2011: 173)

Cost-benefit analysis, as put forward by the economic perspective, does very little to explain risk construction and interpretation, mostly because people use vastly different pathways to make decisions[2]. This brings us to the *psychological perspective*. It focuses on the individual and notices that risk interpretation and corresponding behaviours are modulated by perceived context. In other words, behavioural response is regulated by interpretation of risk and not cause-effect reality (Armas, 2006; Bless *et al*, 2004; Dryden & Branch, 2008; von Winterfeldt & Edwards, 1986). Two people can respond differently to the same event. The event is the same; their interpretation of it is not. It's the interpretation that shapes behaviour, not the event itself. Because risk has to do with *potential* events, something that may or may not happen, to a lesser or higher degree, and with a smaller or larger impact, it requires a higher degree of abstraction. It is this abstraction, the way we think of risk, which shapes behaviours and not the objective risk[3] (see Figure 2). The distance between objective risk probabilities and the probabilities people guess is called 'risk ambiguity' (Camerer & Weber, 1992; Etner *et al*, 2012). Risk ambiguity only holds for high frequency events (house fires, car crashes, earthquakes in Japan) where we have enough data to offer reasonably objective probabilities.

Uncertainty, as a key component of risk, is processed through heuristics (Crisp & Feeney, 2009; Kahneman et al, 1982, Zebrowitz, 1990). Heuristics are 'rules of thumb' that people use to problem solve complex situations and judge probabilities. They have been widely researched since the mid-70s (Tversky & Kahneman, 1974) with Daniel Kahneman receiving the Nobel prize in 2002 for his work on probabilistic theory (a descriptive model of how people choose probabilistic alternatives that have risk, when they know the probabilities)

[2] See bounded rationality. Primarily Herbert A. Simone (1955,1957) but also Ariel Rubinstein (1998)

[3] See cognitive-behavioural mechanisms. A good starting point is Aaron T. Beck (1979) and going a bit further back, Seneca the Younger (1969)

(Kahneman & Tversky 1979). Some of the more widely used ones in research are: a) availability – the easier it is to think of examples of events the higher their perceived probability, b) anchoring – the tendency to rely on the first piece of information, and c) representativeness – incorrectly asserting that the probability of two events is higher than that of either of the two, based on how representative or prototypical one is of that event. Psychological research also offers us ample research on cognitive-emotional characteristics such as locus of control (Riechard & Peterson, 1998), perceived self-efficacy (Kallmen, 2000), or anxiety (Butler & Mathews, 1987), and the role they have in shaping risk perceptions. It seems then quite important that we have a reasonably thorough understanding of these mechanisms if we are to have some success in understanding the dynamics between whistleblowing and risk.

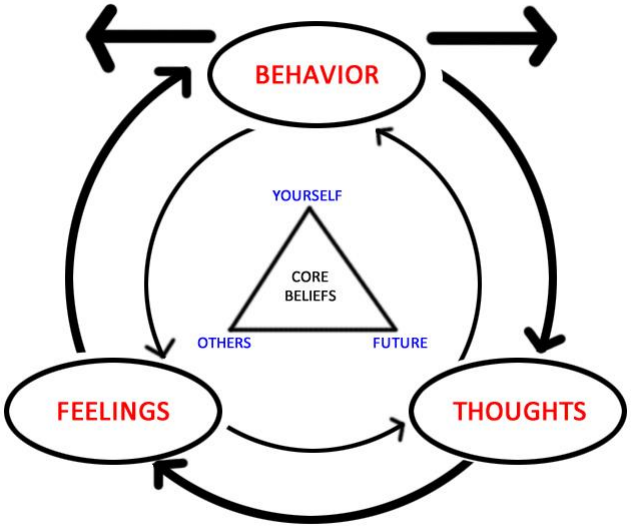

FIGURE 2 Emotions, thoughts, and behaviours all influence each other. Notice the absence of any direct, unmediated, influence of what is outside (objective reality) on behaviours. (From Cognitive Behavioural Theory, https://goo.gl/GtkPj8)

The *sociological perspective* moves from the individual and sees risk as a part of a larger social unit. It looks at social systems, such as communities or organisations, and how they share knowledge about risks through communication (Bankoff et al, 2004). Risk thus becomes a social construct reflecting the values/norms of the group. One of the major limitations of this perspective is that social complexity is reduced to manageable chunks through subjective selection based on that person's/group's theoretical perspective and/or interest (Renn, 1992).

One such model, of how social norms impact risk behaviour at decision-maker level, is Turner's (Turner & Pidgeon, 1997), which although extremely useful in pointing out how organizational life can impact safety, assumes that decision-makers either don't have

enough information or that they are part of a “bounded decision zone” because of culturally accepted beliefs and norms. The underlying assumption is that it happened “despite the best intentions” (Pidgeon & O’Leary, 2000). What the model seems to ignore are the instances where decisions are made rationally, well informed, and without being bounded by norms (albeit as much as they can be), the instances where the “best intention” is directed solely at the decision-maker him/herself (DeCelles & Pfarrer, 2004; Hesst & Ford, 2008). Again, we see plenty of room for whistleblowing to reveal such vulnerabilities.

In our quest to see how whistleblowing might be helpful in reducing risk we have so far looked at some of the major perspectives on risk: (1) the technical perspective is useful for high frequency/low impact events (car crashes, house fires, etc.) but is of limited help when addressing disasters, which are intrinsically low frequency/high impact, (2) the economic perspective and its subjective satisfaction might explain why some will choose to impose risk onto others (usually without the latter being aware of it), (3) the psychological perspective which seeks to discover what cognitive-emotional characteristics modulate risk perception and the behaviours that follow, and (4) the sociological perspective where risk is shaped by beliefs and norms. It is only by understanding how risk is approached, theorised, and, most importantly, operationalized, that we can begin to make the link between whistleblowing and risk part of empirical research.

Governance

Hazard, risk, resilience and vulnerability are all linked. There is no risk if there is no hazard and there is no vulnerability if there is no risk. The way one chooses to interpret hazard, risk, vulnerability and resilience will guide our approach to risk assessment, communication and management. If the acquisition manager of a company is corrupt and accepts low quality pipes for their installation the risk of a hazardous leak or explosion increases and the company and the community they operate in become vulnerable. Surely good governance should be able to resolve this issue? This might be the case. However, if we again look at Fukushima we see that Japan is considered to be a country with very good governance (World Bank Institute, 2010) and yet risk management failed to protect a nuclear power plant from an earthquake and a tsunami in a country that is prone to big earthquakes (Aydan et al, 2001) and where the word ‚tsunami’ comes from.

Good governance can be characterized by open processes, a professional bureaucracy, an accountable executive branch all linked by a strong civil society and all acting under rule of law (Blagescu, 2005). If Japan fits that description then the question is how did its regulatory arm, which also has high quality indicators (World Bank Institute, 2010), interact with TEPCO? By just looking at the numbers Fukushima should have not happened.

The relationship between government agencies and non-state organizational actors is important because a healthy one seems to be a sign of good governance and good

governance seems to encompass good risk management (Hoti, 2004). One might therefore be inclined to look at governance when researching whistleblowing/risk reduction. There are however some issues with both defining and measuring what a healthy relationship actually means in this context. The first is that organizations may interpret scrutiny as a threat (Mannarelli, 1996). This is relevant because if that is the case then one could ask how the organization might respond to such a perceived threat. It is people that make decisions in companies/organizations and people's responses to threats will generally fall under three categories: fight, flight or freeze (Bracha, 2004). Companies can and will influence the political and legal arenas through corruption (Mauro, 1995). If one looks at how a regulating body (stakeholder)(Mitchell, 1997) influences the company then why not also look at it the other way around and see how the company (now a stakeholder) might influence the regulating body. When balancing between conflicting stakeholders claims (Mitchell, 1997); what if some of the claims can be made to go away at a lower price than actually honouring them would involve? There appears to have been a tacit understanding in Japan between its nuclear regulating body and TEPCO (IAEA, 2011) whereby regulators came to work for the organization later on in their careers (Reuters, 2011). If that is the case then one could argue the leadership of this organization chose to fight. Once again we see how disclosure of the state of affairs might have made the organization more resilient.

The second has to do with government agencies. The people in these agencies should represent the interests of the populace by regulating the risks that organizations within their jurisdiction can impose on others (Coffee Jr., 2002; Office for Nuclear Regulation, 2011; Thomas 1998). If the agency is accountable to the society of which it is a proxy (Vandekerckhove, 2006: 284), this should work. The issue is that this rests on the underlying assumption that the people there have a superior capacity to predict disaster when compared to the people that will suffer from the disaster. Expert predictions from risk assessors, or "the new breed of shamans" as Perrow (1999) calls them, seem to have as many errors as the predictions made by non-experts (Taleb, 2007)(for sources of errors, see Heuristics above).

The author sees limited applications for the concept of governance in the scientific study of whistleblowing and risk. The issue is that good governance seems to be a label, that cannot be operationalized, with limited explanatory power and which is constructed on behaviours (controlling corruption, lowering economic risks, maintaining political stability, etc.), and is then measured by looking at those same behaviours. This is similar to the circularity found in trait psychology where the reasoning is A: Why does Daniel get into fights? B: Because he is aggressive. A: How do we know if he is aggressive? B: We measure how often he gets into fights. It's likely more effective, in terms of the scientific quality of our outputs, to limit ourselves to the study of measurable constructs such as risk and whistleblowing, without necessarily aiming to make governance part of the picture.

Conclusion

The links one can find in academic literature between disasters and whistleblowing typically put forward the idea that the latter might help us avoid the former. While this is encouraging it should be noted that in almost all of these articles the links tend to, rightly so, act as justification for why whistleblowing is relevant as a research subject (Bashir et al, 2011; Bok, 1980; Dehn & Borrie, 2001; Lewis *et al*, 2001; Miceli & Near, 1994; Park *et al*, 2005; Sprague, 1998). However, they very rarely focus extensively on disasters and Disaster Risk Reduction. To the author's knowledge there are only three articles that deal primarily with the disaster / whistleblowing pairing: Vinten (1993, 2000) and Uys (2006). There is also a strong argument for whistleblowing management as enterprise risk management initiated by Tsahuridu (2011). There is no empirical research.

People will continue to live in the path of hazards. Our exposure is only likely to increase if current global trends continue. It thus becomes relevant to look for alternative ways to reduce vulnerability. It is observed that organizational misbehaviours create, hide, and externalise risks. Employees are the first to spot vulnerability within their organization and they tend to disclose it internally. Future research[4] should therefore explore this avenue by asking such questions as:

- To what extent is whistleblowing seen as risk reduction by managers?
- Do organisations have the competency and resources to provide internal channels for disclosure of information?
- To what extent does relevant legislation impact current arrangements?
- What is the nature of expected benefits to flow from setting up internal disclosure channels?

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[4] We are currently carrying research in to the way managers perceive whistleblowing as a risk reduction measure. Our research team is Professor Dr. Iuliana Armas and myself. We are based at the 'The Centre for Risk Studies Spatial and Dynamic Modeling of Terrestrial and Coastal Systems' of which Dr. Armas is the head, at the Faculty of Geography, University of Bucharest. We are currently carrying research in to the way managers perceive whistleblowing as a risk reduction measure.

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