Safety Education: Culture, Leadership and Learning in the Workplace: A critical discourse analysis

by

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Bachelor of Arts, University of New Brunswick, 1993
Master of Education, University of Calgary, 1998

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Supervisory Committee

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Abstract

A challenge of our time is that workplace fatality and injury rates have remained consistent for the past 25 years (AWCBC, 2017, Table 22). According to Association of Workers Compensation Boards of Canada statistics, since 1993 approximately 1000 workers have been killed on the job every year. The human and financial costs of these failures are high, so major incident reports are produced as means to guide how industries and corporations need to move forward on education, learning and safety as a whole. Questioning what these reports actually say is a necessity in terms of adult education for safety, but there is little in the literature that shows any focus in this area. Yet these reports are important because what they tell us, or do not, guides the future. Using critical discourse and content analysis, my study explored primarily one major accident report – *The Report of the BP U.S. Refineries Independent Safety Review Panel* (2007) – written in response to the 2005 BP Texas City Refinery accident. I chose this as it is very comprehensive report, available publicly, and is similar to many that have been produced.

Findings show that on one hand, the Baker Panel actively worked to hold BP accountable for the accident, calling out the company for poor training programs and leadership staffing, indiscriminate cost-cutting and lack of investment, as well as tolerating unrealistic production pressures. In various ways, the panel named capitalism's and profit over safety as problematic. However, the report also perpetuates a rigid, narrow view of leadership, bases its recommendations in part on the 'myth' of a safety culture, does not recognise workers' knowledge, does not appear to understand or suggest anything around the importance of informal learning and mentions little about the important concept of mentorship. Further, it maintains a technical-rational status quo, supporting, even promoting, the existence of a 'traditional' corporate infrastructure framework that oppresses workers and inhibits their safety.

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I acknowledge the extraordinary community of people at the BP Cherry Point Refinery who, by showing me warmth and friendship in 2006-2007, demonstrated how important community and relationships were to the workplace and safety. They were models of how effective informal learning could be, without even really trying. They were by far the most important inspiration for this research

I acknowledge my three children; Torin, whose natural organizational skills inspired me to make a plan; Yvie, whose insatiable thirst for challenge and improvement kept me pushing to complete, and Ethan, who's natural inclination to question everything helped me see how some of the most important learning comes from the questions within us.

Finally, I would also like to thank my best friend and partner, my spouse Michelle, whose patience held fast throughout the process. Thank you for believing in me.

Dedication

I dedicate this dissertation to the memories of the 15 workers who lost their lives, and to the 180 workers who were injured at the Texas City Refinery on March 23, 2005.

Chapter 1 - Introduction

Introduction

This is a study about workers' safety, about life-threatening and life-ending 'accidents,' about knowledge, culture, education, and learning and the discursive practices – in this case major accident reports – that challenge and/or maintain the status quo. The study emerges from two contexts. The first is my own experience. Having spent the past 20 years as a professional in the area of workplace training, education, and safety, my observations and reflections form part of the rationale and basis for the questions that drove this research. I discuss that experience below. The second context is gaps in the literature. A search shows a litany of thought on culture, safety culture, leadership, and, of course, adult education and learning. Few, if any, however, bring the three concepts -- culture, leadership and learning -- together as lenses to explore safety as a learned value priority in a neoliberal world. The reports written around accidents have a significant impact on workers' safety through the policies and programs implemented by organizations in their wake, making them highly influential 'pedagogical' documents which have yet to be examined through the lens of adult education.

Purpose of the Study

Current and future decisions about worker safety are often guided and informed by what has happened in the past and this means through the incident analyses and recommendations outlined in major reports, often commissioned by government controlled regulators to critique, respond to and suggest new ways of working, thinking, and/or training within the current corporate culture. These reports often make causal connections (technical and practical) that suggest ways to improve safety. Organisations and corporations then use these reports to develop

new safety policy. These reports are seen as de facto truth and, if the concepts are misunderstood or understood in a narrow way, they can have a detrimental impact on future safety progress.

My study aimed to uncover how these reports potentially impacted decisions about safety. These reports are important. They give direction and we need to understand how they challenge problematic contexts and practices and/or maintain a status quo, and their implications for education, learning and leadership. This study fills a gap in the literature on workplace safety, which is little focused on adult education and learning, and the adult education and learning literature, which seldom focuses on workplace safety by exploring in these important documents the connects and disconnects between how these documents understand what counts as knowledge, who has (or has not) knowledge, what types of leadership matters or who has power, what 'safety' and 'workplace' actually culture mean, and what education and training need to look like or take up. In other words, I looked at the way culture, training, learning and leadership in the context of workplace safety were taken up and utilized through formal accident/incident reports following one particularly relevant safety failure. To do this, I chose to analyse *The Report of the BP U.S. Refineries Independent Safety Review Panel* (2007). This report was released following the March 23, 2005 refinery explosion at BP's Texas City Refinery that killed 15 workers and injured 180. I decided to look at an historical document because history can provide important insights into what was going on from an education and learning standpoint with respect to health and safety at the time of the accident, but also, has implications for today since they feed in and off each other. From the past, we can try to construct what has gone wrong, what is being perpetuated, or may be helpful and new, in terms of thinking through a new safety education and knowledge future. The study focused on how the report discussed the above concepts using two of the refineries examined as examples, the Cherry Point refinery in Blaine,

Washington, USA and the Texas City Refinery, near Galveston, Texas, USA. These places were significant because of the starkly different safety records of the two facilities. Additionally, I had a personal connection with the Cherry Point refinery, having worked there as a consultant in the aftermath of, and related to, the accident at Texas City.

Background

There could not be more reasons why a study such as this is important. Accidents in industrial sectors continue to occur far too frequently. On July 6, 2013, at approximately 1:15 am local time, a runaway Montreal, Maine and Atlantic freight train (MMA-002) carrying 72 tank cars of highly volatile Bakken crude oil derailed in the centre of the town of Lac-Mégantic, Quebec. Multiple tank cars caught fire, resulting in several explosions and creating an inferno that destroyed 40 buildings in the town's centre, roughly half of the downtown area (Jang, 2013). Forty-seven people died. It was the most lethal Canadian rail disaster in nearly 150 years. Though the cause of the accident was not initially evident, according to a report by the Transportation Safety Board (2014), it was ascribed to a series of systemic failures. The conclusions reached by the TSB report were that the regulatory system was ultimately effective and the blame could be placed on the company for: a) not providing effective training for the crews to learn the regulatory system and; b) not providing enough regulatory oversight (enforcement) to ensure the rules were followed. Additionally, blame was assigned by the Transportation Safety Board (2014) to a weak ‘safety culture’ (p. 124), which allows part of the blame to be assigned to a nebulous and somewhat uncontrollable variable. This is a typical corporate response where blame needs to be assigned quickly and conclusively to satisfy regulators, company stakeholders and the general public.

Incidents such as this have focused media and public attention on health and safety practices in the workplace, both in terms of the welfare of individual workers as well as overall public safety. The tragedy of Lac-Mégantic reminds us that safety lapses in what are known as the heavy industries (e.g., Transportation, Energy, Resources, Manufacturing, Utilities) can have a devastating impact on people's lives, the environment, and the economy. This disaster, however, is just one incident in a long history of failures of industrial safety and health practices that have resulted in needless injuries and fatalities, and inspired major reports with recommendations for change. Other such 'accidents' include the Hinton rail disaster, when, on February 8, 1986, 23 people were killed in a collision between a Canadian National Railway (CN) freight train and a VIA Rail passenger train near Hinton, Alberta; the Westray coal mine disaster, where, on May 9, 1992, an explosion at the Westray Coal mine in Plymouth, Nova Scotia killed 26 miners; and the now infamous Deepwater Horizon accident where, on April 20, 2010, the offshore oil drilling rig Deepwater Horizon suffered an explosion that killed 11 of the rig's crew members.

While major events like these are relatively rare, smaller incidents and accidents that do not make the headlines are uncomfortably common. In 2009, there were nearly 142,000 incidents reported and 121 fatalities in British Columbia (WorkSafe BC Incident Summaries, 2013).

Research Context

The economic cost of workplace injuries is staggering. Leigh (2011) estimates the national cost (direct and indirect) of occupational injury and illnesses among civilians in the United States for 2007 was approximately $250 billion. In Canada, in 2008, factoring in direct and indirect costs, the total cost of occupational injuries to the Canadian economy was estimated to be more than $19 billion annually (Gilks & Logan, 2010). In Canada, over the decade between

2001 and 2011, nearly 12,000 workers died as a result of workplace injuries. On average, three workers are fatally injured everyday – too often because of unsafe workplace conditions and practices (AWCBC, 2015, Table 22). These numbers are shocking, and I will return to quantifications, but the more important costs of these failures are human costs: the loss of life and the loss of loved ones, the lost ability to make a living for self and family, and the loss to communities as a whole.

Something apparent in mainstream discourses is that the focus is frequently more on numbers and economics than the real human cost (Panopoulos & Booth, 2007). However, each subsequent accident or incident prompts further public outcry for increased regulation and oversight, for tighter directions and controls. Despite this, incident and injury rates have stopped declining, remaining essentially unchanged year over year for the past decade (AWCBC, 2015, Table 1). One needs to question why. One reason, as research shows, is that increased regulatory oversight is not necessarily effective. Auld, Herber, Gordon and McClintock (2001) released their findings of the impact of on-site safety inspections to the frequency of work-related injuries in the Alberta construction sector between 1987 and 1992. They concluded, "on-site safety inspections *have no effect* on the risk of accident and injury" (emphasis mine, p. 900). Additionally, in their book *The Management of Safety*, Sutherland, Makin, and Cox (2000) found "the existing methods of attempting to enhance safe performance have very limited efficacy" (p. 1). From these documents, we can infer that current safety methods and strategies designed to impose safety onto workplaces and workers (i.e., monitoring, regulation, training) have limited impact on lowering the rates of accidents and injuries. This means a new perspective is needed. We need to focus our attention on the human element, the community and alternative approaches to the education and learning of safety. There is little question that regulatory oversight is an

important piece of the ‘safety’ puzzle, especially when it comes to holding organizations accountable to standards of work that are protective of workers. It seems likely, however, that the ‘law of diminishing returns’ means that endlessly pursuing regulatory solutions is not the answer to continuous safety improvement. What also needs to be acknowledged, and this is where my study comes in, is that the reports commissioned and written around all of these accidents play a critical role in how we might be able to have a pedagogical discussion about what other approaches can be looked at to further improve workplace safety. Yet today there has been no systematic analysis of these documents through the lens of adult education and learning, although they have major implications, or perhaps better said, much to tell us pedagogically about how corporations are encouraged to develop these new perspectives about workplace safety, or how they are not. What is the ‘potential’ of these reports to bring about change? What do they say and what do they leave unsaid? And why does it matter?

Positioning myself as the Witness-Researcher

In September of 1997, I began my career as a training and development specialist with a small ‘analysis and recommendations’ contract with the Canadian Forces. During the next 20 years as a workplace learning professional, I developed, delivered, and was otherwise involved with, dozens of various safety training programs and initiatives in a multitude of industry sectors including transportation, construction, manufacturing, utilities, and resource development. My experience involved rich, thoughtful interaction with workers, management, and the relevant legislation concerning safety programs and training. I experienced the corporate and community aftermath of innumerable accidents, both fatal and non-fatal, where questions were asked and conclusions reached, that impacted the lives of employees and their families. Through this experience, I became increasingly convinced that worker safety was not something that could

simply be trained, legislated, engineered or mandated into existence. The 'safety training' I was creating was necessary, but not sufficient, for influencing the safe being of workers. Through my interactions with worker communities, I started to appreciate that the most needed safety education was learning how to prioritize safety as the *primary* value. I also started to think that workplace culture was critical to prioritizing safety within those communities; that it was this context within which critical safety learning occurred. It was also during this time that I was witness to decisions, incidents, and events that led me to believe that corporations were much more concerned about profit than the safety of employees. Out of this experience, I established a 'working' theory that *safety*, *culture*, *learning*, and *leadership* were connected in ways not addressed by typical corporate/ organisational approaches to training worker safety, and the common trope of creating a 'safety culture,' often touted by many of the organisations I encountered, was woefully misunderstood and painfully insufficient.

Thus, this study was developed from my experience as a workplace education professional, as a witness to accidents, and as someone highly familiar with accident reports, although I had not looked at them as systematically as I do in this study. In May of 2006, I conducted training needs analysis at global energy giant BP's Cherry Point Refinery near Blaine, Washington. I was brought in as a consultant as part of a wider corporate response to an accident that happened a little more than one-year prior at another BP Refinery in Texas. It was during my time at the Cherry Point Refinery, and the subsequent exploration of what happened at the Texas City Refinery, that helped refine the questions that form the basis of my theory and this study.

Research Questions

Primarily, this study used document and critical discourse analysis to answer the research questions: What does *The Report of the BP U.S. Refineries Independent Safety Review Panel*

(2007) tell us about how the Baker Panel and BP viewed culture, leadership, education, and learning in the context of safety? What are the problems with how these are framed and articulated and what is the potential for developing new education and training methods and approaches for workers? To answer these broad questions, I used a variety of sub-questions. Firstly, what did the *Baker Panel* conclude about culture, leadership and learning at the refineries and how or are they defined? Secondly, how did the Baker Panel perceive BP as viewing those same concepts? Thirdly, what did I *as a researcher* see in the evidence they presented about those concepts? The way these ideas are understood by the Baker Panel can tell us about what safety knowledge, education, learning, training and thus they view as important, what kinds of changes could be implemented, or not, to improve overall worker safety.

Secondarily, I also took the opportunity to examine the report for evidence suggesting why there was such substantial difference between the workplace cultures and safety records of Cherry Point Refinery and Texas City Refinery. These differences were described by the Baker Panel in their report and by the employees themselves via information collected using the Baker Panel's *Process Safety Culture Survey*, which was a data collection tool developed specifically for their investigation.

A Theory of Learning Safety as Cultural Element (Value/Belief)

The way in which post-incident analysis reports such as the ones mentioned and the one focused on in particular in this study (*The Report of the BP U.S. Refineries Independent Safety Review Panel*, 2007) interpret and deploy ideas of culture, leadership and learning can have a tremendous impact on the way future organizations understand and use the concepts. There is a gap between how the reports define the concepts and how the research literature defines them. Like many safety culture scholars (Zohar, 1980, Geller, 1994, Reason, 1998, Hale, 2000,

Hopkins, 2005), I acknowledge a connection between safety performance and workplace culture. Beyond looking at safety as a cultural goal (i.e., to create a 'safety culture'), however, culture needs to be seen as an antecedent to safety. It is the *culture* of a workplace that governs if, when, and how safety, as a value priority, is learned and applied and culture cannot be instrumentalized to prevent technological accidents (e.g., Silbey, 2009). Therefore, through the lens of adult education and learning, the literature suggests that employees/workers learn to value safety informally (informal learning), from leaders/teachers in the workplace community -- role models and mentors who function as cultural nexuses. These leaders are not necessarily, or even frequently, chosen by the corporation or organisation, but are chosen or sanctioned by the community because of their pedagogical ability (learned or innate). The power they have is a power *with* people, not over people (Forsyth, 2009), as normative organisational-corporate structures often prescribe. Hierarchical organizations create artificial power structures that alienate and oppress workers, impeding community relationships and knowledge transmission. Workers need to have agency and power over their own learning about safety. This study explores, using predominantly one major accident report, how the authors of the report challenge, but more problematically, perpetuate normative corporate or regulatory control that ultimately dismisses and disempowers workers and what this means to means to educators like me who aim to make a difference.

The Accident at Texas City Refinery

On March 23, 2005, at approximately 1:20 pm, a series of explosions occurred at BP's (then owned) Texas City refinery, near Galveston, Texas during the restarting of a hydrocarbon isomerization unit. The accident killed 15 workers and injured 180 others. An investigation by the US Chemical Safety Board (CSB) concluded, "Cost-cutting, failure to invest and production

pressures from BP Group executive managers impaired process safety performance at Texas City" (CSB, 2007, p. 25). BP owned five refineries in the United States at the time, Texas City, Texas; Whiting, Indiana; Toledo, Ohio; Carson, California and Cherry Point, Washington. Following several additional incidents in 2005 at the Texas City Refinery, the CSB recommended that BP commission an independent panel to investigate the safety culture and management systems at BP North America, with a focus on its five refineries. On August 17, 2005 the Baker panel, led by former US Secretary of State James Baker III, was formed. During late 2005, and most of 2006, the Baker panel conducted its investigation into BP's safety management and safety culture. The panel published its findings in a report released on January 16, 2007.

The independent review cited weaknesses in corporate and process safety culture, and flaws in process safety management (the result of production pressures and cost-cutting) as contributing factors to the accident, and as ongoing issues at all the refineries. One unique finding noted was the highly differentiated 'safety cultures' at each of the refineries, with Cherry Point refinery having a "strong safety culture" (Baker et al., 2007, p. 125) and Texas City having an "apparent complacency toward serious process safety risk" (p.120). This conclusion aligned with my own anecdotal observations of the culture at Cherry Point during my time working there as a training consultant in 2006, and led me to question why there were such noticeable differences between the facilities and their respective cultures.

Coming to the Project

It was by no means this single event that led me to want to explore the concept of safety and its relationship to community values, cultural transmission and learning. It was a string of experiences and events over my 20-year career in workplace learning that

seemed to be related, as I alluded to above, to have some common thread running through them about the nature of safety as an embodied value or belief. I began to question the effectiveness of safety training and the existence of a so called 'safety culture.' If there was such a thing as 'safety culture', I thought, what defined it and how we could better understand how this culture has taken hold? I asked myself, 'is this what occupational health and safety is really about?' The aim of safety training and education seemed to be intended solely to claim that safety training had been delivered and completed, meeting minimum industry regulated standards thus protecting the corporation from liability and fines and maximize profits. Safety training and practices did not seem to be intended to have any impact on shifting workers' values and beliefs toward prioritizing workplace safety. What I discovered was a 'cult' of training, informed within a neoliberal mindset that had not been explored and exposed. In these organizations, training is typically developed by first laying down learning objectives, also called performance objectives, putting focus squarely on the organization's requirements of the learners. I rarely encountered training specialists who questioned this standard approach, and when I did they were often systematically ostracized by management, and other, less innovative, members of the team. Though frequently they were lauded by trainers and learners alike.

How knowledge, education, learning and safety are taken up in the evaluative documents of the types of disasters outlined above could have an important impact on how we think about training and education for safety, but few analyses of these critical documents used by corporations exist. My argument suggests there is a larger unseen dynamic at play that, if fully analyzed and theorized, could help define an endgame not yet apparent.

Methodology and Methods

This study used critical discourse analysis and document analysis to explore *The Report of the BP U.S. Refineries Independent Safety Review Panel (2007).* I wanted to explore how the Baker Panel had interpreted and utilized the concepts of culture, learning and leadership as they related to safety generally, but also how they existed at BP and its U.S. refineries in 2005, specifically the Cherry Point refinery and the Texas City refinery. Critical Discourse Analysis (CDA) is a form of discourse analysis that is concerned with relations of power and inequality in language (Wodak, 1995). Document analysis is defined as the "systematic procedure for reviewing or evaluating documents – both printed and electronic (computer-based and Internet-transmitted) material" (Bowen, 2009, p. 27).

In conducting the study, I reviewed the Baker Panel report document, analyzing the data through an open coding process (Strauss & Corbin, 1998) using a popular analysis software. This process resulted in the emergence of core categories and concepts. I then organized these 'categories' into subcategories, and continued to review the data. This process is what is known as selective coding (Price, 2010). By consistently reviewing the data and using a constant comparison method (Charmaz, 2005; Morgan, 1993) I began to notice themes emerging that aligned with my research questions. I continued to read and reread the document, looking for similarities, and ultimately grouping similar concepts together. I categorized data that seemed important but not particularly relevant in an unclassified category. By the end of the data analysis I had several sub-themes with data coded under the larger thematic nodes of culture, leadership and learning.

Significance of the Study

The need for construction, operations and maintenance workers in industry continues to grow. At the same time, while great strides have been made in the domain of safety at work, accidents and injuries continue. Despite the fact that overall injuries and accidents (Accepted Time-Loss Injuries) have had a net decline year after year, rates in heavy industries such as transportation, construction and heavy manufacturing remain high, increasing in the construction sector between 2011 and 2013 (AWCBC, 2015). With so much riding on the education of employees working in these heavy industries, it is surprising that more academic research and programming initiatives are not focussed on the specific learning needs of those working in them. I am hopeful this study will show there is much more to safety education in the workplace than safety training programs.

Conclusion

A new approach is needed for learning and education in industrial workplaces that will encourage and support the development of a workplace community that places a high priority on the value of safety. That way, occupational health and safety is learned as part of lived experience (lifeworld) as opposed to a set of rules, imposed by the system, that need to be followed, but are often broken when no one is watching. This study aims to show that the way the system perceives safety and education in industrial workplaces serves only to limit the understanding of learning to value safety at work. If this is the case, some of the most important educational practices at industrial workplaces perhaps happen informally, outside of the control of the system. If these informal practices can be identified, supported and encouraged, it may be possible to improve overall safety at work.

This study argues that safety beliefs and values are critical to improving safety performance now and in the future. In the Chapter 7, Conclusions and Recommendations, I present the outline of a curriculum/program that I believe supports the growth of workplace communities that prioritize safety and educate workplace community leaders. This is significant because it is a clear departure from the current standard of performance based safety training. The curriculum, inspired by the findings of this study, aims to provide a path to the growth of community-based safety education. In my program, I show how the best 'kernel' of learning rests with those leaders who can be mentors in an everyday context. These are the front-line leaders, foremen and field managers who are role models in the everyday, not disconnected corporate managers. It is these front-line leaders who function as conduits/advocates between the frontline employees (where safety is most immediate) and management, between the ideal of the regulation/training and the on the ground, everyday realities. These are the leaders who can influence the workers by showing them what is acceptable and what is not acceptable when it comes to safety, and by simply showing that interdependence and caring exists and is important, change a worker's belief system concerning safety and ultimately, his or her behaviours.

Chapter 2 - Literature Review

Introduction

This chapter begins with a discussion of critical theory, the theoretical framework through which this study was conducted. Critical theory is the idea that reflective analysis of human thought and action is fundamental to catalyzing positive change. Critical theory also analyzes relationships of power (Horkheimer, 1972). Out of critical theory comes critical pedagogy (Freire, 1970) and critical adult education (Mezirow, 1981). Critical adult education perspectives can help us explore paths to freedom and empowerment within the systems where we work through learning by identifying the oppressive structures within which we live and transforming our individual views of the world. Next, I review the broad concept of culture, and the more narrowly defined ideas of workplace culture, organizational/corporate culture and safety culture. Though commonly used, these ideas are often narrowly interpreted, misunderstood, or overlooked completely by the systems that currently define workplace learning and education. Then I explore the critically important concept of informal learning, which is the way that I suggest the value of prioritizing safety gets transferred throughout the workplace community. Finally, I examine the literature on leadership, mentorship and related power to illustrate how the informal learning that is so crucial to values education has, at its core, leadership and mentorship. These two positional concepts contain forms of power as the community members look to those more senior for guidance.

Theoretical Framework

This study, and its methodology, are grounded in critical theory. Critical theory is described as the foundational perspective from which analysis of social action, politics, science,

and other human endeavors can proceed (Horkheimer, 1972). Research drawing from critical theory has critique (assessment of the current state and the requirements to reach a desired state) at its centre. Critique entails examination of both action and motivation. That is, it includes both what is done and why it is done. In application, it is the use of dialectic, reason, and ethics as means to study the conditions under which people live (Budd, 2008).

Max Horkheimer suggested that:

> The critical theory of society…has for its object men (sic) as producers of their own historical way of life in its totality… Objects, the kind of perception, the questions asked, and the meaning of the answers all bear witness to human activity and the degree of man's power (1972, p. 244).

The practical purpose of critical theory, then, is to discover and challenge the general acceptance of the way things are. We should constantly and fervently question the status quo of society in order to speed our liberation from its constraints.

This study challenges the status quo of safety and health in the workplace by directly questioning the current state of corporate practices wherein the corporate system regulates knowledge and seeks to control the agency of the workers. This is an example of the 'system' invading and colonizing the 'lifeworld.' (Habermas, 1981, Husserl, 1936) As the 'system' occupies the 'lifeworld', it mutes its natural discourse. In the case of this study, it is suspected that the corporate system, and its regulatory overseers, inhibit the opportunity for informal learning to occur, which is fundamental to the learning of community values.

Jürgen Habermas (1981) first described the contrast of the system and the lifeworld in his seminal work *The Theory of Communicative Action.* In it, Habermas builds on the concept of lifeworld, originally described by Edmund Husserl in *The Crisis of European Sciences and Transcendental Phenomenology* (1936). In *The Theory of Communicative Action*, Habermas

describes the dual nature of society. It includes both the lifeworld (those subjective experiences of being human) and the system (artificial social structures). The critical elements of the lifeworld, for Habermas, are the development of mutual communication, face-to-face interaction and the dissemination of shared norms and values. These are all things that get pushed aside or suppressed as the system colonizes the lifeworld. Regulatory oversight under the pretext of public safety and justice, as well as a corporate structure and an industry guided by the capitalist profit motive, are examples of systems that chronically colonize the lifeworld, disrupting communication and discourse, and dehumanizing our existence in the workplace. Corporate and regulatory decision makers consistently try to control the norms and values (i.e., the culture) of the workplace by creating and strengthening the system. The strength of the system allows them to promote competive corporate advantage, control costs, and shape public image, which can impact profits. This serves only to further disrupt communication and discourse. The bellwether for the health of the lifeworld is culture, a strong positive culture inhabiting a vibrant community of people. This leads to the community prioritizing values that put people over profit. Any attempt to control culture is an example of the system colonizing the lifeworld, and is a form of oppression.

Critical Adult Education

Many employees experience a form of economic oppression as they are bound within corporate systems seeking profit and many corporate learning strategies reflect that fact. Training and development has become a multi-billion-dollar industry in Canada and the United States. Every year corporations spend large amounts of money to ‘improve’ the performance of their ‘human resources’ and increase the ‘value’ of their human capital. This de-humanizing approach to human learning is problematic and oppressive. The paradigm of workplace learning in North

America is rooted in the process-based production ideology of consumer-based, profit-driven industrial capitalism. Its focus is on the outputs of the human capital and the best result using the cost/benefit equation to determine human value (Becker, 1964). The central tenet of critical adult education, that critical reflection is central to transforming our learning from experience (Mezirow, 1981), is generally overlooked.

Arguably, any discussion about education as a tool to fight oppression should include the work of Paulo Freire. Freire is the ideological founder of critical pedagogy, an educational concept rooted in critical theory and Marxism, among other philosophies. Freire (1970) writes, "One cannot expect positive results from an educational or political action program which fails to respect the particular view of the world held by the people. Such a program constitutes cultural invasion, good intentions notwithstanding." (p. 95) Thus, Freire suggests that the will and power of learning belongs in the hands of the people. The 'people' Freire refers to are those who are oppressed. Through opportunities for empowerment (critical pedagogy), he believes the primary purpose of education is liberation. In *Pedagogy of the Oppressed (1970)*, Freire demonstrated his belief that emancipation comes from education, by empowering people to exercise their will over the world through open dialogue. Through this dialogue, the oppressed can learn to think critically and openly about things relevant to their lives. Freire suggests that once people develop critical awareness of their situations they are then beholden to act upon the world to change it.

Following on the work done by Freire, Jack Mezirow developed his concept of Transformative Learning as a foundation for adult education. Mezirow suggested that:

> A defining condition of being human is that we have to understand the meaning of our experience. For some, any uncritically assimilated explanation by an authority figure will suffice. But in contemporary societies

> we must learn to make our own interpretations rather than act on the purposes, beliefs, judgements, and feelings of others. Facilitating such understandings is the cardinal goal of adult education. Transformative learning develops autonomous thinking. (1997, p.5)

To facilitate transformative learning, Mezirow suggests learners need to engage in what he called "perspective transformation" (1981, p. 6). Mezirow submits that the meaning schemes that make up meaning structures may change as an individual adds to or integrates ideas within an existing scheme and, in fact, this transformation of meaning schemes occurs routinely through learning. A perspective transformation leading to transformative learning, however, occurs much less frequently. Mezirow believes this less frequent transformation usually results from a "disorienting dilemma"(1995, p. 50), which is triggered by a life crisis or major life transition, although it may also result from an accumulation of transformations in meaning schemes over a period of time.

An important way critical theory informs adult education practices is through critical reflection. Because the current, dominant, employee learning and development model is rooted in a capitalist tradition, profit and productivity are systemically prioritized. There is oppression contained in the system that limits empowerment, community and relationships. Critical adult education concepts are important to changing the way we think about learning in the workplace.

Culture

The concept of culture is fundamental to my premise that prioritizing safety is an embodied value learned through community interaction, rather than a system-derived set of rules, procedures and information intended to be consumed by employees. Predominantly, in the way we intend to use the term, "culture" is an anthropological concept that developed in the 20th century (Kuper, 1999), although clearly the idea of human 'culture' has been around a very long

time. The Oxford English Dictionary (OED) defines culture as “the ideas, customs and social behaviour of a particular people or society”, alternatively “a way of life or social environment characterized by, or associated with, the specified quality or thing; a group of people subscribing or belonging to this” (Oxford Dictionary of English, 2015, d.2) and also, more recently, “The philosophy, practices, and attitudes of an institution, business, or other organization (i.e., corporate culture)” (Fowler’s Dictionary of Modern English Usage, 2016, d.3).

There are many similar types of definitions in the literature. An early definition by Tylor (1871/1974) describes culture as "that complex whole which includes knowledge, belief, art, morals, law, custom and any other capabilities and habits acquired by man [sic] as a member of society" (p. 1). The Center for Advanced Research in Language Acquisition (CARLA) at the University of Minnesota has the following definition of culture:

> (For the purposes of the Intercultural Studies Project), culture is defined as the shared patterns of behaviors and interactions, cognitive constructs, and affective understanding that are learned through a process of socialization. These shared patterns identify the members of a culture group while also distinguishing those of another group. (http://www.carla.umn.edu/culture/definitions.html, retrieved September 28, 2015)

Important here is that “…affective understanding that are learned through a process of socialization.” Safety as a value falls within the affective domain suggested by Benjamin Bloom in 1956 and is therefore, according to this definition, learned through socialization, which is, in practice, a process of informal learning.

Banks and McGee-Banks define culture as follows:

> Most social scientists today view culture as consisting primarily of the symbolic, ideational, and intangible aspects of human societies. The essence of a culture is not its artifacts, tools, or other tangible cultural elements but how the members of the group interpret, use, and perceive them. It is the values, symbols, interpretations, and perspectives that distinguish one people

> from another in modernized societies; it is not material objects and other tangible aspects of human societies. People within a culture usually interpret the meaning of symbols, artifacts, and behaviors in the same or in similar ways. (2012, p. 8)

It is interesting that the authors here suggest that the essence of culture is intangible. “It is the values, symbols, interpretations and perspectives that distinguish one people from another…” This is important because if the essence of culture includes values, then it requires more than the simple installation of “...artifacts, tools, or other tangible cultural elements...” (p.8) to develop.

Damen (1987) defines culture as:

> learned and shared human patterns or models for living; day- to-day living patterns. These patterns and models pervade all aspects of human social interaction. Culture is mankind's primary adaptive mechanism. (p. 367)

This definition also suggests social interaction is fundamental to the existence of culture. Additionally, in claiming “Culture is mankind’s primary adaptive mechanism” Damen is suggesting it is an existential necessity, at least for those humans wanting to live in groups (which ostensibly is nearly all of us). Aligned with Damen (1987), McMillan and Chavis (1986) suggest the development of culture is an organic process, involving interpersonal relationships.

Hofstede (1984) writes, “Culture is the collective programming of the mind which distinguishes the members of one category of people from another." (p. 51). This is a simplistic definition, but it implies that a fundamental component of culture is the “collective” element. This definition resists the idea that culture can be imposed or engineered by an external agency.

An older, but quite comprehensive definition comes from Kroeber and Kluckhohn (1952):

> Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievements of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e., historically derived and

> selected) ideas and especially their attached values; culture systems may, on the one hand, be considered as products of action, and on the other as conditioning elements of further action. (p. 47)

In stating that "culture systems may, on the one hand, be considered as products of action, and on the other as conditioning elements of further action," Kroeber and Kluckhohn claim culture is not only an end (products of action), but also a means to an end (conditioning elements), and as such is emergent and continuously evolving.

So, from the literature, culture is 'a set of collectively held intangible values and ideas, learned primarily through social interaction, which is fundamental to our way of life and is constantly changing.' While there is no clearly outlined and agreed upon definition of human culture, there are many common elements found in the various definitions. This is important, because the lack of a clear definition is possibly what allows organizations to seize on this somewhat vaguely defined concept and deploy it for their own purposes, like the idea of a safety culture. There are, however, two accepted truths about culture that are fundamentally important to our understanding here. One is that culture generally refers to, at least in part, the values, attitudes and beliefs of a defined group of people, and the other is that culture is continually evolving. Thus, if we hold that safety as a value and a belief is a function of a workplace culture, it becomes an important element to examine alongside safety systems, procedures and processes. All are important. I suggest one cannot exist without the others; it is a symbiotic relationship.

Workplace Culture

Workplaces are circumstances of culture; they are dynamic and complex. As seen above, culture is a humanistic concept that develops around groups of people who share a common context (goals, environment, language), such as that found in the workplace. Levy (2003) claims workplace community groups can "satisfy social needs such as friendship and companionship;

satisfy security needs, making employees feel safe and connected; facilitate cooperation amongst employees, and; regulate social and task behaviours such that organizational norms and procedures are disseminated" (p. 360). Each workplace community will have its own culture with its own values, beliefs and norms of practice which the community informally adopts. This community-based culture is usually outside the realm of corporate and regulatory control, although corporate and regulatory influences, among other factors, likely have an impact on workplace cultures (Schein, 2010, Needle, 2010).

Organizational Culture, Corporate Culture and Culture Engineering

In the literature, the term 'corporate culture' is often used interchangeably with the term 'organizational culture.' Schein (2010) defines organizational culture as the "shared basic assumptions learned by a group as it solved its problems" (p. 18) To Schein then, culture is the collective behaviours in an organization. He suggests it is wide-ranging in scope and tends to consist of four layers: values, beliefs, behaviours and assumptions. In Schein's model, organizational values are often easy to identify, as they tend to be written down as statements about the organization's mission, objectives, or strategies. They can often be vague. Beliefs are more specific, but still are evident from corporate statements. Behaviours are the day-to-day way in which the organization operates. These include work routines and organizational structure. Taken-for-granted assumptions are the core of an organization's culture. They are frequently difficult to identify and explain and are often referred to as the organizational paradigm, where the paradigm is the set of assumptions held in common and taken for granted. They represent collective experience without which members of the organization would have to 'reinvent their world' for different circumstances that they face.

Like Schein, Needle (2010) suggests organizational culture:

> represents the collective values, beliefs and principles of organizational members and is a product of such factors as history, product, market, technology, strategy, type of employees, management style, and national culture; culture includes the organization's vision, values, norms, systems, symbols, language, assumptions, beliefs, and habits. (p. 213).

Both Schein and Needle view corporate/organizational culture as a broad, complex, and universal to the organization. Smircich (1983), however, breaks apart the ideations of organizational culture, suggesting

> Much of the literature refers to *an* organization culture, appearing to lose sight of the great likelihood that there are multiple organization subcultures, or even countercultures, competing to define the nature of situations within organizational boundaries (emphasis in original, p. 346).

Further, Smircich questions whether 'corporate culture' is anything more than term acquired by management academics and practitioners. She writes:

> The talk about corporate culture tends to be optimistic, even messianic, about top managers molding cultures to suit their strategic ends. The notion of "corporate culture" runs the risk of being as disappointing a managerial tool as the more technical and quantitative tools that were faddish in the 1970s. Those of a skeptical nature may also question the extent to which the term corporate culture refers to anything more than an ideology cultivated by management for the purpose of control and legitimation of activity. (p. 346)

The commonly held perspective that culture is something an organization 'has', therefore can be changed to improve efficiency or effectiveness, has been referred to as "cultural engineering" (Jackson & Carter, 2007, p. 27). Cultural engineering involves sanctioning the 'right' kind of organizational culture such that management-imposed values rule out particular courses of action or narrow the range of options for a decision. This leads me to question the validity of many artificially created cultural constructs, including the widely used notion of a 'safety culture.'

The Safety Culture 'Myth'

The concept of 'safety culture' is a relatively recent development that was created in the aftermath of the 1986 nuclear accident at Chernobyl in Ukraine. In its post-incident report on the 1986 Chernobyl nuclear accident, the International Nuclear Safety Advisory Group (INSAG) (a group convened under the auspices of the International Atomic Energy Agency) coined the term 'safety culture' for the first time. Initially, they described the term specifically as follows, "In its report on the Chernobyl accident (INSAG-1), INSAG coined the term 'safety culture' to refer to the safety regime that should prevail at a nuclear plant" (INSAG-7, p. 21). INSAG refined their definition in a subsequent publication writing, "In INSAG-3 it was stated that Safety Culture "refers to the personal dedication and accountability of all individuals engaged in any activity which has a bearing on the safety of nuclear power plants"" (INSAG-4, p. 4). In INSAG-4, the definition was refined further into what has become the essential definition quoted and re-quoted as fact by subsequent scholars (Reason 1998, Hopkins 2002) and in myriad documents. It states,

> Safety Culture is that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance. (INSAG-4, p. 4)

INSAG's description and usage of the new concept was applied at the plant level, in reference to the way the workers at the facility viewed and prioritized safety, but also in a much broader, societal way, as is evident in the following passage: "INSAG traced the development of a safety culture to its origin in the national regime of law relating to nuclear safety" (INSAG 7, p. 21).

The way INSAG approached 'safety culture,' pulling it seemingly from the ether, to deploy it as tool to critique safety regimes, was flawed. It was flawed because it did not address

in any way the sociological, anthropological or educational roots of 'culture' as a concept. We are left to assume that because mainstream discourse suggests a broader societal 'understanding' of culture, we can conclude a 'safety culture' is simply a culture focussed on safety. Cultures, however, are never exclusively focused on a single element such as safety (Hale, 2000). Scholars such as Hopkins (2002) and Hale (2000) suggest that 'safety culture' is a problematic term. Hopkins writes "My own view is that it (the term 'safety culture') can and should be avoided" (Hopkins 2002, p. 3) and Hale suggests the term "cultural influences on safety" (Hale 2000, p. 5) should be used instead of 'safety culture.' It becomes problematic when the term is picked up and utilized by subsequent organizations (such as BP and the Baker Panel) to address the less predictable side of human behaviour in the workplace concerning safety. That has led, in my experience, to the concept having very little impact or meaning because it used to describe so much. Thus, much of the blame for today's problematic interpretation of safety's relationship to culture can be attributed to a misguided, alhough likely well-intentioned, term invented more than 30 years ago.

Many organizations and scholars of safety in heavy industry continue to be concerned with the importance of developing a 'safety culture,' or the related concept, 'safety climate' in the workplace (Zohar, 1980, Pidgeon 1991, Geller 1994, Guldenmund 2000). It is suggested a 'safety culture' sets expectations of all members of the workplace community and guides individuals to learn how to be a member of that community by adopting acceptable attitudes and values (Cox & Cox, 1991).

Safety culture as a concept, however, has become part of a wider workplace safety lexicon. It is important that we do not dismiss it entirely, as it serves as a focal point for discussing values and beliefs around safety (Hale 2000, Fleming 2001, Hopkins 2002). Hale

(2000) defines *safety culture* as "The *attitudes, beliefs and perceptions* shared by natural groups as defining norms and values, which determine how they act and react in relation to risk and risk control systems" (emphasis mine, p. 7). This is an interesting attempt to fuse a common definition of culture with a broadly accepted definition of safety. By this definition, safety culture *only* refers to those *attitudes, beliefs and perceptions* that relate to risk and risk control. Does selecting a subset of values held by a community define a discrete culture? I would suggest that it does not, and Hale (2000), suggesting instead the viewpoint of 'cultural influences' on safety, would seem to concur.

The idea of connecting employee attitudes to safety performance was explored before INSAG suggested the term 'safety culture' in 1986. Zohar (1980) first defined the term 'safety climate' in an empirical investigation of safety attitudes in Israeli manufacturing. He defined it as "…a summary of molar perceptions that employees share about their work environments." (p. 96). Zohar's suggestion is that safety climate is essentially shared perceptions of employees in the work environment and serves to support the idea that the workplace community is critical to the safety performance of an organization.

Guldenmund (2000) reviews the concepts of 'safety culture' and 'safety climate', concluding that "Although safety culture and climate are generally acknowledged to be important concepts, not much consensus has been reached on the cause, the content and the consequences of safety culture and climate in the past 20 years. Moreover, there is an overall lack of models specifying either the relationship of both concepts with safety and risk management or with safety performance." (p. 215). Guldenmund identifies three levels by which organizational culture can be measured: espoused values; basic assumptions; and artefacts, suggesting that although espoused values are used to 'measure' the safety climate of an

organization, it is the basic assumptions (core beliefs) that form the core of the culture. This is an important conclusion, as many employees espouse values in rote or repetitive ways to satisfy company management or regulators, while having basic assumptions or core beliefs which are markedly different.

Griffin and Neal (2000), as well as Clarke (2006), suggest a link between 'safety climate' and 'safety performance.' Griffin and Neal suggest an organization's safety climate promotes employee knowledge, skill and motivation, and promoting system safety. Clarke identifies a correlation between an organization's safety climate and safety performance, but describes no causality.

Hopkins (2005) suggests safety culture, risk awareness, and effective organizational safety practices are closely related, in that all refer to aspects of organizational culture which are conducive to safety. Safety scholars James Reason (1998) and Andrew Hopkins (2005) both suggest safety culture is defined by collective practices, arguing this is a more useful definition because it suggests a practical way to create cultural change.

Informal Learning and Education

Another key area informing this study is 'informal learning.' Malcolm Knowles is generally considered to be the originator of the term 'informal education' (and by extension informal learning) through his book *Informal Adult Education: A Guide for Administrators, Leaders, and Teachers* first published in 1950. Knowles was an important thinker in the field of adult education, at least in terms of 'individual' learning, first creating the term 'andragogy' to describe the science and the art of helping adults learn, although this term has gone out of date and was really only used in the United States (Knowles, 1973). Out of Knowles' work came the

Principles of Adult Education, which are still widely used by learning and training professionals today.

Learning is widely thought to be a socially mediated and constructed process (Bandura, 1977; Vygotsky, 1978). This suggests that community-held knowledge such as safety values and beliefs are learned through a socially contextualized learning process. Fleming (2001) suggests that in strong workplace cultures, this learning is part of socialization or enculturation whereby an employee is either indoctrinated (educated) into the community if she/he accepts the community values, or ostracized and pushed out if she/he rejects them.

The Organization for Economic Co-operation and Development (OECD) defines informal learning as follows. “(Informal) learning is never organized. Rather than being guided by a rigid curriculum, it is often thought of experiential and spontaneous” (OECD), n.d.; Werquin, 2007). Cofer (2000) suggests informal learning means the learner sets the goals and objectives. This would suggest, according to Cofer, that informal learning is outside the realm of system-controlled learning. Livingstone (1999) defines informal learning as "any activity involving the pursuit of understanding, knowledge or skill which occurs outside the curricula of educational institutions, or the courses or workshops offered by educational or social agencies" (p.51). Schugurensky (2000) describes informal learning as “learning (that) takes place outside the curricula provided by formal and non-formal educational institutions and programs” (p.2). Schugurensky also proposes three forms of informal learning: self-directed learning; incidental learning; and socialization (tacit learning). These differ in terms of intentionality and awareness at the time of the learning experience. Colley, Hodkinson and Malcolm (2003) suggest informality and formality in learning express a relational continuum rather than distinct categories. Much of the learning occurring at work in industry could be considered learning in

one of these forms. I suggest that learning safety as a 'value' priority in industrial workplaces could be viewed as 'socialization.' It could also be seen as happening incidentally, without any expressed intent to teach or to learn.

Marsick and Watkins (1990) write:

> Informal learning, a category that includes incidental learning, may occur in institutions, but it is not typically classroom-based or highly structured, and control of learning rests primarily in the hands of the learner. Incidental learning is defined as a by-product of some other activity, such as task accomplishment, interpersonal interaction, sensing the organizational culture, trial-and-error experimentation, or even formal learning. Informal learning can be deliberately encouraged by an organization or it can take place despite an environment not highly conducive to learning. Incidental learning, on the other hand, almost always takes place although people are not always conscious of it. (p. 12)

In 2001, Marsick and Watkins conducted an analysis of the literature on informal and incidental learning and found there appeared to be an overlap between their concept of informal learning (including incidental learning) and other scholars' ideas, such as experiential learning (Kolb, 1984), social modeling (Bandura, 1986), self-directed learning (Knowles,1950), critical reflection and transformative learning (Mezirow, 1991), tacit knowing (Nonaka and Takeuchi, 1995), situated cognition (Lave and Wenger, 1991), and communities of practice (Wenger, 1998).

Eraut (2004) provides the following comprehensive definition of informal learning:

> (Informal learning) provides a simple contrast to formal learning or training that suggests greater flexibility or freedom for learners. It recognizes the social significance of learning from other people, but implies greater scope for individual agency than socialization. It draws attention to the learning that takes place in the spaces surrounding activities and events with a more overt formal purpose, and takes place in a much wider variety of settings than formal education or training. It can also be considered as a complementary partner to learning from experience, which is usually, construed more in terms of personal than interpersonal learning. (p.248)

Eraut's definition takes into account almost all occasions where learning occurs outside of socialization. It is important to recognize, as Fleming (2001) suggests, socialization itself is an important form of learning, and learners will adopt a culture's values through the process of socialization. Eraut submits that informal learning "implies greater scope for individual agency than socialization" (p. 248). This suggests informal learning, by his definition, requires the intent of the learner to acquire new knowledge; it is a function of active choice, rather than passive absorption. This leads us to conclude that those who have a greater sense of agency and control over their own learning will learn more readily than those who have less control.

Thus, we can conclude that informal learning takes place wherever people have the need, motivation, and opportunity for learning. After a review of several studies done on informal learning in the workplace, Marsick and Volpe (1999) concluded informal learning can be characterized as "Integrated with daily routines; triggered by an internal or external jolt; not highly conscious; haphazard and influenced by chance; inductive process of reflection and action; and, linked to learning of others" (p.28). Marsick and Volpe note learning begins with some kind of internal or external stimulus signalling some frustration with current ways of thinking or being. "This trigger or experience encountered is often a surprise, such as the sudden departure of a leader" (p.29). This leads us to conclude informal learning can (among other things) be caused by disequilibrium in the social constructs of a workplace community.

There are those who suggest that institutions can manipulate or control informal learning. For example, Marsick and Watkins (1990, 2001) suggest organizations can facilitate informal learning by means of culture, policy and specific procedures. I suggest the very nature of informal learning would make this difficult. It implies imposing structure to a social context where structure comes from the community and its individuals, not the organization.

According to many of the definitions we have reviewed, informal learning is a component of social practice. Lave and Wenger (1991) suggest learning is a function of socialization or what they call "legitimate peripheral participation" (p. 29). They additionally claim learning cannot be separated from the context, the social, the cultural, and the experiential. They suggest "reified knowledge domains" (p. 52) constrain learning as a socially contextualized practice. "Knowing as an activity by specific people in specific circumstances" (p 52). It is clear Lave and Wenger's concept of legitimate peripheral participation in many ways mirrors our broader understanding of informal learning. One critical facet about legitimate peripheral participation is its holistic nature, supporting an individual's entire development from peripheral to full participant in a community of practice, in whatever role he or she has chosen (or been chosen for). For example, learning to be a welder in a shipbuilding and repair facility requires more than just the ability to weld. An employee's job tasks may require the application of his skills as a welder, but his or her development as member of the community requires participation in social relations, adherence to rules and policies, and importantly, adoption of existing community held values and beliefs, including those of safety. This process could be viewed as adopting the 'organizational culture,' but this definition is incomplete. In his book, *Communities of Practice* (1998), Etienne Wenger presents a theory of learning that begins with the following assumption:

> engagement in social practice is the fundamental process by which we learn and so become who we are. The primary unit of analysis is neither the individual nor social institutions but rather the informal "communities of practice" that people form as they pursued shared enterprises over time. In order to give a social account of learning, the theory explores in a systematic way the intersection of issues of community, social practice, meaning and identity. (p.4)

So, learning, according to Wenger is a process of becoming, rather than solely the acquisition of skills, knowledge and attitudes (Bloom, 1956). Legitimate peripheral participation induces change in the identities of participants. Lave and Wenger (1991) write, “The person is defined by as well as defines these relations. Learning thus implies becoming a different person with respect to the possibilities enabled by these systems of relations. To ignore this aspect of learning is to overlook the fact that learning involves the construction of identities” (p 53). This concept is central to my perspective that deeply held values and beliefs can be acquired, abandoned, inhibited, changed or reinforced as a result of participation. Activities, tasks, functions, and understandings do not exist in isolation; they are part of a broader web of relations in which they have meaning. These webs of relations arise out of, and are reproduced and developed within, social communities, which are, in part, a web of relations among persons.

Lave and Wenger (1991) hold that “Legitimate peripherality is a complex notion, implicated in social structures involving relations of power……. legitimate peripherality can be a source of power or powerlessness” (p 36). Communities of practice involve social production as well as social reproduction, evolving the community relationships as new people with their unique characteristics (and values) become part of the community. This becomes problematic in many institutions and corporations who attempt to maintain the implicit hierarchical power structures found in western capitalist economies (the system). “Gaining legitimacy is also a problem when masters prevent learning by acting in effect as pedagogical authoritarians, viewing apprentices as novices who "should be instructed" rather than as peripheral participants in a community engaged in its own reproduction” (p 76). This is typically what is found in our corporate industrial workplaces. The guardian organizations take control of employee training and development and spend millions of dollars on training curricula and skills development

programs. Industrial capitalist systems are forms of coercion, laden with implicit power relations that subordinate the workforce. A good example of this is competency based training that have become standard organizational training fare. Each starts by defining the expectations for those who fill a specific organizational roles, laying out specific tasks, skills and information needed to perform the role to prescribed standard. Learner differences, needs or expectations are not considered. "Our viewpoint suggests that communities of practice may well develop interstitially and informally in coercive workplaces. What will be learned then will be the socio-cultural practices of whatever informal community takes place in response to coercion" (p. 64). Each workplace has a unique culture, with its own communities of practice, existing within the larger cultural context, which is defined by the work, the organizational structure and society, as well as by the input from the members from diverse ethno-cultural backgrounds and experiences. Thus, informal learning that occurs 'interstitially' in communities of practice is confounded and complicated by overlapping social constructs with divergent, often competing priorities. Informal learning that occurs is essential to creating an employee's identities in the workplace, however, and its importance should not be underestimated over overlooked, especially when learning the values and beliefs about safety.

Weiss (1978) explored the social learning of work values using the application of Bandura's (1977) Social Learning Theory in a work environment using adult learners. He suggested that new employees to an organization go through a process of 'organization socialization' by engaging in an 'active role search.' "In searching for the role, the employee uses the behaviours, expressed values, and personal and social characteristics of models as relevant role defining information" (p. 717). This suggests a newcomer (Lave & Wenger, 1991) will search for a mentor or master (I use here the historical terminology often deployed to

describe the master/apprentice/journeyperson relationship still commonly found in today's modern industrial workplaces) to with whom he or she will develop an apprentice-like relationship and learn in non-formal and informal ways how to become a full participant in the community of practice. This includes learning the values of safety from the mentor in informal, incidental ways. This does not mean the values learned are necessarily good ones. If the master, or mentor, embodies values neglecting personal safety, it can have a negative impact on the values developed by the newcomer. Learning of the values and beliefs of safety is implicit, understood, and often undefined. Jarvis (1987) explains "meaning (and self) is derived from interaction with significant and generalized others" (p.51).

Leadership, Mentorship, and Power

The informal learning models examined have both an acquirer of knowledge (learner) and a disseminator of knowledge (teacher). The relationship between the two, because it is informal, is not usually a typical teacher/student relationship, but more often involves a workplace leader, mentor or role model and an employee-learner. There are very often multiple sources for employee-learners to learn in a community, each with different approaches and resulting impacts on the individual. The concepts of leadership, mentoring and power are fundamental to the premise upon which this study is conducted, so it is important to review some of the major perspectives.

Chemers (2000) admits, "For much of its history, leadership theory and the empirical supporting research have been regarded as a fractured and confusing set of contradictory findings and assertions without coherence or interpretability." (p.27). There are, however, some relatively concrete and widely accepted definitions of leadership which have developed in western society and many of those definitions are quite similar. Many perceptions of leadership in our western

culture are centred on organizational leadership. Northouse (2013) defines leadership as “a process whereby an individual influences a group of individuals to achieve a common goal” (p.3). Chemers (2000) defines leadership as "a process of social influence in which one person is able to enlist the aid and support of others in the accomplishment of a common task.” (p.27). Still others suggest leadership is defined in various forms as an inter-relational process between leader and follower. Lawson and Shen (1998) characterize leadership as someone who “defines and communicates an organizational situation to followers and directs, and maintains the collective activity.” (p. 151)

The terms ‘influences’ in Northouse’s definition and ‘enlists’ in Chemers’ definition both imply a systemic power structure and agency on the part of the person identified as ‘leader.’ To a lesser degree, the word ‘directs’ in Lawson and Shen’s characterization implies a ‘power’ type of relationship. In fact, Lawson and Shen specifically say “in most cases one cannot lead unless they have some type of power, which makes it a necessary condition for leadership--but not a sufficient condition” (p.152)

Yukl (2013) defines power as “the capacity of one party (the agent) to influence another party (the target)” (p. 146). It is important to note this description does not imply those who possess power always know it. Despite the notion that power is often viewed as a negative construct (because of its capacity to control and oppress), it is a necessary component of culture and community in its capacity to influence others. French and Raven (1959) suggest the most commonly discussed and cited typology of power in their ground-breaking work on leadership, *The bases of social power*. Their typology identified five major bases of social power, legitimate power, reward power, coercive power, expert power and referent power. Three of these types of

power are considered positional power sources; they are legitimate power, reward power, and coercive power.

Legitimate power is usually conferred on a person by social hierarchies, cultural norms and the constructs of a system or organization (e.g., political heads of state, police officers, CEOs). This type of power can be unpredictable and unstable. It requires no proven ability to lead with the leader gaining power as a result of external elements, not merit. If the leader loses title or position, legitimate power can evaporate, since others were influenced by the position, not by the individual. Also, the scope of power is limited to situations where others believe the individual has a right to control.

Reward power comes from the ability of an individual to give out rewards such as raises, promotions, desirable assignments, training opportunities, and even simple compliments. If others expect they will be rewarded for doing what is desired, there is a high probability they will comply. This type of power is obviously rooted in behavioural psychology, specifically operant conditioning (Skinner, 1938).

Coercive Power, another type of power based on operant conditioning, is derived from threats and punishment. Implying or threatening someone will be fired, demoted, denied privileges, or given undesirable assignments are examples of using coercive power. This source of power is also problematic and can be subject to abuse. What's more, it can cause unhealthy behaviour and dissatisfaction in the workplace.

The remaining two types of power are known as personal power sources (French and Raven, 1959). Expert Power exists when an individual has knowledge and skills enabling them to understand a situation, suggest solutions, use solid judgment, and generally outperform others. This type of power is frequently situational, meaning expert power is limited to what the

individual knows about a certain subject area, at a given time and in a given context. When a leader demonstrates expertise, people tend to trust them and respect what they say. Additionally, those with expert power can often take the confidence, decisiveness, and reputation for rational thinking that often come as a result of expert power and expand them to other subjects and issues.

Referent power comes from one person liking and respecting another, and strongly identifying with that person in some way. In a workplace, someone with charm often makes everyone feel good, so he or she tends to have a lot of influence. Referent power can be problematic because one doesn't necessarily have to do anything to earn it and can thus be abused quite easily. Someone who is likable, but lacks integrity and honesty may rise to power and use that power to hurt and alienate people as well as gain personal advantage.

The earlier definitions of leadership (Northouse, 2013; Chemers, 2000; Lawson & Shen, 1998) that are described using terms such as 'influences,' 'directs,' and 'enlists,' seem to imply intentionality on the part of the leader, though intentionality may not exist. Consider a senior employee (or perhaps a newcomer) in a workplace whose behaviour could be characterized as model (e.g., demonstrating strong safety values and beliefs). He/she could be considered a safety leader, but may or may not be actively pursuing a common goal with those who are following or have any intention to enlist or influence others. This shifts the definition from an active role to a passive one, perhaps employing some combination of referent and expert power. Additionally, although leadership certainly employs a form of power, Forsyth (2009) observes it is not distinguished by power over people; it is a power with people that exists as a reciprocal relationship between a leader and his/her followers.

Interestingly, early thought on leadership takes a less active perspective on its definition. Carlyle (1841/1907) proposed the ‘great man’ theory of leadership, which argued that successful leaders possessed traits of personality and character that set them apart from ordinary followers. In the early part of the 20th century, this trait-based perspective on leadership began to gain momentum. Scholars began to explore traits that were stereotypically associated with leadership, such as dominance, assertiveness, intelligence, physical stature, social sensitivity, and others.

In 1948, Stogdill concluded that although individual differences were essential in identifying developing or successful leaders, the variety of circumstances in which leaders functioned made it unlikely that any one trait would universally predict success in leadership. Stogdill’s analysis was a precursor to theories of leadership predicated on an interaction between leadership traits and situational contingencies. This would eventually become the theoretical basis of the Contingency Theory of leadership.

Recent developments in trait theory suggest traits, particularly what are known as the “Big Five” personality traits, actually play an important role in leadership. The Big Five framework of personality traits was outlined by Costa and McCrae in 1992. They are:

- Openness (inventive/curious vs. consistent/cautious)
- Conscientiousness (efficient/organized vs. easy-going/careless)
- Extraversion (outgoing/energetic vs. solitary/reserved)
- Agreeableness (friendly/compassionate vs. cold/unkind)
- Neuroticism (sensitive/nervous vs. secure/confident)

In their 2002 meta-analysis of more than 70 studies, Judge, Bono, Ilies and Gerhardt found the Big Five traits were effective leadership predictors. Extraversion (outgoing/energetic) and

conscientiousness (efficient/organized) particularly seemed to be the most important and consistent predictors.

While trait theory continues to be influential on research into leadership, in the mid-20th century some scholars began to shift thought away from trait based ideas about leadership, and began exploring leadership as specific behaviours and styles that could potentially be learned or developed. The Leader Behaviour Description Questionnaire (LBDQ) was developed at Ohio State University (Hemphill, 1950). This research established two major behavioural dimensions of leadership. The first dimension, initiating structure, refers to behaviours through which leaders define their roles and their subordinates' roles in achieving the group's formal goals. The second dimension, consideration, concerns the extent to which leaders act in a supportive way and show concern and respect for their subordinates. Although conclusions related to the LBDQ failed to provide any reliable way of using behaviours or styles to predict leadership, the research did have an enduring impact on the field of leadership and even today leadership styles and behaviours are sought as indicators or guidance constructs to identify and shape leadership candidates.

In the 1960s, and into the 1970s, E.P. Hollander conducted a series of studies revealing some of the features of leadership attainment and legitimacy. In his research, Hollander (1964; Hollander & Julian, 1970) found that individuals in groups achieve status through the demonstration of task-related competence and loyalty to group values (i.e., expert power and referent power).

It is interesting that Hollander observed that leaders demonstrated adherence to group values. This suggests, despite organizational intent to strategically place identified leaders into work groups, it is the group that will inevitably determine the success or failure of an individual

at leading, not the qualities, traits, styles or behaviours of the leader that will determine the success of the workgroup. This is an important consideration because I have seen the effect of both in organizations. Many traditional corporate organizations have a top down, command and control hierarchy supporting the placement of leaders based on observable behaviours in select contexts. These leaders frequently fail in a new context specifically because of the reasons described; prescriptive behaviours, styles and traits do not imply leadership ability in every context. Often, workgroups will have official leadership in the form of supervisors and managers, and de facto leadership in the form of senior employees and those who have organically evolved into community leaders; by garnering respect and followers naturally. One of the important steps in nurturing the learning to prioritize safety then is find the natural leadership in a workplace community and legitimize it.

I suggest that what is happening, from an educational perspective, is some of these leaders have behaviours, styles and traits allowing them to coach, mentor, and instruct in specific contexts making them good teachers. These traits place these particular leaders in the role of full participant in a given community of practice (arguably providing them with expert power), allowing them to naturally participate in apprentice-like relationship with newcomers.

In 1998, Hogg, Hains, and Mason employed social identity theory as it relates to leadership perception. Their studies indicated that, although followers seemed to value leaders who exemplify group values, they also greatly value task appropriate competence in their evaluation of leadership. That is, leaders must demonstrate an acceptable level of competence at their current roles in order to garner credibility amongst followers. A machinist, for example who becomes a workplace leader, must be considered considerably capable as a machinist before other machinists or workers will respect her or him enough to listen to what they have to say and

want to emulate them. Expert Power, then, is a precursor to Referent Power, and the most effective leaders must embody both.

In 1967 Fred Fiedler published his contingency theory of leadership asserting that group effectiveness depends on an appropriate match between a leadership style (essentially a trait measure) and the demands of the situation. Specifically, he argued that task-oriented leaders are best suited for some situations and relationship-oriented leaders are best suited for other situations.

Another Contingency theory of leadership was developed by Robert House in 1971. House proposed the Path-Goal Theory of Leadership to describe the way leaders encourage and support their followers in achieving the goals they have set by making the path they should take clear and easy. In 1996, House revised his Path-Goal theory adding that the leader additionally engages in behaviours complementing a subordinate's abilities and compensating for deficiencies.

Modern scholars in the area of leadership explore all manner of perspectives including trait based approaches, contingency based approaches, behavioural approaches and others. In the latter part of the 20th century, a major paradigm shift occurred in leadership research (House & Aditya, 1997). Scholars began to look at theories focussing on the connections formed between leaders and followers. Leader-Member Exchange (LMX) theory (Lord, 2000), for example, focuses on the relationships among subordinates and leaders rather than situations or leader behaviours or traits. According to LMX theory, the quality of the leader-follower relationship is predictive of outcomes at multiple levels (individual, group, organization).

One of the best known of this modern group of theories is Transformational Leadership Theory, advanced in 1985 by Bernhard Bass. Transformational leaders motivate and inspire people by helping group members see the importance and higher good of the task. These leaders

are focused on the performance of group members, but also want each person to fulfill his or her potential. Leaders with this style often have high ethical and moral standards.

While research and theories on leadership over the last century have not explicitly discussed the implications of male centric structures, the very nature of the context of the development of these theories and the studies conducted to explore them is masculine. It is important to keep in mind the fact that as more women take on leadership roles historically held by men, the more those theories need to be re-evaluated. Eagly and Carli (2003) report:

> Research has shown that women possess both advantages and disadvantages as leaders, with the disadvantages arising primarily in roles that are male-dominated or otherwise defined in masculine ways. Many of the difficulties and challenges that women face arise from the incongruity of the traditional female role and many leader roles (Eagly & Karau, 2002). This incongruity creates vulnerability whereby women encounter prejudicial reactions that restrict their access to leadership roles and negatively bias judgments of their performance as leaders. (p.825)

Much of the research over the past quarter century on differences in leadership theory has focussed on trait and style differences. In 2005, a year-long study conducted by Caliper, a Princeton, New Jersey-based management consulting firm, and Aurora, a London-based organization advancing women, identified a number of characteristics distinguishing women leaders from men when it comes to qualities of leadership. They are summarized as follows:

1. Women leaders are more persuasive than their male counterparts.
2. When feeling the sting of rejection, women leaders learn from adversity and carry on with an "I'll show you" attitude.
3. Women leaders demonstrate an inclusive, team-building leadership style of problem solving and decision making.
4. Women leaders are more likely to ignore rules and take risks.

While these qualities highlight some of the differences between men and women in leadership roles, the context and power constructs remain masculine.

Closely related to the concept of leadership is mentorship. A simple definition of mentoring is the transfer of wisdom from a wise and trusted counselor, normally in a leadership position, who helps to guide a person's development. From the Oxford English Dictionary, a mentor is “An experienced and trusted adviser” and also “An experienced person in a company or educational institution who trains and counsels new employees or students” (Oxford Dictionary of English, 2015, d.1).

The definitions from the Oxford Dictionary of English demonstrate that the concept of mentoring is very broad and all-encompassing, including roles such as friend, sponsor, patron, counsellor, trainer, guide and advisor that, while seemingly connected, are all quite distinct. It seems the role of a mentor is broad, inclusive and unique to every situation. During the latter part of the 20th century, formal mentoring programs started to become popular in institutions and corporations. This came about as organizations began to see the advantage of implementing formal programs enabling potential learning and growth for employees on the job (Ehrich & Hansford, 1999).

Organizations have tried to leverage mentorship for safety by selecting and installing ‘safety leaders’ at various levels of the organization. This predominantly management-driven initiative often fails because it attempts to short circuit the natural process of development of a mentoring relationship that should grow ‘ad-hoc’ (Kram, 1985). It also tends to fail because an authentic mentoring relationship is often a long term and deeply personal one. Identifying a few people to be safety leaders will not replace a natural mentoring relationship.

Bozeman and Feeney (2007) define mentoring as:

> a process for the informal transmission of knowledge, social capital, and the psychosocial support perceived by the recipient as relevant to work, career, or professional development; mentoring entails informal communication, usually face-to-face and during a sustained period of time, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to have less (the protégé). (p.731)

Bozeman and Feeney suggest the mentor-protégé relationship is limited to the occupational realm. Though, unlike the relationship of a learner with a teacher or coach, mentoring is often viewed as a long-term relationship with a responsibility to provide the support, knowledge, and drive that can facilitate professional success. Most definitions of mentoring stress the importance of a personal connection that goes beyond the usual student-teacher, or leader-follower relationship.

Zelditch (1990) writes:

> Mentors are advisors, people with career experience willing to share their knowledge; supporters, people who give emotional and moral encouragement; tutors, people who give specific feedback on one's performance; masters, in the sense of employers to whom one is apprenticed; sponsors, sources of information about and aid in obtaining opportunities; models of identity, of the kind of person one should be to be an academic. (p.8)

For the most part, the word ‘academic’ can be replaced in this description with any other vocation and the message remains consistent. Zelditch’s description is very specific and highly contextual, leaving out many traditional mentor style relationships. In the apprentice-style relationships described by Lave and Wenger (1991), learners are involved in long term relationships with mentors from an early age. Mentors are far more than teachers and the complexity of the mentor’s role suggests that it is unrealistic that he or she would excel or even be successful in every related area of a vocation needed by the protégé .

The literature suggests that mentoring yields benefits for both protégés and mentors (Hansford, Ehrich, & Tennent, 2004). Kram (1985) suggests career advancement and psycho-social support are often identified as two important outcomes of mentoring for the protégé. Roche (1979) found 75% of the top executives in the United States had been mentored and, compared with their un-mentored counterparts, earned 28% more, were more likely to have a degree, were happier with work, and more likely to mentor others. Psycho-social support such as encouragement, friendship, advice and feedback on performance (Kram 1985), has also been identified as a positive outcome for mentors.

Mentoring is almost always a mutually beneficial process providing benefits for the mentor as well as the protégé. Levinson et al. (1978) found that mentoring rejuvenates mentors' careers through assisting and shaping the development of protégés. Douglas (1997) suggests other benefits for the mentor including increased confidence, personal fulfilment and assistance on projects.

While it seems most of the literature on mentoring identifies the benefits of mentoring for all parties, some of the literature indicates problems with the mentoring relationship. According to Long (1997), "under various conditions, the mentoring relationship can actually be detrimental to the mentor, protégé or both" (p.115). Long identifies several concerns with mentoring including a lack of time for effective mentoring; poor planning of the mentoring process; unsuccessful matching of mentors and protégés; a lack of understanding about the mentoring process; and lack of access to mentors from minority groups.

Mentoring is unique in its ability to bring a mentor's personal model of a code of ethics to relevant situations. It exposes the protégé to the 'tacit knowledge' required for functioning as a community member. Modelling personal values in the culturally significant context of the

workplace cannot be explicitly taught. Training can provide the standards of conduct, but only a mentoring relationship can explore the complexity of applied ethics and values (Epstein 1999).

Kapp and Parboteeah (2008) highlight the role ethics plays in occupational safety programs within an organization or workplace. They suggest a sound moral principle is important in the prevention of occupational injuries and illnesses. They also suggest that ethics in the workplace includes a precise concept of the worker as human with dignity, clear acknowledgment of fundamental human rights, and a complete vision of prevention including a capacity to determine acceptable risk.

The value of mentorship is apparent though I am not confident it is confined only to the occupational arena as suggested by Bozeman and Feeney (2007). I believe people find role models in many places during their lifetime and seek to become more like those role models. Occasionally an ad-hoc relationship of guidance will develop and in effect a mentoring relationship occurs. I have no doubt mentor-like relationships outside the occupational setting have been described and studied, but the area is vast and my scope limited to the workplace.

In the context of this study, the most important single component of the mentoring process is the comprehensive nature of mentor-protégé relationship that allows for the mentor to introduce a personal code of ethics and values, modelling the embodiment of the values for the protégé. Weiss (1978) suggests that work values (including safety) are learned through socialization, such as the behaviour modelling of a respected mentor and reproduction in the protégé. The essential component here is that the protégé seeks to embody respected facets of the mentor.

Conclusion

An understanding of critical adult education, culture, informal learning, leadership, power and mentorship are critical to the success of this study. The intersection of these concepts is the lens through which the study is undertaken. Critical adult education (transformative learning) is vital to revealing the authenticity and importance of informal learning practices in the workplace. Workplace culture is the important context within which informal learning occurs that transfers values such as health and safety to the community members. Effective community leaders and mentors are crucial to the success of informal learning at work. In order for community leaders to be effective, they must possess specific leadership qualities (including specific types of power) and mentoring abilities.

Educational anthropology suggests the process of enculturation (the transmission of culture and tradition from one generation to the next) is critical for a sense of identity for members of a community (Comitas & Dolgin, 1979), but in the workplace, this transfer of culture is often overlooked or constrained in educational praxis. Training programs are inevitably controlled by the system (organization/regulators) and its needs, but the workplace community (lifeworld) has an important role in the education of its members. In many respects, the transmission of a workplace culture happens informally, within the community of employee learners, not through system sanctioned training initiatives. I would argue any exploration of workplace learning should explore the cultural context within which this transmission is taking place. With this in mind, issues of workplace safety should then include a discussion of the community of employee learners, not just learning prescribed by government regulators and corporate management.

Chapter 3 – Methods and Methodology

Introduction

This chapter describes the methods and the methodology that were used to carry out this research project. This study used critical discourse and document analysis to examine *The Report of the BP U.S. Refineries Independent Safety Review Panel (2007).* The report focused on the findings and conclusions of the Baker Panel's investigation of BP after the Texas City accident of March 23, 2005. The research is specifically focused on how the Baker Panel had taken up and understood the concepts of culture, learning and leadership, utilizing them as lenses through which the panel interpreted its findings and generated conclusions about BP and its U.S. refineries in 2005. A critique of this report could hopefully lead to changes in the way organizations understand safety as an educational practice. In the study, I refer to Texas City and Cherry Point refineries as examples. They were the facilities with reportedly the 'worst' and the 'best' safety cultures at BP in 2005 (Baker et al., 2007).

Role of the Researcher

Creswell (1994) writes that qualitative research is interpretative research. This leads us to conclude that the biases, values, and judgment of the researcher are important and must be embraced. My background experiences have shaped my interpretation of the data. Researchers must be conscious of how their past experiences, status, beliefs and values shape and enrich their research rather than trying to eliminate, discount or ignore any prior experience they may have. Researchers bring their own specific background to a study, including training in a particular field, knowledge of different topics, a particular standpoint, and theoretical approaches. This shapes what approaches are taken and what issues are focused on.

I bring ideas and experiences I gained during my past experiences as a consultant and an employee to the current study. My personal and professional experiences have influenced my research question, the way I have conceptualized the research and the design of the research. Furthermore, I interpreted the data through perspectives influenced by my cultural and educational background.

I come from a family of historically traditional blue-collar, union workers who held fast to the paradigm that hard work was the key to success in life. My maternal grandfather was a master electrician, held in high regard by his peers, and a card carrying member of the International Brotherhood of Electrical Workers (IBEW). My paternal grandfather was an Aircraft Maintenance Technician (mechanic) and later a Heavy Duty Diesel mechanic. My grandmothers on both sides did not work outside the home in any substantial way (though their contributions to the family and society were indisputably substantial).

My father was the first in his family to attend university, achieving a degree in chemical engineering from the University of New Brunswick, even as his family shook their heads and asked “why?.” My mother failed to complete high school, but her voracious love of reading allowed her to continue to learn informally; she has accumulated an incredible, if largely untapped, depth of knowledge, and wisdom.

In the years after completing my undergraduate degree I worked blue-collar jobs to survive (my bachelors degree was not the ticket to employment I had hoped for). I was a prep cook in a military kitchen, a roughneck on a rig drilling shallow gas wells in the prairies, and a furniture mover, often driving a 5 ton truck. These experiences were exceptionally valuable to me, though I knew I desired more.

I completed my Masters degree in Education in 1998 (focused on instructional design and educational technology) and was immediately drawn to working as an instructional designer/training specialist in industries such as the transportation, resources, utilities, and construction. I found a real connection with the learners (employees) and the trainers that worked with them. I loved helping them, loved learning about them, and with them, and loved going to work every day.

Throughout the research process, my history, values, experiences, interests and my cultural identity (white, educated, male) shaped the research (Bogdan & Biklen, 2003). Conversely, the research also affected me, and I developed into a more experienced researcher, and a more knowledgeable professional. I acknowledge my subjectivity in this research process. It is my interest in the subject matter and my assumptions about its' influence and potential that encouraged me to design and pursue this research project.

The chief research questions directing this study emerged while I was a paid consultant at Cherry Point Refinery, working within the very organizational structures I saw as oppressive and limiting. That context and perspective deepens the subjectivity that I bring to this project. Subjectivity is an integral part of the qualitative, critical tradition (Patton, 2015; Peshkin, 1988) from which I write. In this study, I embrace this subjectivity and the role it has played in all aspects of the research process from first conceiving of the project to analyzing the data to interpreting and representing that data. During all of these stages, I have been present and have been participating as a researcher in order to construct this thesis.

Qualitative Research

Qualitative researchers are interested in meaning -- how people make sense of their lives, experiences, and their structure of the world (Patton, 2015). In a qualitative study, initial

questions for research often come from real-world observation and dilemma. They may also emerge directly from the researcher's experiences (Marshall & Rossman, 2011). In my study, the research question emerged from my own experience working as a training consultant at the Cherry Point refinery in Blaine, WA in from May 2006 to September 2007.

From the critical theory standpoint which I take, qualitative research allows the researcher to explore the subjective and multiple realities of the world. Multiple realities exist in any situation, including documents written by people. They exist in the researcher, and in the reader or audience interpretations brought to any a study (Creswell, 1994; Guba & Lincoln, 1988). These realities emerge with categories identified during research process (Creswell, 1994).

Morse (1994) also states that using a qualitative paradigm is appropriate when: (a) the concept is "immature" due to a lack of theory and previous research; (b) the available theory may be inaccurate, inappropriate, incorrect or biased; (c) a need exists to explore and describe the phenomena and to develop theory; or (d) the nature of the phenomenon may not be appropriate for quantitative measurement. A thorough literature review reveals research on different forms of culture, informal learning and training, as well as perspectives on leaders and leadership. There is very little written on the potential connection between the three concepts. In this case, I suggest that a need exists to explore and describe the concepts and to develop a theory.

Critical Discourse Analysis

Critical Discourse Analysis (CDA) is a form of discourse analysis that is concerned with relations of power and inequality in language. Blommaert and Bulcaen (2000) write that "Discourse is an opaque power object in modern societies and CDA aims to make it more visible and transparent" (p. 448). Wodak (1995) suggests that CDA seeks to analyze "opaque as well as

transparent structural relationships of dominance, discrimination, power and control as manifested in language" (p. 204). More specifically, Wodak (1997) writes, "(CDA) studies real, and often extended, instances of social interaction which take (partially) linguistic form. The critical approach is distinctive in its view of (a) the relationship between language and society, and (b) the relationship between analysis and the practices analysed" (p. 173). CDA states that discourse is socially constitutive as well as socially conditioned, aiming to make it more visible and transparent.

Document Analysis

Document analysis is defined as the "systematic procedure for reviewing or evaluating documents – both printed and electronic (computer-based and Internet-transmitted) material (Bowen, 2009, p. 27). As with other analytical methods in qualitative research, document analysis requires that data be scrutinized and interpreted with the aim of deriving meaning, gaining understanding, and developing empirical knowledge (Corbin & Strauss, 2008). In document analysis, Bowen (2009) suggests that in document analysis, any documents analyzed must contain text (words) and images that have been recorded without interference of the researcher. The analytic procedure involves identifying, selecting, evaluating (making sense of), and synthesizing data contained in documents. Document analysis yields data -- extracts, quotations, or entire passages -- that are then organised into categories, major themes, and case examples specifically through content analysis (Labuschagne, 2003).

Baker Panel Investigation and Report (2007)

The primary source of data for this study will be *The Report of the BP U.S. Refineries Independent Safety Review Panel (2007).* Following several incidents in 2005 at BP's Texas City site, the US Chemical Safety Board (CSB) recommended BP commission an independent panel

to examine both the safety culture and management systems at BP's operations in North America. The panel was led by former US Secretary of State James Baker III. The Baker panel released its findings in a 374 page report on January 16, 2007.

Inductive Qualitative Analysis

Patton (2015) maintains that inductive analysis involves discovering patterns, themes and categories in one's data. Typically, in the early stages, especially when developing a codebook or figuring out possible categories, patterns and themes, Patton emphasizes the importance of being open to the data and calls it 'open coding.' Once patterns, categories, and/or themes have been established through inductive analysis, the final stage or qualitative analysis may be deductive in testing and affirming the appropriateness of the inductive analysis, including carefully examining deviate data that does not fit the categories developed. Inductive analysis requires that the researcher is comfortable with developing categories and making comparisons and contrasts. It also requires that the researcher be open to possibilities and see contrary or alternative explanation for the findings (Creswell, 1994). In the process of analysis, the researcher has to reduce a large amount of information to certain patterns, categories, or themes and then interprets this information. Creswell suggests that researchers form categories of information and attach codes to these categories. In this study, the data analysis process followed Creswell's (1994) and Patton's (2015) principles on data analysis. I immersed myself in the data, reading and rereading, so I could have an overview idea of the data and then have a close idea of the data. I went through each document and highlighted statements relevant to research questions, putting aside information that did not fit the categories or codes (Gillham, 2000).

Analytical Questions

The primary research questions that guided this document/content analysis asked: What does The Report of the BP U.S. Refineries Independent Safety Review Panel (2007) tell us about how the Baker Panel and BP viewed culture, leadership, education, and learning in the context of safety? What are the problems with how these are framed and articulated and what is the potential for developing new education and training methods and approaches for workers? To respond to these broad questions, I used a number of analytical sub-questions drawn from adult education and workplace learning concepts and principles:

1.) How are the concepts of power, agency, safety, knowledge, values, ethics, leadership and change taken up and understood in the document? Specifically, who has knowledge and/or how is it to be imparted? What does agency mean in the context of safety? Whose and what values are brought into play? What forms of leadership are called for and how is that understood that affect 'education' and 'safety' and or make change? What is change(s) is called for and how would that be brought about?

2) How is 'workplace culture' understood and what role does that play in safety, education and learning? What needs to be changed and how? What pedagogical methods or processes are needed to be put into place?

3) What were key differences between the workplace communities and their respective cultures at the Texas City Refinery and the Cherry Point Refinery (as outlined in the Baker Panel Report) with respect to prioritizing and valuing safety? What does this tell us about education, knowledge and learning?

4) What evidence is there to suggest whether corporate organisational structures impede or promote the growth of informal learning in terms of safety and workplace cultural change?

5.) What elements of workplace community learning are required for employees to learn to prioritize safety?

Credibility, Transferability, Dependability and Confirmability

Lincoln and Guba (1985) proposed four evaluative criteria for qualitative research: credibility, transferability, dependability and confirmability. Credibility refers to the “confidence in the 'truth' of the findings.” Transferability involves “showing that the findings have applicability in other contexts.” Dependability is gained by “showing that the findings are consistent and could be repeated” and confirmability requires “a degree of neutrality or the extent to which the findings of a study are shaped by the respondents and not researcher bias, motivation, or interest.”

In order to establish credibility, the research must be conducted in such a manner to ensure the inquiry was accurately identified and described. The inquiry must be “credible to the constructs of the original multiple realities.” (Lincoln & Guba, 1985, p. 296). My commitment to credibility is "to understand the world as it unfolds, be true to complexities and multiple perspectives as they emerge, and be balanced in reporting both confirming and disconfirming evidence with regard to any conclusions offered” (Patton, 2015, p. 58). There is likely a stark difference between what is credible from a scholarly research perspective and from a public discourse perspective. The document that was analyzed, while by no means providing definitive conclusions, was widely accepted as credible by the company, the industry and its regulators.

The changing nature of phenomena studied by qualitative researchers prohibits the reliability typically sought by quantitative researchers (Marshall & Rossman, 2011). Lincoln and Guba (1985) suggest a study’s dependability is gained by showing that the findings are consistent and could be repeated. Dependability emphasizes the need for the researcher to

account for the continuously changing context within which the research occurs. The researcher is responsible for describing the changes that occur in the setting and how these changes affected the way the researcher approached the study.

Lincoln and Guba (1985) highlight a link between credibility and dependability, suggesting the degree of credibility of a study reflects some degree of its dependability. Shenton (2004) suggests this could be realised through the use of 'overlapping methods.' Shenton adds that in order to address dependability more directly, the study's processes need to be described in detail, allowing future researchers to repeat the process, if not necessarily to achieve similar results. In this way, the research design may be viewed as a 'prototype.' This type of detailed recording allows the reader to evaluate the degree to which proper research practices have been followed. Shenton suggests:

> To allow readers of the research to cultivate a thorough understanding of the methods and their effectiveness, the text should include sections devoted to a) the research design and its implementation, describing what was planned and executed on a strategic level; b) the operational detail of data gathering, addressing the minutiae of what was done in the field and c) reflective appraisal of the project, evaluating the effectiveness of the process of inquiry undertaken. (Shenton, 2004, pp 71-72)

Confirmability stresses the need to ask whether more data could confirm the findings of the study. One technique that can help establish confirmability is triangulation. Triangulation can be achieved by comparing the coding categories the researcher developed to each other and to the way the categories are described in the literature (Baxter & Babbie, 2004). With the procedure of triangulation, the confirmability and the credibility of all aspects of data analysis were enhanced, including development of coding categories.

Choosing the project

The subject and the research questions of this study were chosen and developed because of a personal connection with the investigation following an accident at the Texas City refinery in March, 2005. In May of 2006, I received an e-mail from a former colleague and mentor that the company he was working for (a company I had previously worked for) needed someone to conduct a Training Needs Analysis at an oil refinery in Washington state. I was working at the time developing courses for a financial services regulator in Toronto, but found the work unfulfilling. I resigned my position and moved to British Columbia where I began working at BP's Cherry Point refinery, just across the US border from my office in Vancouver. My presence at the refinery was a direct result of the collective response of BP to the Texas City Refinery accident, little more than one-year prior. There was a convergence and a coincidence that brought me to the consulting role, having consistently questioned the effectiveness of traditional safety training during the previous 8 years of my career. The power of connection and informal learning was laid out before me as I analysed the state of training and learning at the Cherry Point refinery. It would be another year before the Baker Panel would release its report that included the state of process safety culture at BP's US refineries. When it was released, their findings corroborated my own conclusions about the community and culture at Cherry Point, linking then with a strong safety record. I knew something special was happening there, and I wanted to know what, and why. The Baker Panel's 2007 report was unique in that it was, in large part, focused on culture. Specifically, 'process safety culture' was examined at all BP's US refineries. It was the first report that I had seen that attempted to deconstruct culture as a contributing factor to workplace accidents and poor safety records. Up until that point, and since 1986, 'safety culture' was identified as an important element, but not dissected in any way for

analysis. The Baker Panel seemed to be attempting to do just that. This was an opportunity to examine the assumptions of a representative sample of important contributors to the discourse about safety in industry.

My study is also important, as it can provide important insights into what the significance and competing meanings of culture, leadership, and learning and what kinds of changes could be implemented, or not, to improve overall worker safety. I also chose to look at an historical document because history can provide important insights into what was going on from an education and learning standpoint with respect to safety at the time of the accident, and its implications for today. By shedding some light on the systemic constructs that serve to limit perspectives on learning in the workplace, this study aims to offer alternative perspectives that support community centred approaches to safety education that could potentially improve overall safety in industrial workplaces.

My Role as Witness Researcher

It is understood that the research questions and subsequent study were developed from my own personal rich history with workplace learning and safety training in numerous different organizations and industries over my 20+ year career. That career led me into a training consulting role at BP's Cherry Point Refinery from May, 2006 until September, 2007, where I had the opportunity to witness an effective workplace community in a facility with a strong safety record. I developed relationships with key members of the Cherry Point community over the course of my time working there, and I acknowledge that those relationships, and the entre and insights they provided, have without question, at least in part, have long shaped my perspective of the Cherry Point community, its culture, and it informal learning processes.

Data Sources and Data Collection

This multi-method qualitative research project is comprised of critical discourse and documentary analysis. Though other documents were used to provide context, the primary document used as a data source in this study was *The Report of the BP U.S. Refineries Independent Safety Review Panel (2007).*

Coding the Data

I reviewed the data, analyzing the documents through an open coding process (Strauss & Corbin, 1998). This process resulted in the emergence of core categories and concepts. I then organized these 'categories' into subcategories, and continued to review the data. This process is what is known as selective coding (Price, 2010). By consistently reviewing the data, and using a constant comparison method (Charmaz, 2005; Morgan, 1993) I began to notice themes emerging. I continued to read and reread the document, looking for similarities, and ultimately grouping similar concepts together. An example of the process of coding is illustrated in Table 1.

Table 1 - Example coding technique

Text	Initial Codes	Eventual
Excerpt 1 BP should involve the relevant stakeholders to develop a positive, trusting, and open process safety culture within each U.S. refinery.	System Control	Culture Engineering
Excerpt 2 BP has not provided effective leadership in making certain its management and U.S. refining workforce understand what is expected of them regarding process safety performance.	Control Structure	Corporate Leadership

Using NVIVO 10 and then NVIVO 11 software, I began by selecting a relevant reference and then giving it a working title as a theme within NVIVO. This theme is what is known as a node in the software. During the Open Coding process, each node initially had a relatively long description for the title. By the time I finished reading through the document, I had created dozens of different nodes. During the Selective Coding process, I organized the selections under large nodes or themes. At the end of the data analysis I had several sub-themes with data coded under the larger thematic nodes of culture, leadership and learning.

As I reviewed the data, I became aware of ideas emerging and I applied codes to text. In the above example, these codes included System Control and Control Structure. Continuing to review the data, I began to notice certain concepts or codes re-emerging across the data, or codes that could be linked together under more general codes. These codes became the categories I began to focus on. I continued to review the data looking for such categories, relabeling or expanding some of my initial codes. Coded data that did not fit a category, or in other words,

were not recycled substantially throughout the data, were not used in the representation of the findings.

Coded data that did not fit a category, or in other words, were not recycled substantially throughout the data, were not used in the representation of the findings. The prominent categories that emerged from this analysis included: Culture Engineering, prioritizing values other than safety, Defining culture, External control of safety training, Training vs education, Corporate Leadership, Company Power Structure, Corporate Power Sources and Safety Performance and Risk Management. The following chapters delve deeper into these categories, outlining each of them more specifically and providing examples to illustrate each category. In Chapter 8 I then reflect on the implications of these categories.

Chapter 4 – Findings – Culture and Leadership

Introduction - Culture

> The interviews of refinery management and hourly workers suggested a *very strong safety culture* at Cherry Point, a generally positive safety culture at Carson, a mixed but improving safety culture at Whiting, a weak safety culture at Toledo, and a safety culture at Texas City that was *very poor for a substantial period*. (emphases mine, Baker et al., 2007, p. 96)

Following the Texas City Refinery accident of March 23, 2005, the BP U.S. Refineries Independent Safety Review Panel, known as the Baker Panel, was formed to conduct an investigation into the accident and produced its report in early 2007. As seen above, among their findings was an emphasis on the 'safety cultures' of BP's five US Refineries, noting challenges and, particularly, the discrepancy between the 'best safety culture' and the 'worst safety culture.' Using content and discourse analysis, this chapter shares findings around the theme of safety culture that emerged from the analysis of the *Baker Panel's 2007 Report.* The way safety culture is taken up in the report has implications with respect to how it could influence safety education and learning in the workplace. I begin by discussing how the concept of safety culture is interpreted by the Baker Panel.

What is Safety Culture?

The idea of a safety culture was first introduced by the International Nuclear Safety Advisory Group (INSAG) in their post-accident report on the Chernobyl nuclear accident in 1986, although the related concept of occupational 'climates' of safety had been explored earlier (Zohar, 1980). To begin to talk about the Baker Panel's findings around the concept of 'safety culture,' we need to understand its complexity. In 2002, the UK Health and Safety Executive put forward a definition of safety culture, stating "safety culture is the product of the individual and

group values, attitudes, competencies and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety programmes" (p. 2). Zohar (1980) first described 'safety climate' in an empirical investigation of safety attitudes in Israeli manufacturing as "a summary of molar perceptions that employees share about their work environments" (p. 96). Turner, Pidgeon, Blockley, and Toft (1989) define safety culture as "the set of beliefs, norms, attitudes, roles, and social and technical practices that are concerned with minimizing the exposure of employees, managers, customers, and members of the public to conditions considered dangerous or injurious" (p. 4). Yet Guldenmund (2000) reminds us that "although safety culture and climate are generally acknowledged to be important not much consensus has been reached on the cause, the content and the consequences of safety culture and climate in the past 20 years" (p. 215) and Reason (1998) suggests "there is no universally accepted definition of safety culture" (p.293).

Complex or not, the term 'culture' is commonplace to describe the human elements of a workplace and is considered to be pivotal to the improvement of productivity and safety (Schein, 2010). Around the world, 'safety culture' has become routinely associated with organizational failures resulting in deadly accidents (Hopkins, 2005). In many countries government regulators have seized on 'safety culture' as a means to understanding and shifting the attitudes of employees towards health and safety at work (Turner et al., 1989). In Canada, for example, after the Lac Mégantic train derailment and explosion in 2013, the Transportation Safety Board of Canada (TSB) (2014) suggested a lack of 'safety culture' was a significant factor contributing to the accident. In the United Kingdom, a 'poor safety culture' was linked to the Piper Alpha oil platform explosion in 1988 (Cullen, 1990). In the United States, the Rogers commission reported that the explosion of the space shuttle Challenger had contributing cultural factors (Report of the

presidential commission on the space shuttle challenger accident, 1986).

Safety and culture have thus become permanently intertwined and it is clear that they are central to the Baker Panel report and its quest for contributing factors to the accident. 'Culture' is in fact used extensively throughout the report, often in conjunction with other descriptors including 'corporate', 'entrepreneurial', 'learning', 'reporting', 'reliability' and 'safety'. In reference to safety, the term 'culture' emerges repeatedly through terms such as 'process safety' culture, culture of 'safety', 'corporate safety' culture, cultural 'safety,' and simply 'safety' culture. In fact, a 'word' search of the document shows the term culture appears 474 times. Although scholars such as Guldenmund (2000) remind us there is little consistency in use or definition, the predominant assumption in the Baker Panel report is that 'culture' is critical to safety. So, what in fact is 'safety culture' and what are the implications of its existence or absence?

Baker Panel Definition of Culture and Safety Culture

In 2007, the Baker Panel, seeking to define 'culture' and 'safety culture', drew their definition from a 2003 research report on best practices in corporate safety and health. They write:

> Safety and health are (or have become) part of the company culture—and frequently part of the management system. "Culture" is traditionally defined as "a shared set of beliefs, norms, and practices, documented and communicated through a common language." The key word here is *shared*. Companies have found that if safety and health values are not consistently (and constantly) shared at all levels of management and among all employees, any gains that result from declaring safety and health excellence a "priority" are likely to be short-lived. (emphasis mine, Baker et al., 2007, p. 23)

By deploying this description, the Baker Panel recognises that a 'safety culture' consists of

beliefs, norms and practices, things that align with other descriptions (e.g., Tylor, 1974, Kuper, 1999, Banks & McGee-Banks, 2012). However, I have highlighted something in this report I think is important – the idea of 'shared'. What this seems to indicate is The Baker Panel believes no single person 'owns' safety or the culture. Problematically, as I will come to in the next chapter, the report all but side-steps this idea in favour of hierarchy, although it is more complex than that. This also emerges in the idea of 'controlling' culture.

Connecting Culture and Safety

The Baker Panel holds that safety and culture should be connected, as this is repeated throughout the document. How they are connected, or should be, is the challenge they attempt address. To begin, the Baker Panel indicates while BP seemingly understood there was a connection between workplace culture and safety performance, it did not appreciate the importance of the connection until after the Texas City accident. They write, "It appears that BP now understands that a positive safety culture is a critical driver of process safety performance" (p. 59). What is important in this statement is that the Baker Panel suggests that BP now acknowledges the importance of culture as a determinant to safety. However, there are also problems. Silbey (2009) reminds us that "sociological critiques claim that culture is emergent and indeterminate and cannot be instrumentalized to prevent technological accidents" (p. 341). In other words, while culture and safety are undoubtedly connected we need to be mindful that it may be problematic if a company attempts to influence safety by controlling culture, as the Baker Panel recommends.

Safety Culture and Values

As alluded to above, there is a strong connection between culture and 'values'. Kroeber and Kluckhohn (1952) in fact wrote many years ago that "the essential core of culture consists of

traditional… ideas and especially their attached values." (p. 47). Banks and McGee-Banks (2012) add the essence of culture is "the values, symbols, interpretations, and perspectives." (p. 8). The Baker Panel explores the idea of values, making the link between this and their 'idea of 'shared' culture:

> In a positive process safety culture, all constituencies of the refinery's workforce -- from the plant managers to superintendents to HSSE professionals to hourly employees and contractors -- regard process safety as a core value and all levels of the workforce appreciate that process safety expectations are not considered secondary to production goals, budgetary objectives, or other competing considerations. (p. 60)

This suggests the Panel understands that, in a 'positive' (read 'effective') safety culture, all levels of the workforce should 'regard safety as a core value' and 'appreciate that process safety expectations are not considered secondary to production goals, budgetary objectives, or other competing considerations.' I suggest it is responding to the fact that in most cases, cost-cutting and production pressures seem to be primary organizational/corporate priorities or values in a neoliberal world, which get adopted by the workplace community, becoming the essence of its culture (Schein, 2010). The Baker Panel in fact does seem to suggest this is happening at BP, and specifically at the Texas City Refinery, although they also point out that values and practices of neoliberalism were met with less resistance than at other BP refineries, and perhaps even with exuberance, as illustrated in this selection from a report from the Chemical Safety Board in 2007:

> While some BP refinery leaders resisted the call for a 25 percent reduction in fixed costs, Texas City made serious cuts and came close to the 25 percent reduction target. Its cost reduction strategy was to "aggressively drive costs out of the system at an accelerated pace relative to other refiners." …… Items cut included turnarounds; safety committee meetings; the central training organization; fire drills; maintenance, engineering, supervision, and inspection staff; plant maintenance; and training courses. Safety and maintenance expenditures were a significant portion of the cuts. The

> refinery's capital expenditures to maintain safe plant operation and to comply with HSE legal requirements were cut $33 million, or 45 percent, from 1998 to 1999. (CSB Final Report, 2007, p. 159)

When corporate leaders argue safety as a priority, yet push for, and accept, budget cuts to safety related systems, it is not surprising the workforce gets mixed messages about which values are held in higher regard. This priority trickled down from corporate managers into refinery leadership where it became known, as noted in the quotation from the report below, as a 'chequebook mentality' and it is linked to the inability to assess risks and more: "One of the most problematic gaps identified was that a "checkbook (sic) mentality" still existed throughout most of the Texas City site, which "limits HSE and general performance" (CSB Final Report, 2007, p. 161).

This 'chequebook mentality' meant budgets were not large enough to address identified risks. The Baker Panel highlights the misalignment between the values held by the workplace community at Texas City refinery, and the values being touted by the corporation. The corporate 'line' claimed that safety was important, but the Baker Panel's investigation shows this message to be diluted and nebulous. "The Panel's refinery level interviews, the process safety culture survey, and some BP documents suggest that significant portions of the U.S. refinery workforce do not believe that process safety is a core value at BP." (p. 61). The Panel continues by writing "a significant portion of the U.S. refining workforce believed that production goals, operational pressures, or budgetary constraints sometimes overrode process safety concerns." (p. 61). As an outside consulting firm noted in a June 2004 report, "telling the workforce that "safety is number one" when it really was not only served to increase cynicism within that refinery." (p. 61). The panel went further, noting, "the inability of many in the workforce to perceive a consistent and

meaningful corporate message about process safety is easy to understand given the number of 'values' that BP articulates" (p. 61)

These findings are important as they expose disconnect between the corporation and its front-line workers concerning values and the priorities they hold. There is an important connection here between values disconnect and the concept the shared culture of safety noted earlier. The Baker Panel acknowledged the importance of safety as a 'shared belief.' Further, they explored "whether the workforce has a shared belief that safety comes first, regardless of financial, scheduling, or cost objectives" (p. 95). The panel also examined "the extent to which the workforce is vigilant about process safety risks, continuously tries to reduce them, and seeks to learn from incidents and near misses" (p. 95) which would be an indication of how the value of safety was prioritized within the workplace community.

Culture: Static or Evolving?

An important aspect of the Baker Panel's investigation was the idea of 'cultural permanence'. The Baker Panel seems to describe culture as 'not static' in detail and thus recognizes that it does change over time. For example, in one paragraph the Report argues

> A safety culture evolves over time in response to various events, including changes in leadership and in management systems. Accordingly, an organization's safety culture at any point in time may be viewed as reflecting prior events or prior defining periods in the history of the organization, such as mergers and acquisitions, reorganizations, financial difficulties, technological changes, and management changes. (p. 23)

This statement takes into account 'environmental' factors that influence the development of culture. It acknowledges that 'economics', for example, plays a key role in 'safety culture' as well as technological and leadership changes. On the former, one could in fact argue it may be recognizing, albeit gently, that financial considerations like cut backs in staffing, and the

introduction of new technologies for efficiency which are often unaccompanied by insufficient training could be detrimental to a 'culture of safety'. In other words, the culture of 'economics' – profit driven culture –is something that needs to be acknowledged. Equally, this excerpt suggests 'leadership' also plays a role in determining the 'culture of safety', though the nature of that relationship is unclear here. The panel also presumes that culture will change as a result of changes to the 'management system.' This may serve as a rationale for implementing corporate management system changes in an attempt to influence 'safety culture.'

Trust and Safety Culture

Burns, Mearns, and McGeorge (2006) write "despite the central role of trust in leading models of safety culture, literature reviews of the factors measured in safety climate surveys have shown that trust is rarely measured" (p. 1140). The Baker Panel, however, highlights trust in their definition: "A good safety culture requires a positive, trusting, and open environment with effective lines of communication between management and the workforce, including employee representatives" (p. 75). In this quotation, the Panel identifies trust with 'good' and openness as critical factors to the development of safety culture. Indeed, "the single most important factor in creating a good process safety culture is trust" (p. 75). Yet the report does not go into any detail about where the trust is placed or where it exists. Management trusting employees, for example, is different to employees trusting management, or trusting each other. This is highlighted in the report like this: "Employees and contractors must trust that they can report incidents, near misses, and other concerns -- even when it reflects poorly on their own knowledge, skills, or conduct -- without fear of punishment or repercussion" (p.75). This suggests the health of a safety culture can be measured in some way by "the extent to which the workforce feels free to report safety-related incidents, near misses, and concerns without fear of

retaliation;" (p. 95). This widely applied concept, known as behaviour-based safety (Geller, 2005), involves individuals anonymously reporting unsafe behaviour by their co-workers. This is an important indicator of the nature of trust in the organization. The question is whether or not the Panel is showing a perspective on trust that is biased? I would argue it is suggesting the employees must trust that management and its systems will not use incident reporting as means of identifying personnel, and meting out punishment. In the report, there is no mention of the importance of management trusting the workforce, and, more importantly, no exploration of trust, as it exists between employees, or as an element of the workplace community.

Trust at Cherry Point and Texas City Refineries

It is interesting to do a comparison from the report on the idea of trust as the Panel found significant differences between the Texas City refinery and the Cherry Point refinery. The panel concluded, "Cherry Point has a very positive, open, and trusting environment" whilst at Texas City "BP has not established a positive, trusting, and open environment" (p. 75). Problematically, however, the Panel did not explore further why there was such a difference in trust, or the nature of the trust components. So while their comparison opens a gap to explore the element of trust as it relates to workplace culture, were are not clear how and why trust came about and thus its full contributions to safety culture. What the Panel does argue,however, is that there are ways of assigning levels of effectiveness at the two facilities. In other words, ways of 'measuring' safety culture.

Measuring Safety Cultures

Although Silbey (2009) suggests culture is an emergent and indeterminate phenomenon, and McMillan and Chavis (1986) propose culture as an organic process, the Baker Panel seems to address culture concretely, viewing it as empirical. When the Panel discusses safety culture

improvement, for example, they use a scale, something to improve 'from' and 'to.' The Panel uses the terms 'strong' and 'weak', 'positive' and 'negative,' 'open' and 'not open' and 'trusting' and 'not trusting' to gauge the quality of the process safety culture at each facility. Deal and Peterson (2016) acknowledge a difference between strong and positive, as well as weak and negative, when discussing culture. Saffold (1988) suggests strength is an ambiguous dimension in measuring organizational culture, suggesting "the meaning of *culture strength* is surprisingly difficult to pin down" (p. 548). Despite this ambiguity, the panel uses the terms 'strong' and 'weak' to describe the process safety cultures at BP. This means it is "mindful, as readers of this report should be, that no specific response percentage for any survey item can be regarded as a definitive indicator of a strong or weak process safety culture." (p.10). However, they continue to use the terms 'strong' and 'weak' despite the apparent limitations of the survey design. The report outlines some elements, or criteria, that point to a 'weak' culture. "The Panel found instances of a lack of operating discipline, toleration of serious deviations from safe operating practices, and apparent complacency toward serious process safety risks at each refinery." (p. xiii). Extending this idea, a 'strong' safety culture would then have no lack of operating discipline, low tolerance of serious deviations from safe operating practices, and no complacency toward serious process safety risks. The Panel goes even further, suggesting "Moreover, an organization with a strong safety culture does not lose sight of the fact that the stakeholders with the most to lose -- their lives -- are workers and members of the public living or working near hazardous operating units." (p. 24). Thus, a strong safety culture places a very high value on safety and safe behaviour, and a weak culture is one that embodies, or prioritizes values other than safety. Additionally, the Panel suggests that a good or positive safety culture is one that follows the rules. It assessed "whether deviations from policies and procedures are tolerated." (p.

95) Thus, it can be argued, to come back around to a previous point, that a ‘good’ safety culture is, among other things, one where employees do what they are told to do by corporate management.

Process Safety Culture Survey

The Baker Panel Report (2007) specifies one of its main objectives as the investigation of “Process Safety Culture” (p. 1). They commissioned the `Process Safety Culture Survey` as part of their investigation “to assess the beliefs and attitudes of BP’s workforce concerning process safety culture and process safety management systems” (p. 7). It is important to note that the Panel drew on “expertise of those Panel members with experience in developing and administering workforce surveys” (p. 7) and equally, saw value in creating a survey that gathered input about culture from the refinery employees themselves, to ensure they were included. The Panel was also clear that the intention of the survey was to create a comparison, as noted in this passage:

> with the survey data from BP’s U.S. refining workforce, the Panel can compare survey results between one refinery and another or between one job function and another. The Panel believes that these types of comparisons provide valuable information for possible process safety culture improvement. (p. 9)

The idea of comparative data is to create, as noted, a scale to name where the problems lie. What they found from interviews with refinery management and workers was “a very strong safety culture at Cherry Point, a generally positive safety culture at Carson, a mixed but improving safety culture at Whiting, a weak safety culture at Toledo, and a safety culture at Texas City that was very poor for a substantial period” (p. 96). Interestingly, the report does not delineate between management and workers, so it can be assumed there was agreement across the groups.

This ambiguity in terminology is problematic when trying to compare the refineries' cultures. While comparing the safety cultures at the five US refineries, the Panel refers to using the survey as a "benchmarking tool" (p. 7). The idea of 'benchmarking' suggests a standard for a 'safety culture' either exists, or needs to be established. The pursuit of a scale to measure 'culture' is a further attempt to delimit and control a phenomenon that is emergent and indeterminate (Silbey, 2009).

Benchmarking a Safety Culture

Once a scale and a measurement device were established, a standard needed to be found to measure against. Consider the following quote from the report:

> In conducting the review that its charter contemplated, the Panel believed it important to consider the manner in which other companies engaged in the energy, chemical, and other process industries manage process safety performance and attempt to cultivate a strong process safety culture" (p. 12).

This is evidence that the Baker Panel was looking elsewhere in industry to find examples of what constituted a 'strong process safety culture.' The Panel was trying to establish a baseline, or a benchmark for what a successful or 'good' safety culture looks like or includes. It is not clear what the panel found in its background research, as the companies and results of the discussions were not revealed in the report.

Engineering a Safety Culture

The Baker Panel made clear its intent to improve safety culture at BP, when it stated "the Panel believes that these types of comparisons provide valuable information for possible process safety culture improvement" (p. 9). They were also clear about where responsibility for culture change was situated in the organization, writing "BP should…develop a positive, trusting, and

open process safety culture within each U.S. refinery." (p. xvi). This points to BP requiring a structured solution to its culture issues. However, Papa, Daniels and Spiker (2007) argue that a stance adopted by xxxx? in terms of an organization's culture should not be "a monolithic form controlled from above by managers and owners" (p. 129). Ezzy (2001) believes that this is because it would limit the choices for workers if cultures were engineered cultures. The Baker Panel, however, references popular safety scholar Reason (1998) to support their perspective that culture can be engineered, and that BP needed to create, influence, or install culture. As Reason argued, "it is first necessary to engineer a reporting culture -- not an easy thing, especially when it requires people to confess their own slips, lapses and mistakes" (p. 75). While Reason admits to the difficulty of engineering a reporting culture, he is suggesting cultures can be, and should be, influenced by organizations. The Baker Panel blamed the corporation directly for its failure to create a culture of safety, stating emphatically, "BP has not adequately established process safety as a core value across all its five U.S. refineries" (p.59). Taking this further, the Panel suggests culture can be manufactured and installed like a component of a facility. They imply it is the responsibility of BP to do just that, writing "BP has not instilled a common, unifying process safety culture among its U.S. refineries" (p.60). There is nothing inherently wrong with wanting 'a common, unifying process safety culture' but it does raise some concerns. First, it denies agency and empowerment to those who work there, and second, it leaves 'safety culture' in the hands of an organisation whose first interest is profit, not its employees who have a vital interest in safety. In fact, this 'problem' is acknowledged in the report when it states BP has "a corporate safety culture that may have tolerated serious and longstanding deviations from good safety practice" (p. viii).

Cultures and Subcultures

The Baker Panel reported a lack of common safety culture at BP's facilities. "The Panel struggled to detect any common safety culture among BP's US refineries" (p. 95). This is significant because it shows the Panel was looking for evidence of common, unifying culture across the five facilities. If, as Papa, Daniels and Spiker (2007) suggest, "an organization's culture is not a monolithic form" (p. 129), what is the alternative? Saffold (1988) believes "multiple subcultures appear to be the rule, unitary cultures the exception" (p. 547) while Papa, Daniels and Spiker (2008) remind us subcultures are "particularly important to consider when describing an organization's culture" (p. 129). The Panel goes on to describe what it actually did find. "Because of legacy, historical, geographic and other site-specific influences, each of BP's U.S. refineries appears to have a unique local safety culture, and significant differences exist amongst them" (Baker et al., p. 95). This passage provides evidence the Panel acknowledges the existence of these local cultures, or subcultures, and provides reasons why they are different (i.e., history, geography etc.). In fact, the Panel goes on to write, "Other than corporate signage and the prevalence of the BP logo, little indicates that these refineries have common ownership" (p. 95). The implication is that not only do the facilities lack a common safety culture, they do not even have a common corporate culture: "The refineries show some similar process safety cultural weaknesses, even though they do not share a unified process safety culture" (p.60). The Baker Panel sees cultural 'uniformity' as a factor important to safety culture.

Going further, the Panel found that each refinery had its own subculture of safety and that this was recognized by BP's management. They wrote that "almost all agreed that each US refinery had its own safety culture and that those cultures were substantially different" (p. 96). This is crucial because it shows both the Baker Panel and the BP seemed to understand that each

refinery had its own unique safety culture. The question not asked in any detail by the Baker Panel was what elements were present, or missing, in those local cultures, or subcultures, that made them more safety conscious, or less so? An additional question would be why was the Baker Panel so insistent that BP needed a strong, 'umbrella,' corporate safety culture when each facility had its own unique safety culture? Did the Panel view the variability as being problematic?

Safety Culture and Community

Each local culture or subculture is a manifestation of the local workplace community. The concept of community, however, is broad and somewhat vague. The Concise Encyclopedia of Sociology specifies that "'Community' is concerned with people having something in common, although there is much debate about precisely what that thing is" (p. 74) and whatever the commonality, relationships are fundamental, suggesting, "Whether the basis of a community is common residence, common interest, common identity, or some combination of these factors, it is necessarily the case that the relationships that are involved will be exclusive to some degree" (p.75). Naylor and Willimon (1996) define community more specifically as "a partnership of free people committed to the care and nurturing of each other's mind, body, heart and soul through participatory means" (p.42) The Baker Panel did not suggest employees at any of BP's facilities were part of a local workplace community. They do however talk about relationships. They write, "At each link in the management chain (the) framework depends heavily upon having healthy, productive relationships between the individuals at each and every link in this chain of command." (Baker et al., p.92) This is important because the Panel here suggests the only critical relationships in BP's organization occur in vertical fashion. They continue, connecting safety directly to the quality of those vertical relationships.

> Even a single dysfunctional relationship in the chain—whether between a supervisor and a superintendent, a refinery plant manager and the regional vice president, or the head of global refining and the Chief Executive, Refining and Marketing—can create a significant break in the management system for ensuring process safety performance. (p.92)

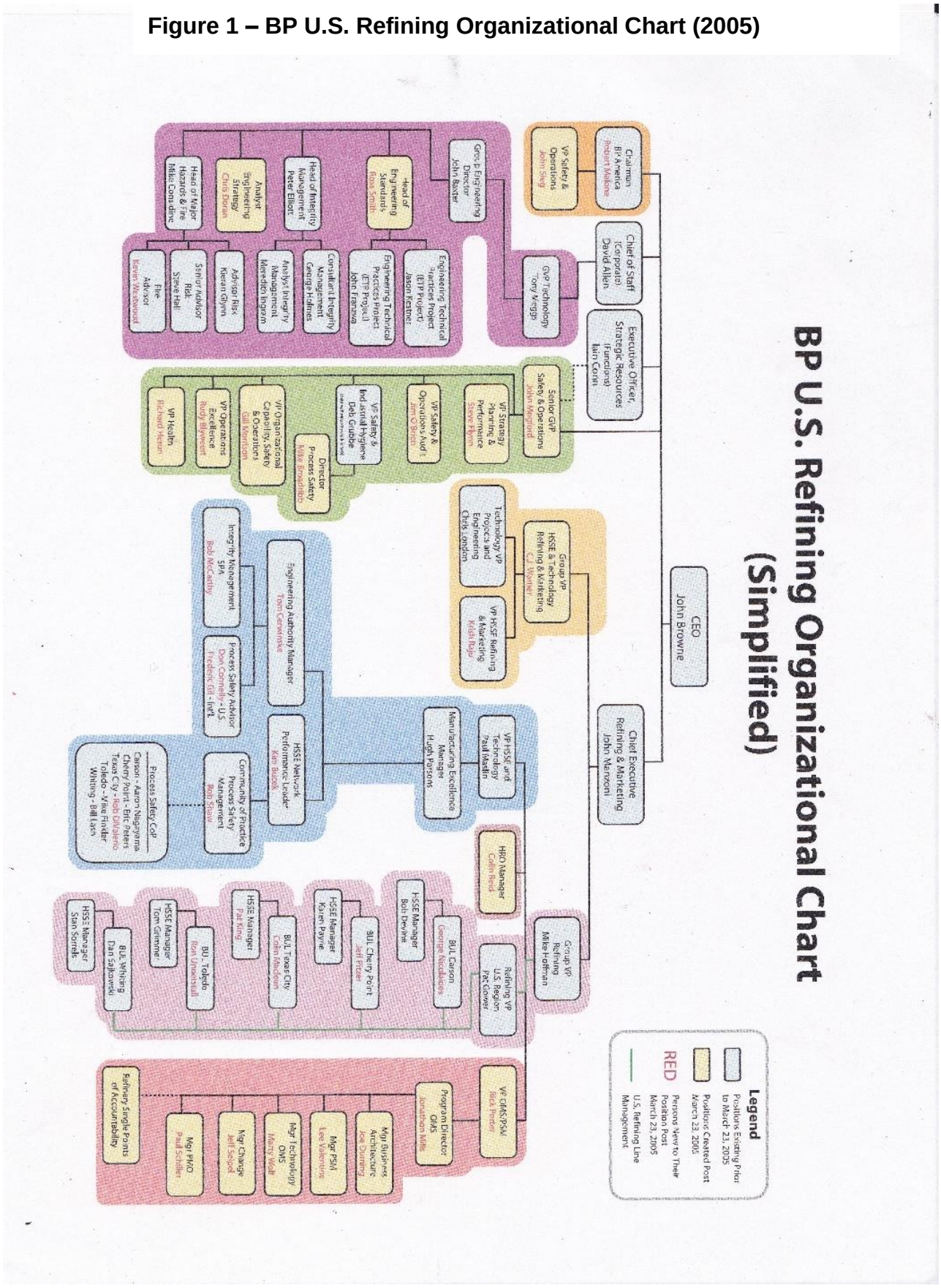
This is key because culture is a concept of community. The panel acknowledges the existence of local cultures and, at least superficially, acknowledges *some* community-based elements. They write, "in assessing the local safety culture at each refinery, the Panel focused on a number of attributes, including "the degree to which the workforce feels "empowered" as to process safety and "ownership" of process safety;" (p. 95). The panel continues, suggesting relationships and trust are important to the existence of a good community, but it implies the important relationships are between artificially created corporate hierarchal groups or categories (i.e., management, workforce, contractors). In its investigation, the panel looked at "relationships and trust between different constituencies, including management and the workforce, management and contractors, and contractors and the workforce." (p. 95) This is critical because they did not acknowledge the potential importance of the relationships between the workers, managers, and the contractors and, most importantly, within the refinery community that included members of all those groups.

Culture, Community and Communication

Edwards and Shepherd (2007) see community as a "social (communicational) accomplishment" (p. 360). Communication is an important factor in community and relationship development, though not all communication is the same. Horizontal or lateral communication amongst workers in a workplace is not the same as vertical communication through the chain-of-command in an organization. Papa, Daniels and Spiker (2007) claim lateral or horizontal communications within organizations improve "problem solving, information sharing across

different work groups, and task coordination between departments or project teams." (p. 56). Koehler, Anatol and Applebaum (1981) suggest horizontal communications can enhance morale and provide a means for resolving conflicts in organizations. Problematically, however, in 2005, BP had a hierarchical organizational structure. Its organizational chart (figure 1 below) demonstrates a typical corporate, chain-of-command arrangement.

Figure 1 – BP U.S. Refining Organizational Chart (2005)



This type of arrangement emphasizes the value placed on vertical communication and hegemonic patriarchy and power, as does this passage:

> BP's overarching philosophy is that safety accountability always runs through the line, with support and challenges from a variety of functions. Accordingly, several strands of BP's organizational chart have a material impact on process safety management and culture in the U.S. refineries. (p. 32).

This quotation is talking about safety accountability (i.e., responsibility) running 'through the line.' This is shows the company paid close attention to the vertical communication pathways, but acknowledges the importance of the horizontal pathways in the workplace community. Continuing, the Panel looked at "the extent to which safety-related information flows freely among all levels of the refinery." (p. 95) This further indicates the focus on 'levels' (of responsibility) throughout the facilities and that the flow of information was more or less vertical.

Culture Summary

If we hold that workplace culture is, at minimum, the set of values and beliefs held by a workplace community, and that prioritizing safety is a belief or a value held by that community as part of its culture, then understanding culture becomes critical to understanding how safety, as a belief, is communicated and learned. As defined, *safety culture* seems to describe a single facet of a workplace culture, not a distinct culture, because culture is a collective set of values and beliefs. Regardless, the term *safety culture* can be a useful tool for discussing safety education in the workplace. I am suggesting that workplace culture (defined, in part, as safety culture or not) is the contextual fabric within which the learning of safety as a value occurs. Next, I will discuss

the role of leaders and how they operate as pedagogical nodes within the cultural fabric of a workplace culture.

Introduction - Leadership

Leadership is a widely studied yet often misunderstood concept, as I have shown in Chapter 2. One common theme throughout the literature is that those who lead can influence the values and beliefs of those who follow (Hollander & Julian, 1970, Chemers, 2000, Northouse, 2013). What, then, is the role of leadership in creating a culture that values safety? If, as I suggest in the previous chapter, culture is the backdrop of values education in the workplace, then I suggest it is leadership that is the locus of the learning. Bass (1985) highlights that a particularly important role of leaders is to motivate and inspire people by helping them to see the importance and higher good of the task. This chapter will look at how the Baker Panel discussed and understood leaders and leadership at BP at the time of the Texas City accident. It is important to understand how leadership decisions were made and how they impacted the development of culture and safety education at the company and its facilities.

Leadership as Hierarchy

One thing that becomes clear in reading the Baker Panel report is the group's support for leadership within normative hierarchical structures. This is done in one way through the terms used. To begin, the report argues "leadership from the top of the company, starting with the Board and going down, is *essential*….it is imperative that BP's leadership set the process safety *"tone at the top"* of the organization and establish appropriate expectations regarding process safety performance" (emphases mine, p. xii). There are a number of concerns here. First, it suggests that those further 'down the chain' should have less power to influence change than those further up. This is what Forsyth (2009) calls power over people rather than power with

people. Second, the idea of 'sharing' responsibility for safety culture raised in chapter five has clearly been abandoned when it comes to ideas of leadership. There is no portrayal of any reciprocal relationship. Further, I emphasized two terms in this quotation. The first, 'essential,' implies the Baker Panel sees leadership as critical to change. The second item (phrase) I emphasized in the above quotation was "*tone at the top"*. At 'the top' are the 'shareholders' and the Board of Directors, from whom, the report notes, authority flows "down throughout BP" (p. 27). The questions become who are these people and what is their interest in safety? Are their interests with the workers, or are they more financial interests of the company? Is their goal to strengthen the bottom line, or the well-being of the workers? Just who is this authority to influence important decisions that remains nameless and faceless in the report?

Challenging the Chain of Control

Yet there are also indications in the Baker Panel's report of flaws in the essential, top-down leadership approach. They note

> Even a single dysfunctional relationship in the chain—whether between a supervisor and a superintendent, a refinery plant manager and the regional vice president, or the head of global refining and the Chief Executive, Refining and Marketing—can create a significant break in the management system for ensuring process safety performance (p. 92).

They actually name supervisors, superintendents, plant managers, vice presidents, and even those in charge of marketing. This shows a powerful set of figures, with centralized power, where breaks in the chain can have serious implications down the line. Again the idea of a shared responsibility for safety is dismissed. What is equally problematic here is that in naming, the panel/report blames particular 'individuals,' those 'breaks' in the chain rather than the corporation itself and its nameless faceless

power. Breaks in the leadership chain are not always obvious, as is evident in the following passage:

> The Panel believes that this organizational framework produces a number of weak process safety voices -- weak in the sense of apparently lacking the ability to influence in a meaningful way strategic decision-making with respect to U.S. refining operations. (p. 80)

This passage has several critical points. Primarily, it suggests that BP had leadership gaps throughout the organization, both inside and outside the refineries, when it came to process safety. It discusses the 'weak process safety voices' that lacked the ability to influence strategic decision making. This is alluding to weakness in the vertical relationships, aiming to close the gaps and broken links in the chain. It seems to suggest the 'voices' discussed are from below (they do not make strategic decisions, but have the potential to influence them only, as per the above passage). I would argue these are the workers, need to be heard by those with the power of strategic decision making. The question is, then, what is meant here by 'voice' and who has voice in the organization? The Panel continues by noting "BP does not have a designated, high-ranking leader for process safety dedicated to its refining business" (p. xii). This implies the failure at Texas City was, at least in part, caused by a 'break' in the process safety message chain and this 'break' was at a 'high-ranking' level. The report also implies that the power and control of process safety rests with a high-ranking leader. This serves to take away power and knowledge from the front-line workers.

Corporate Management and the Safety Message

In its report, the Baker Panel's number one recommendation is focused on improving Process Safety Leadership. They conclude that:

> The Board of Directors of BP plc., BP's executive management (including its Group Chief Executive), and other members of BP's corporate management must provide effective leadership on and establish appropriate goals for process safety. Those individuals must demonstrate their commitment to process safety by articulating a clear message on the importance of process safety and matching that message both with the policies they adopt and the actions they take. (p. xvi)

As was pointed out previously, there were gaps in the leadership chain that would have been a barrier for the messages from corporate management being distributed to the front-line workers. The report also discusses the importance of actions by 'corporate management.' This is problematic because 'corporate management' are typically not part of the workplace community in any particular facility, so the impact of their actions concerning safety could be minimal. The Panel admits corporate managers have no real influence on front-line safety. "Refinery plant managers are the leaders of the refineries and are accountable for all aspects of the refinery's performance, including commercial, environmental, public affairs, safety, and human resources." (p. 34) This is important because it offloads safety accountability and responsibility to the refinery managers and minimizes accountability for corporate management.

Refinery (Plant) Managers

The Panel names the Refinery Manager position as responsible for safety at its Refineries. They note, "BP regards the refinery plant manager as the person responsible for the refinery's financial, operational, environmental, and safety performance" (p. 92). This places responsibility, as well as power, with a single person in the refinery. It infers that those in front line positions have little decision-making power with respect to safety performance, as this power belongs to the Refinery Manager. This type of singular linchpin position could have the

effect of encouraging or discouraging a strong workplace community and culture, which would depend upon his or her leadership competencies, beliefs, and values.

Leadership Competency Gaps and Turnovers

In addition to the gaps in the leadership 'chain' at BP, the report points out gaps in the competency or ability of the leaders. For example, the Panel found a "lack of leadership competence and understanding to effectively manage all aspects of HSE" (p. 174). This statement highlights a conspicuous gap in the ability of the leaders to communicate and educate the aspects of HSE. I will return to this gap when I take up issues of education, training, learning and knowledge. Adding to the above, the report notes that at the highest level of local leadership there is "high turnover of refinery plant managers, and process safety leadership appears to have suffered as a result" (p. 73). For example, "Carson has had three plant managers since 2000, Cherry Point has had three since 1997, Texas City has had eight since 2000, Toledo has had five since 2000, and Whiting has had four since 2000." (p. 34). As a critical leader in each refinery community, consistency of management is important to maintain stability for trust and important community relationships to develop and the Panel acknowledges the negative effect, particularly in the fact that the safest refinery was the one with least amount of Refinery Manager turnover (Cherry Point with three in eight years) and the refinery with the worst safety record had the most managers (Texas City with eight in five years). This shows the Panel understands the critical importance of the Refinery Manager's position, though it does not explain this importance further.

Refinery Leadership selection and learning gaps

Building on the above, the Baker Panel found there was a lack of consistency and reliability in selecting the refinery managers and higher-level refinery leaders:

> BP uses a 'refining assessment tool' to appraise a candidate's experiences and competencies, and BP develops a pool of candidates for the refinery plant manager and the manager's direct reports. These experiences and competencies, however, are more conceptual than sharp-edged. BP's assessment tool does not qualitatively evaluate a candidate's refinery experience, process safety understanding, or commitment to safety. (p. 34)

This points to inconsistency in the leadership selection process, as well as a lack of firm criteria concerning the knowledge, skills and abilities required for higher level refinery leadership.

The Panel also found, even after a candidate has been selected, that "BP provides no specific training for newly appointed refinery plant managers" (p.35). While I will take up learning and education more thoroughly in the Chapter 7, what this seems to indicate is what little value BP places on the education and training of its leadership. In fact, a new plant manager, for example, is provided with an array of documents pertaining to the refinery, and he or she is expected to work side-by-side with the former plant manager during an extensive transition period. BP encourages new plant managers to use a "refinery leadership transition planner" (p. 35), which itself provides no specific training. I would suggest the report is questioning, or at least raising here, the implications of a lack of formal training for refinery leadership. This would result in a lack of competent management, including a lack of 'soft skills' (e.g. communication skills, social intelligence, emotional intelligence, leadership) that are so important to teaching and communicating values. I will discuss this training gap later in this chapter. This is a critical point as I am calling into question the stress on 'middle-management' that avoids laying the blame at the door of the faceless, nameless, and nebulous 'company'.

Front Line Leadership (First Level Leaders)

Bunning (2000) writes, "the role of front-line leader (often known as supervisor, team leader, foreman and so on) is a critical, challenging and often unappreciated role" (p. 99). The

Baker Panel sees the bottom of the leadership hierarchy as being occupied by what they term 'First Level Leaders.' They write "First level leaders represent the first level of supervision for refinery operators." (p.154). The Panel reported that BP felt there was high degree of importance to first level leaders, writing "Corporate managers emphasized the importance of first level leaders, stating that such a position is "the single most important position" (p. 154) and that the first level leader "holds it all together" (p.154). Their actions suggested otherwise.

While the report indicates BP believed first level leaders and supervisors were important, its lack of investment in their training and support suggests that this was not the case. The panel found the influence of technical expertise was missing in many cases at BP's refineries. They write, "The lack of prerequisite knowledge and formal training systems can result in shift supervisors who are not experts on their process unit's systems" (p. 154). Therefore, the first level leaders did not always have the understanding of their respective process units. This could, in turn, lead to poor decision making and a lack of confidence by their reports. In fact, the panel found that BP did not even have the criteria in place to select first level leaders, writing;

> The Panel found nothing to indicate that any of the refineries had a requirement that a new first level leader be tested on, or be familiar with, the equipment in the unit or that he or she have any minimum job tenure before promotion to that position. (p.154)

The missing investment in selection, training and support would leave gaps in the ability of first level leaders to influence their reports. The panel found that there was indeed a lack of confidence in the workforce. "The lack of basic job experience among certain supervisors caused some …. refinery workers to express concern that new board operators and supervisory personnel did not have sufficient experience to lead shift operations" (p.154). This implies front-line workers did not trust that the first level leaders were technically competent.

Additionally, there was no training or support for supervisors in critical people or soft skills either. Bunning (2000) suggests, "the supervisory job required a moderate amount of technical expertise and a high level of people skills" (p. 101). The Panel found that at Texas City there was "no system for ensuring that 'step up' supervisors and supervisors have the necessary skill sets to be effective safety leaders." (p. 154). One can assume that BP had no way of assessing the knowledge or ability (or lack thereof) of the personnel it was placing in first level leadership positions. Also, it is unclear whether the 'necessary skill sets' referred to by the Baker Panel include people skills or are referring only to technical knowledge and experience.

These findings are critical because they indicate a disconnect between BP management's stated position and their actions when it came to first level leaders. The actions or inactions of the organization did not support the claim that it believed first-level leaders were the 'single most important position.' There appeared to be some commitment by the company to higher level field leadership prior to the Texas City accident, and shortly thereafter, but not to the first level leaders. The Panel additionally discovered areas where nepotism seemed rampant at the refineries, most notably Texas City. Moreover, some hourly workers perceived that first level leaders and supervisors in Texas City were selected on the basis of their relationship with superintendents as opposed to their qualifications, had entrenched positions, and were given considerable leeway in running their units (p. 110). This points to a failure in the organization in terms of leadership credibility. This approach undermined trust in the workplace community.

First Level Accountability

As the name suggests, Front Line or First level leaders are the first (or the last) level of positional leadership in an organization. At BP, they were one end of a chain of authority and accountability. Consider the following passage:

> BP's philosophy is to delegate authority to the lowest appropriate point in the organization -- a single point of accountability. The single point of accountability is always a person, as opposed to an organization, committee, or other group of people, who manages performance through monitoring and intervention. (p. 27)

This seems to open the door to the potential for pushing responsibility for many things, including safety down the hierarchy to the lowest possible point, which by the definition would be first level leaders. There is an implication that being a first level leader could be a liability – blaming the lowest level -- especially if the first level leadership roles are not supported with adequate training, competency criteria, or selection process.

Power of Leadership

Yukl (2013) defines power as an individual's potential influence over the attitudes and behaviour of others. Forsyth (2009) makes this definition somewhat more complex, arguing leadership is not distinguished by power *over people*; it is a power with people that exists as a reciprocal relationship between a leader and his/her followers. As illustrated above, the Baker Panel seems to confirm the paradigm that the chain-of-command structure that already exists is the best model for leadership and power within an organization, and the one that will bring about 'safety' for the workers. Forsyth (2009) suggested that leaders' power is dependent upon reciprocal relationships with followers. French and Raven (1959) identified expert power and referent power and sources of personal power. BP's hierarchical organizational structure, however, implies decision making authority far outside the refinery community. The company structure conveys legitimate power onto roles in the organizational structure, regardless of the person occupying the role. Positional power begins at the very top of the organization and decisions made can have a tremendous effect on many people further down the hierarchy. This organizational power structure has all three positional elements, legitimate power, reward power

and coercive power (French and Raven,1959). Consider the following excerpt from the Baker Panel Report:

> BP's corporate management mandated numerous initiatives that applied to the U.S. refineries and that, while well-intentioned, have overloaded personnel at BP's U.S. refineries. This "initiative overload" may have undermined process safety performance at the U.S. refineries. (p. xii)

This shows what happens when power is employed from the upper part of the hierarchy without consideration of how it will affect the refinery communities. Without clearly understanding why decisions were made by corporate management, the refinery communities can become mistrustful, as is evident in the following quote. "At Texas City, many hourly workers who were interviewed in early February 2006 stated their perception that profit came before safety." (p. 62) This highlights the importance of communication and personal relationships for leaders.

Employee Empowerment

Greasley et al reported in their 2005 study that "there can be a gap between the employee experience and the management rhetoric" (p. 354). They go on to suggest, "Health and Safety issues were often cited by the employees as a major barrier to empowerment. The strict Health and Safety regulations under which (construction) employees operate limit their freedom to influence the work that they undertake" (p.354). The Baker Panel writes, "the Panel made findings about BP's process safety leadership, employee empowerment, resources and positioning of process safety capabilities" (p. xii). This suggests the Panel sees employee empowerment as a goal that will make the refinery workplace safer. In a separate instance, the report has a section titled *Employee empowerment*, under which they write "*Employee empowerment*. A good process safety culture requires a positive, trusting, and open environment with effective lines of communication between management and the workforce, including

employee representatives" (p. xii). There is no mention of actually conferring power on the employees. This statement discusses more about communication and trust than empowerment. The word 'empower' is not used once in the Baker Panel Report and the word empowerment is used exactly ten times. There is not a single use of the word in the context of actually conferring or bestowing power on the employees.

Summary - Leadership

Leadership is a core function of human societies, and other social animals (Smith et al., 2015). It is a concept explored by Plato in *Republic* and by Machiavelli in *The Prince*. It is critical to the success of human communities (Maak & Pless, 2006). As we have seen, the chain-of-command structure (like BP's) tends to centralize and concentrate power within an organization, providing less agency and empowerment to those at the bottom of the chain. If those at the bottom of the chain feel they lack power, influence, and knowledge, they will hesitate or opt-out of making key decisions which can lead to safety failure. To flourish, there is a critical need for community-based leadership, with knowledge and ability to communicate values to, and empower workers. BP's management structure, combined with a lack of support for community-based leaders in the refineries served to undermine safety in those workplace communities. Without a strong community with effective leaders, safety as a cultural value (at Texas City at least) was not communicated to, or learned by, the workforce. At Cherry Point refinery, the community had identified numerous important and effective leaders, including several PSM (Process Safety Management) trainers, most of whom, as it so happens, were women. In the next chapter, I explore the nature of learning and education as it relates to culture and safety, in the context of the refineries and their workplace communities.

Chapter 5 – Findings – Learning and Safety

Introduction

In this chapter, I turn to my analysis of the document through the lenses of education, learning and knowledge. What and whose knowledge counts? What is learning and who is to learn? These are questions that need to be asked by all people, but even more so, I suggest, by workers when it comes to health and safety. Mezirow (1997) suggests, "we must learn to make our own interpretations rather than act on the purposes, beliefs, judgements, and feelings of others." (p. 5). His perspective highlights the importance of agency and empowerment for workers when it comes to health and safety. This is a contrasting perspective to a long established organizational system and structure that relied on, as alluded to in the previous chapter, the majority being effectively powerless in the workplace. There is a very important difference between Mezirow's idea of transformative learning and the technical-practical learning pursued by industry. In this chapter, I will look at how BP and the Baker Panel looked at (or overlooked) the important informal, cultural and social aspects of safety education. I will also look at the way that industry groups, regulators, BP and the Baker Panel showed a heavy preference for competency-based or performance-based learning. Additionally, I will look at how BP ignored the importance of the training programs they did have, undermining the workplace community and eroding trust. I begin with a look at how BP and the Baker Panel viewed the important concepts of social learning, informal learning, intergenerational learning and mentoring.

Deficiencies in Workplace Education

Highlighted throughout the Baker Panel report, and noted in the previous chapter, BP had serious deficiencies in its understanding of workplace education. We have already discussed the lack of investment in training by the company. Lee and Bruvold (2003) write, "a central premise in perceived investment in employee development (PIED) is that it creates conditions where employees believe that their organizations value their contribution and care about their employability" (p. 981). The Baker Panel concluded that investment in training was seriously deficient at BP. Neither BP nor the Baker Panel acknowledged the critical need for, and omission of, the social aspect of learning, informal learning, intergeneration learning, and mentoring.

Going further, the report combines two ideas in terms of widespread deficiencies, i.e., *training* and *education.* The Panel does not go into any detail about what process safety 'education' consists of, and thus they seem to be assuming training and education are equivalent. While training may be a form of education and learning, adult educators such as Mezirow (1981) remind us there are "three distinct but interrelated learning domains that we need to pay attention to and these are "the technical, the practical" (which we could argue are training) and "the emancipatory", which is really the central tenet of adult education (p. 4). The Panel suggests BP has not provided enough investment in the 'technical' or the 'practical' elements of workplace education (training). They discovered "more than one-third of maintenance/ craft technicians, contractors, and operators indicated that the training they had received did not provide them with a clear understanding of process safety risks at the Texas City refinery" (p. 112). It is not clear in this passage exactly which training components were insufficient, or if all components were, but the sentiment given by the employees that training was inadequate, and they were not provided with a clear understanding of process safety, is stark.

Deficiencies in Social Learning

Bandura (1977) writes that learning is a socially mediated and constructed process. Fleming (2001) suggests workplace learning is, in part, socialization or enculturation of newer community members. Thus, a comprehensive safety education program should include, or at least address, a strong social component. The concept of social learning, socialization or enculturation is conspicuous in its absence from the Baker Panel report. While the Baker Panel calls out BP on their lack of a comprehensive training program, writing "BP has not demonstrated to the Panel that the U.S. refineries use a *comprehensive and integrated education and training program* that adequately defines the required education and competency levels for all levels of refining personnel and refining managers" (emphasis mine, p.153), it is unclear whether the comprehensive program they imply contains that social element. The passage is written in very broad terms such as the phrase 'comprehensive and integrated education and training program', making it is difficult to argue against. My experience leads me to believe that the statement is highly rhetorical, as no criteria are offered to suggest what a 'comprehensive and integrated education and training program' might look like or include. Additionally, the passage suggests that the Baker Panel was negligent in addressing training at the refineries generally, which is an important finding that will be discussed later in this chapter.

Deficiencies in Informal Learning

Boud and Middleton (2003) write, "there have been frequent suggestions that formal systematic learning is of lesser importance than informal learning" (p. 194), highlighting the important nature of informal learning at work. What is missing from the Baker Panel report is any reference to the critical informal learning that can impact safety. Informal learning is not mentioned in the Baker Panel report and informal 'mentoring' is mentioned once. The Baker

Panel found, “Hourly employees at all refineries also stated during interviews that formal and informal mentoring was rare or nonexistent” (p. 155). This may imply a tacit recognition of the existence of informal learning by the Baker Panel, though it is the employees that reported the oversight. It is curious that the Baker Panel would include the finding of a lack of ‘informal mentoring’ in the report but make no other mention of it in the entire document. Interestingly, the report also discusses formal mentoring in the above passage.

Deficiencies in Mentoring

Bozeman and Feeney (2007) describe mentoring as “the informal transmission of knowledge, social capital, and psychosocial support” (p. 731). This suggests that mentoring is a type of informal learning, regardless of whether the mentoring is described as formal or informal. The Baker Panel found there was lack of mentoring at the all of BP’s US refineries. They write, “indications that BP does not always ensure adequate interactive training, such as through gun drills…..or mentoring” (p 153). This shows that, at BP, the mentoring process, an important part of informal learning in the workplace, was seriously lacking and continually overlooked in its importance by the company. The word ‘mentors’ is used only once in the report, though ‘mentoring’ is mentioned eight times. It is not identified as formal or informal mentoring, only ‘mentoring.’ Mentoring is a suggested learning approach for refinery managers, for example:

> The information made available to the Panel indicates that in order to transition a new refinery plant manager into the position, BP relies on a detailed handover process and on-the-job training, coupled with mentoring not only from other refinery plant managers, but also from the Refining Vice-President, U.S. Region and the Group Vice-President, Refining. (p. 35)

While it is identified, no criteria for mentoring is discussed, leaving it vague and open to interpretation. It is interesting to note that ‘mentoring’ from senior company management is part

of the process for refinery managers, yet mentoring as a part of the learning process for lower levels of leadership is not discussed.

Deficiencies in Intergenerational Learning

Boyd and Richerson (1985) understand culture as the transmission of knowledge, values and other factors that influence behavior from one generation to the next. We have established that mentoring is a type of informal learning. The way that mentoring usually occurs is between a more experienced person and a less experienced one. Mentoring is defined by the Oxford English Dictionary as "An experienced person in a company or educational institution who trains and counsels new employees or students" (2017, d.1). This indicates that mentoring is also a type of intergenerational learning. Early in their report, the Baker Panel quotes process safety pioneer Jesse C. Ducommun to present a form of 'learning' or education they see as foundational. Ducommun argued that it should

> not be necessary for each generation to rediscover principles of process safety which the generation before discovered. We must learn from the experience of others rather than learn the hard way. We must pass on to the next generation a record of what we have learned (p. xx).

In referencing Ducommun, the Panel seems to imply that a generational transfer of process safety knowledge should occur at these worksites. There is no further mention of intergenerational learning in the document.

Focus on Competency-Based Learning

Competency or performance based learning has become the standard approach to employee training and development in industry (Dubois and Rothwell, 2004). Blank (1982) described competency-based training (learning) as being focused on "the ability to actually

perform" (p.vi) job required tasks. BP's employee learning programs are predominantly competency based. The Baker Panel acknowledges this, writing "BP's Group-level standards recognize the importance of a *trained* workforce" (emphasis mine, p. 150). The emphasis is on a *trained* workforce, showing the language of learning in terms of performance. BP may want their workers to be critical thinkers, innovators, leaders, and, importantly, role models of safety values, but the language does not reflect that kind of learning. The report continues, highlighting xxx?

> Element 3 of gHSEr provides that "our workforce will be carefully selected and trained, and their skills and competencies regularly assessed." Expectation 3.4 indicates that BP's workforce will have the required skills and training to competently perform their tasks in a healthy, safe, and environmentally sound manner and that training will be evaluated to determine its effectiveness. (p. 150)

This passage demonstrates a view of learning at BP, and lauded by the Baker Panel, that is strongly rooted in the performance-based approach. Knowledge and skills are vital to employee safety, and the excerpt shows BP acknowledging the need to have a competent workforce, one where the workers have the knowledge and abilities to complete role-specific tasks. There is difference, however, between having the knowledge and skills to complete tasks safely and choosing to do things safely. The competency based approach does not address learning in the affective domain (Anderson et al, 2001) that deals with attitudes toward values and beliefs, nor does it provide for informal learning events.

The Baker Panel found that, despite acknowledging the importance of having a competent workforce (which is important), BP's commitment to training was lacking:

> BP has not established specific process safety qualifications or competencies necessary to serve as a refinery plant manager, the top-ranking line manager at each refinery, and has not provided a specific training program around

> process safety for new refinery managers. Second, BP has not adequately ensured that its U.S. refinery personnel and contractors have sufficient process safety knowledge and competence. (p. 149)

This importantly shows that BP has not defined the criteria for training (knowledge and competency requirements) for refinery managers, refinery personnel and contractors. It basically suggests the corporate system was at fault, failing to 'set the bar' for ensuring the entire refinery workforce was knowledgeable and competent. There are two important take-aways from this. One is that the company's commitment to the safety of its employees was lacking and the second is that it implicitly bestows ownership of all employee related learning onto the company.

I have discussed the importance of the social perspective with respect to learning. Scholars such as Lawler (1994) suggest the primary challenge for competency-based organizations is "how to best manage *individuals* so they develop and maintain the correct skill sets" (emphasis mine, p. 7). This points to the individualistic nature of performance-based learning. As I have shown above, both BP and the Baker Panel support this individualistic, skill-based approach to learning by focusing only on position based requirements.

The Panel continues its focus on competency, now in the realm of process safety, writing, "in order to ensure, however, an adequate level of process safety knowledge and competency for such key positions, BP should assess and define the process safety responsibilities and activities for these positions and the related process safety knowledge and competency required" (p. 151-152). This is evidence that the Panel is recommending competency based learning strategies specifically for safety to BP by defining process safety performance outcomes. Competency based approaches are thus understood by the Baker Panel as valuable to worker safety, but neither the Baker Panel nor BP address safety values as a function of informal social learning.

Focus on Blended Learning

As we have seen, regulators, companies (such as BP), and industry groups predominantly focus on performance driven learning that seeks to develop the skills and knowledge of employees. In their analysis, the Baker Panel points to the importance of a blended approach to training at BP. Blended learning combines multiple modes of delivery, including online or computer based training (e-learning), classroom based training and on-the-job training (Lothridge, Fox, & Fynan, 2013) to enhance the learning experience. The Baker Panel writes,

> Multiple delivery methods (Blended Learning) may be used in a single training course or event. The entity or person providing the training should consider a variety of methods, which might include *on-the-job training, lecture, computer-based training, discussion, classroom exercises, demonstrations, guided practice, activity-based interactive group(s), and distance learning.* The training provider should evaluate the suitability of each training method and implement the appropriate types of training given the needs of the organization and the information or competencies being taught. (emphases mine, p.150)

From my own experience in this area, I argue all the components emphasized are typical, structured, non-formal training methods commonly used in industry. These are important methods because they have been proven to improve learning of knowledge and skills (Lothridge et al., 2013). These training methods, however, has historically only been capable of addressing learning in formal and non-formal (structured) contexts (Werquin, 2007). They do not easily address informal learning practices or its sociocultural elements, at least not in a typical, traditional, industrial work environment, such as a refinery.

External Learning Standards

It is not only BP and the Baker Panel that show deference to competency based learning, it is regulators and industry groups as well. One of the key elements of competency based

training is that it is criteria based (i.e. mastery learning), that is, tasks are learned and practiced until they can be performed to a required standard (Mager, 1975). The Baker Panel notes industry standards for training and competency, pointing to a 2001 process safety/integrity management standard (ANSI Z-10) that held "All operating, maintenance and contractor personnel shall be competent and capable to safely perform their assigned tasks. They shall fully understand their role in the prevention and management of process safety/integrity management hazards" (p. 150). This is a vaguely written standard that again speaks of competency, capability, and performance. These are all rooted in the knowledge and skills domains of learning and do not address attitudes (affective domain) (Anderson et al., 2001). The focus on job performance with its dependency on knowledge and skills leads organizations such as BP away from informal learning to focus almost exclusively on task performance and related training. It can be seen in language used in the same 2001 process safety/integrity management standard (ANSI Z-10) that held "All facilities must ensure that their workforce is trained in these work procedures and that they are qualified and competent to safely perform all duties assigned in the operation and maintenance of the facility" (p. 150) The words used here; 'trained', 'qualified,' 'perform,' and 'duties' among others, are a powerful reminder that industry, the Baker Panel and BP see workplace learning as a task performance interaction above all. This begs the question, "How would they understand education as anything different?" This speaks to the larger need for adult educators to be part of the discussion and formation of practices, which doesn't currently happen in any industry or corporation in any meaningful way.

Javadi and Zandieh (2011) claim that adults "learn most effectively when they have an inner motivation to develop a new skill or gain new knowledge" (p. 342). They go on to argue that adults will often "resist learning material if it is forced on them" (p. 342). What the

Baker Panel found and I know is consistent from my own experience, is that much of the content and directives for learning process safety came, not only from the corporation, but from external sources, including government regulators and industry groups.

OSHA Training Requirements

In the United States, the Occupational Safety and Health Administration (OSHA) is the federal agency that oversees workplace safety. OSHA investigated the Texas City accident. In September, 2005, BP agreed to pay a $21 million fine resulting from over 300 violations that OSHA identified. BP also agreed to reinforce health and safety training given to refinery workers. Under OSHA guidelines, BP has a responsibility to provide training and education to its employees (OSHA2254-09R).

ANSI Training Standards

The Baker Panel describes knowledge and competence guidance standards that influence learning, including ANSI Z-10 and ANSI Z490.1-2001. The American National Standards Institute (ANSI) is a private, non-profit organization that manages the development of industry standards in the United States. Complying with ANSI standards is not mandatory, but the choice to comply rests with the corporation's upper level management. Though adopting ANSI standards is technically voluntary, it has become much more difficult to 'opt-out' of adhring to them, as ANSI standards have become tied to OSHA regulations, which are not optional. The Panel describes the ANSI standards in their report.

> The ANSI Z-10 standard provides guidance about training workers within a safety management system. That standard indicates that an organization should establish processes to: define and assess the competence needed for both employees and contractors; ensure through appropriate education, training, or other methods that employees and contractors are aware of the

> applicable safety requirements and are competent to carry out their responsibilities as defined by the safety management system; …and ensure that trainers are competent to train employees. (p. 149)

This is powerful because, if adopted, it infers that corporations and regulators should have the power and responsibility to control employee learning. It suggests that the organization should define the competence needed for employees, ensure (read guarantee) through appropriate education, training or other methods that employees are aware of safety requirements and competent to carry them out and, importantly, control the trainers by ensuring they are competent to 'train employees.' On the surface this looks positive, by holding the company accountable for providing the proper training tools. It could also, however, serve to further strip away agency and power from the workplace community by taking away their ability to have input into their own learning. Further, the Baker Panel quotes the ANSI Z490.1-2001 standard which provides criteria for accepted practices in safety, health, and environmental training. That standard states that "[t]raining programs are most effective and efficient when managed under a well-defined and organized administrative system." (p.150) This is a significant stance on employee learning because it supports the idea that human learning is most 'effective and efficient' when it is controlled by the 'system.' This is not to suggest that organized training is not important, only that exclusive control by the system is problematic. The Panel continues to describe the ANSI Z490.1-2001 further.

> A well-integrated program should take into account management and administrative issues related to: responsibility and/or accountability for the training program; resources available to the trainer and trainees; training, design, and development by appropriate, qualified people, using appropriate techniques; delivery strategies appropriate and effective for the learning objectives; appropriate evaluation strategies included in all training; and overall quality of the program managed to assure consistency and continuous improvement. (p. 150)

While the ANSI Z-10 standard outlined the company's responsibility and authority over safety learning, the ANSI Z490.1-2001 standard outlines the components required for a successful program. While it does not specify content, it again puts the power to determine content and methodology into the hands of the organization and its management, allowing for the removal of agency and power from the front-line employees. Additionally, the way the standard is written leaves much more control in the hands of the company than is evident on the surface of the text. Descriptors such as 'appropriate', 'qualified' and 'effective' are open to interpretation by the company when implementing training programs. The Panel backs up the position of the ANSI standard.

> The standard makes clear that sufficient resources must be made available to properly implement an effective training program. Such resources include a sufficient budget to fund all elements of the training program; sufficient personnel and expertise for the development, delivery, and evaluation of training; sufficient technical expertise and information; and suitable training facilities (p. 150)

The Panel suggests the standard 'makes clear' the requirements for a training program, yet the wording used is anything but clear. We are again left to wonder what is meant by the frequently used term 'sufficient.' While some flexibility is required to account for different learners and different learning environments, 'sufficient' in the eyes of the company may be significantly different than 'sufficient' as seen by the employees.

Inadequate Computer-Based Training (E-learning)

Devising different programs of learning and training is important to workplace safety. On a problematic side, companies will often seek to reduce training costs by deploying e-learning programs. As Clark and Mayer (2011) argue, "driven by economic conditions that seek more cost-effective forums for training as well as by continued evolution of computer technology, e-

learning now accounts for over one-third of all workforce learning delivery" (p. 15). What is interesting is that even though there are real problems with relying too heavily on e-learning or computer based training for safety (Zou & Sunindijo, 2015), the Baker Panel found that even the computer-based training (e-learning) being used at BP was inadequate, as they note in this passage:

> Hourly workers interviewed also indicated substantial concerns about training and levels of process safety knowledge. They widely believed that the computer-based training was inadequate, and they noted how many have learned to manipulate the computer testing (for example, by taking a test, seeing the correct answers, and then retaking the same test). Hourly workers also provided instances in which supervisors took the training tests for workers. (p. 110)

There are so many problems highlighted by this finding, it is hard really to know where to begin. Permitting (by looking the other way) learners and supervisors the ability to 'cheat' by retaking the tests and having supervisors (first level leaders) answer the questions in place of an employee borders on criminal in terms of liability. Tests are about evaluating knowledge, not achieving a passable score. There is no telling how many employees began working without the understanding of concepts that were evaluated by this computer testing. Also, the first level leaders taking the test on behalf of employees were very poor role models given their significant lack of valuing safety as a priority. The message from the supervisors was clearly that 'the knowledge evaluated by these computer tests is plainly not important.' Keeping costs low to maintain a corporate competitive edge extends into the arena of critical technical and process knowledge training. With respect to efficiency and cost reduction, Clark and Mayer (2011) report that "cost savings are only an illusion when e-learning does not effectively build knowledge and skills linked to desired job outcomes" (p. 15). BP demonstrated that those

knowledges and skills were evidently not important enough to adequately evaluate. If the learning was not important, then, by extension, neither were the learners.

Equally problematic is the fact that the Baker Panel found within the BP training system a possible overuse of computer based training. They write, “at all of the refineries except Cherry Point, both hourly and management level interviewees reported that (overall) training was inadequate because it tended to rely too heavily on computer-based training” (p. 164). What I think we can surmise from this is that BP did not analyze requirements for training due to its focus on cutting corners to reduce costs. It also highlights that something unique was going on at Cherry Point refinery with respect to training. If they were receiving the same computer based training the other refineries were getting, which is what would be expected, why did they not complain about it being over-relied upon? What I think it suggests is that at the particular site, other learning activities, such as informal learning, were happening, thus compensating for the deficiencies in computer based training. I will return to this point in the discussion.

Insufficient Practical Learning

Kolb (1984) is a pioneer in the area of practical and experiential learning and he describes the importance of it, writing, “Learning is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience and transforming it” (p. 67). For important practical application of knowledge and skills, refinery workforces used practical sessions known as ‘gun drills.’ The Baker Panel describes ‘gun drills’ as “hypothetical problem scenarios … posed to operators to test their response” (p. 110). The Baker Panel found that “hourly employees repeatedly indicated during interviews that formal gun drills were sporadic at best or not conducted at all” (p. 155). This seems to make clear that the important practice of practical application of process safety

knowledge was most often missing entirely. The Baker Panel cited the conclusion of the Mogford Report on the 2005 Texas City tragedy that one of the key problems was in fact that "the lack of gun drills to reinforce practical knowledge meant that operators' theoretical knowledge was not complete and rarely witnessed." (p. 155).

What is emerging here is an alarming picture. BP, in general, is inadequate in terms of computer-based training, but it is also not implementing the types of practical or experiential learning activities that would save lives. In other words, there is significant lack of investment in training and a commitment to employees, their development and thus, their safety. If BP's lack of investment in employee learning and development was a cost control strategy, it was seriously short-sighted. Lee and Bruvold (2003) suggest, "If sustained competitive advantage is what most organizations are looking for, then one way to achieve it is through sustained employee development" (p. 994). Even from a simple cost-benefit analysis perspective, investing in employees leads to overall cost savings and an improved bottom line.

Empowerment and Innovation

Beirne (2007) identifies a link between employee empowerment and innovation. He argues a workplace community that has a culture that empowers workers, allows for innovation, including concerning learning and safety. This idea is reflected in the Panel report. At Cherry Point refinery, for instance, the Baker Panel identified what they called "a unique version of an employee-based safety awareness program, known as the What's Your Exposure (WYE) program" (p. 177). The report drew attention to how:

> WYE prompts employees to think about safety and making the right safety choices before starting a work activity. WYE encourages personnel to identify potential safety exposures, issues, or conflicts with a proposed or active work plan. *WYE also empowers*

> *employees* to take action to make appropriate changes to create a safe work place. Based on their brief observations, the technical consultants believe that WYE is an effective means for engaging employees and contractors in hazard identification and reporting. *Conceived by an hourly employee, the WYE program has its own budget and has been fully implemented by the hourly workforce*. (emphases mine, p. 177)

This passage is saying a number of things. Firstly, as is evident in the first phrase emphasized, it demonstrates that by involving employees in their own learning, they become invested and empowered to learn. The knowledge and the process belong to them. Secondly, it demonstrates that if employees are given the opportunity to be responsible for their own safety, they can be very innovative and create effective solutions. Thirdly, I emphasis the final sentence because it demonstrates a method by which the workplace community seized control of their own safety from the corporation. This is vitally important because it shows that, at Cherry Point refinery, process safety was embodied by the employees to such a degree that they were able to develop an innovative program to prioritize it.

Conclusions

If learning (of safety) is primarily a social construct (Bandura, 1977, Vygotsky, 1978), and occurs inter-generationally (Boyd and Richerson, 1985), the primary place for process safety education to occur in the front-line community is between more experienced and novice workers at the refineries. I will take up this idea of inter-generational learning and education in my discussion.

There is evidence in the Baker Panel report that, leading up to the March, 2005 accident, BP's Texas City refinery had a 'culture' on the ground that prioritized values other than safety. The lack of 'safety culture' may have been a result of a weak community with poor

communication channels, weak leadership and poor training. Given the chequered safety history of the Texas City refinery, even prior to ownership by BP, it seems likely that the workplace culture that existed there had been evolving for many years with process safety as a low priority. After BP acquired the facility, the Baker Panel found that the company continually showed little commitment to the community's needs, specifically in the area of education and training. This, coupled with the continual push of their cost-cutting and production agenda, left the workplace community with little trust for management and an impulse to adapt to a lack of resources. As much as the Texas City accident was a failure of process safety systems and culture, it was also a failure of the organization to understand the true nature of culture in the workplace community, and its relationship to safety as a community embodied value and belief.

Chapter 6 – Analysis and Discussion

Introduction

In this chapter, I respond to the findings revealed in Chapters 4 and 5 regarding how the Baker Panel took up the concepts of safety culture, leadership and learning. The purpose of this research was not to try to define or redefine the concepts of *culture* or *safety culture*, *safety*, *leadership* or *learning*. Rather, by using critical discourse and document analysis, I wanted to reveal how these complex concepts are taken up, and even ingrained in industry, in problematic ways, despite, perhaps, good intentions. My aim in this research has been to lay bare the overt and covert misconceptions held by corporations, regulatory institutions, and other stakeholders, and the ways in which a formal investigative report (such as the Baker Panel Report), which is extremely important, can challenge yet equally perpetuate problems and misconceptions. This is critical, for in the real world, misconceptions and misunderstandings have significant impacts on the safety of workers.

The Baker Panel report was among several documents that revealed findings and conclusions about the Texas City refinery accident in 2005. The Baker Panel was established following the accident as an independent body to investigate and report its findings about BP and its perceived problems with process safety, including its culture. Other reports came from the U.S. Chemical Safety Board, BP corporate (Mogford Report), and OSHA. Just as the Baker Panel referenced reports of past incidents such as the Presidential Commission's report on the Columbia space shuttle disaster and the Major Incident Investigation Report - BP Grangemouth Scotland, the reports surrounding Texas City will get taken up by those investigating future industrial accidents and incidents. Once written and circulating, the reports become reference tools and their conclusions de facto truths that will undoubtedly influence decision makers in

future post-accident analyses and recommendations. If the conclusions reached in these documents are published and accepted without challenge, future decisions based on incomplete or inaccurate information could have a negative impact on the evolution of safety in general.

BP's and the Baker Panel's perspective on 'Culture' and 'Safety Culture'

As a result of the discourse around the 'safety culture' myth that was perpetuated in the years following the introduction of the term by INSAG, it is understandable that BP and the Baker Panel were summarily misguided when they began discussing 'safety culture' and culture generally. In its report, the panel describes 'safety culture' as one among several kinds of 'culture' that were present at BP's facilities in 2005. The Baker Panel describes the existence of reporting culture, entrepreneurial culture, safety culture and corporate culture, to name a few. Further, they took the idea of 'safety culture' and created a new concept, a new type of 'culture,' called a 'process safety culture.' It seems the Panel operated under the assumption that cultures were malleable and could be redefined at will to create whatever new sort of culture fit a particular situation. The Panel also saw 'culture' as something that could be (and should be) externally mandated, manipulated or engineered to be, among other things, safer. In fact, they directed BP to 'install' a safety culture at Texas City as a response to the accident in 2005. Both BP and the Baker Panel approach *culture* with a presumptive and misguided understanding of what it is and how it works. If the Panel is basing its conclusions and recommendations on an incorrect or incomplete understanding of culture, those conclusions are suspect and the recommendations are likely incorrect or incomplete.

BP's policies, practices and brand likely *do* have an influence on the development of culture at each of its refineries over time, though it is not always clear how, or if that influence is necessarily positive. In the findings discussed earlier, in Chapter 4, p. 7 of this thesis, for

example, we saw that corporate cost-cutting erodes trust in the workforce and production pressures force unsafe decision making. These are but two factors of many that can affect the evolution of workplace culture. As I have discussed, a community's culture develops as a unique manifestation of the collective values of its members and evolves over time. The workplace culture at Cherry Point refinery was clearly different than the one at the Texas City refinery, as was pointed out in the Baker Panel report. Like Texas City, the history of the Cherry Point refinery showed evidence of a unique set of values and a culture that evolved over the life of facility. Each unique community developed somewhat independently of each successive owner, as examined in chapter 4, p. 17 of this thesis.

The Panel briefly addresses some of the more broadly understood aspects of culture when it outlines its own understanding of the concept. Elements such as 'sharing' are touched upon. The Panel references a 2003 research report on best practices in corporate safety and health among a number of U.S. companies (Armstrong-Whiting and Bennett, 2003). This report, they suggest, highlights the importance of the 'shared' element of *safety culture*. By deploying some commonly understood terms and definitions, and referencing several safety and organizational scholars, the Baker Panel, as well as BP, lend legitimacy to their perspective and find evidence of a safety 'smoking gun' in the findings of their investigations. Their bias, however, toward scholars and research that supports their paradigm of *safety culture* is conspicuous. James Reason (1998), for example, is referenced to support the perspective that culture can and should be engineered into existence, and BP needed to do so. Reason writes, "it is first necessary to engineer a reporting culture -- not an easy thing, especially when it requires people to confess their own slips, lapses and mistakes" (p. 75). As reviewed in chapter 4, workplace cultures evolve uniquely over time with influences from historical events, individual values and beliefs,

corporate and organizational structure, the broader community within which they facilities exist, as well as individual role models and community leaders. Cultures can change and workplaces can become safer (Fleming, 2001). Companies and organizations do have some impact on workplace cultures, though attempts to install or engineer them is folly. Cultures are humanistic, organic in nature, and ultimately determined by the people who live them. Safety improvements are dependent on values related to safe work practices being shared between workers and generations of workers.

Leadership

In my experience as a workplace educator, the most effective leaders are those sanctioned by the community to act as role models. They function as conduits for learning a community's culture, including its values. Problems can arise when workplace communities have no control over who their leaders are. Companies such as BP and regulatory groups view leadership in a myopic way. To them, 'leaders' are defined by the organizational structure. In Chapter 4 (p. 23), I discussed how the Baker Panel highlighted the importance of hierarchical leadership. In this way, leadership is only positional in nature. Forsyth (2009) argued that leadership is distinguished by power *with* people. French and Raven (1959) identified referent (people-skills) power as a source of personal power held by leaders. This suggests that there is an important reciprocal element to leadership. The positional leadership roles found within a corporate hierarchy imply unidirectional power, as in "The Panel believes that leadership from the top of the company, starting with the Board and going down, is essential" (p. xii).

Beyond the problematic hierarchy, there appeared to be a lack of ability (competence) in the leadership of the facilities at BP, the report uncovered, and then seemed to condone. As was evident at Texas City refinery, often leaders did not have the requisite knowledge or

understanding to share with their reports. The Baker Panel noted a 2003 gHSEr (getting Health Safety and Environment right) report that found a "lack of leadership competence and understanding to effectively manage all aspects of HSE" (p. 174). This particular reference was referring to refinery leadership; the highest site-based leadership positions. Indeed, even at the front line, the Baker Panel observed first-level leaders that were given leadership positions without any evaluation of their knowledge, skills, or experience as it pertained to their work-groups. The Panel found "at Texas City [t]here is no system for ensuring that 'step up' supervisors and supervisors have the necessary skill sets to be effective safety leaders" (p. 154). It is unclear from the report exactly what the Baker Panel meant by 'lack of leadership competence' or 'necessary skill sets,' but the implication is that there existed a lack of trust in the leaders' abilities. This could be referring to a gap in technical knowledge and skill, or it could be a lack of people skills (e.g. communication, understanding, empathy, trust-building) (Bunning, 2000).

Bunning (2000) suggests, "the supervisory job required a moderate amount of technical expertise and a high level of people skills" (p. 101). This calls into question a long-established tradition in industrial workplaces of placing people into leadership roles based on their technical expertise, usually correlated to the length of time at the company or in a particular vocation. To be fair, unions have also historically advocated for promotion of its members (e.g., to a leadership position) based on length of service, rather than strictly on merit or ability. In a 1985 study by Abraham and Medoff, they wrote, "our findings indicate that length of service carries greater weight in the typical union hourly promotion decision than in the typical nonunion hourly promotion decision" (p. 419). It is worth noting that in 2005, Texas City had a unionized workforce and Cherry Point did not.

The Baker Panel reported that refinery leadership submitted requests and recommendations looking to bolster training and selection processes for refinery-based leadership, though none of the training available at BP at the time seemed to address the 'people skills' that are evidently so critical to leadership success. In Chapter 4, I discussed that personnel are often assigned leadership positions within the organizational structure, regardless of their knowledge or skills, and are considered leaders by the organization, but were often not trusted or deemed competent by the workplace community. The Baker Panel observed that at both the top-level (refinery) and the front-line, leadership positions were given to people who often did not have the ability to fill them effectively. They were not effective leaders, and lacked the confidence of their reports that promoted influence.

Learning and Education

I suggest from this study that *learning* safety needs to be seen as multi-pronged endeavour. Learning to effectively manage risk requires employees to grow their knowledge about the systems that they work with and potential hazards. It requires knowledge of industry best practices and regulations. It requires the understanding of, and ability to implement, safe work procedures and regulations. It requires learning that safety is *the* most important value priority. It also requires understanding the local context and needs, as well as the global view While knowledge and skills can be learned with traditionally used corporate training methods such as classroom-based courses, e-learning, self-directed learning, and on-the-job training, I am suggesting learning to value safety happens informally, mostly outside these structured learning events. Neither the Baker Panel, nor BP, acknowledged (or were even aware) that informal learning was happening at the refineries, was an important element of learning safety or that it even existed as a concept.

In the case of Texas City, the workplace community found they needed to prioritize different values than safety if the refinery was going to operate. It is understandable that if a job and the well-being of a family is at stake, it might seem much more important to get the job done than to do things the safe way. As a result, the refinery had a community that pushed safety down the list of value priorities, and the employees learned to tolerate more risk than should have been acceptable as a result. Technical safety knowledge and related skills, including safe work procedures are captured in an organization's Safety Management System (SMS) and learned through structured training. To be effective, however, an SMS requires workers to operate within its parameters. This is why it is important to address safety as a culture variable (Hale, 2000); because processes, systems, policies and legislation are useless unless the employees elect to apply them. The organization punishing those who do not follow the rules is insufficient, there needs to be consequences from the community itself for members choosing not to prioritize safety at work. The culture begins to shift when a significant number of community members adopt new beliefs and values, and then ostracize or otherwise the outliers.

In Chapter 5, I observed that BP focused its limited training efforts on improving the knowledge and skills (competencies) of their employees. Unfortunately, their application of competency-based training was focused exclusively on task performance, and provided very little in terms of facilitating learning of community values or attitudes toward safety. In addition to the limited scope, it was also found there was significant lack of training in many areas, and the training that was available was poor. The failure to invest in quality learning programs for the employees served to undermine the community in several ways. First, it fostered poor trust of the company and its intentions. As Lee and Bruvold (2003) suggest, the lack of "perceived investment in employee development (PIED)" (p. 981) created a situation where the employees

felt undervalued. Second, due to a shortage of confident employees available to move into first-level leadership positions, the community lacked critical role-models for the education of safety as a core value.

The Baker Panel realized that the available training at BP at the time was deficient. They write, “The information and data that the Panel reviewed indicated, for example, that process safety education and training needs to be more rigorous, comprehensive, and integrated” (p.149). The panel uses the descriptors *rigorous*, *comprehensive* and *integrated* to describe what they see as the desired state of ‘process safety education and training.’ These are powerful descriptors. *Rigorous* suggests that education and training needs to be demanding and challenging and *comprehensive* points to it being complete and inclusive. *Integrated* is the most important word used here, I believe. *Integrated* suggests the education and training needs to be a part of something else. Integrated with what? is the relevant question here. Perhaps the use of the term *integrated* points to the panel understanding the need for education and training to be ‘less separate’ than it currently is at BP’s refineries, more integrated with the workplace community, its culture and daily life at the refinery. Learning is not something separate, and apart, as, in my own experience, safety training frequently seems to be. Learning about safety should be continuous, contiguous and integrated. It should merge informal and non-formal (Werquin, 2007) ways of learning. There should be a blend of requisite structured training and the pedagogical nodes of community leaders.

Safety: Comparing Cherry Point Refinery and Texas City Refinery

The findings of the Baker Panel report on the cultures at Cherry Point Refinery and at Texas City Refinery, as they were in 2005 and the following year during the Baker Panel investigation, provided an important comparison in safety culture development. Both cases were

complex in nature, with the Cherry Point community placing a high value on safety and learning, and achieving a positive record on safety (Baker et al., 2007). The Baker Panel decided on its own to benchmark and measure culture, though without any clearly defined criteria. They essentially projected their own assumptions, values and beliefs on to their collected data. The one clear measurement with respect to safety at each refinery was the *safety record* of each facility. Although actual safety statistics for each refinery are notably hard to track down, the Texas City Refinery had a notoriously poor safety record, with the U.S. Chemical Safety Board pointing out the refinery's "deadly 30-year history" (CSB, 2007, p. 172) and claiming that "Texas City is not a Safe Place to Work" (p.172).

In Chapter 4, page 1 of this thesis, I showed how the Panel found a "very strong safety culture at Cherry Point… and a safety culture at Texas City that was very poor for a substantial period" (Baker et al., 2007, p. 96). This kind of assessment, while appearing to be objective, is dangerous because it implies a quantitative measurement of culture is possible. Each refinery had its own culture, not a bad or good culture, strong or weak culture, just a culture. The term 'culture' is regularly used by industry in an attempt to categorize and delimit something that is nebulous and lacking in definition by its very nature.

Safety scholars such as Hale, 2000, and Hopkins, 2005 conclude that *safety culture*, as a concept, has not been effectively defined, which makes one wonder why the Baker Panel thought they could (or should) define it, measure it, or have BP fix it. The Panel's conclusion that BP did not effectively create the proper 'process safety culture' at Texas City suggests they see culture as something that can be, and should be, engineered and controlled to influence worker safety. The problem is, that perspective dismisses the fact that culture is a reflection of a community and its members, not something separate. The Baker Panel's misguided premise about culture is

evident in their attempt to benchmark and measure the ‘safety cultures’ of all of BP’s North American refineries. By doing this they are looking to find a set of criteria that they can use to influence change in the refineries cultures and presumably, ‘make’ them safer. While the intent is positive, the approach ignores the historical and social differences of each population. Those differences make each culture unique to its community; it would be impossible to compare them effectively.

The Baker Panel and BP had a misguided belief that culture could be improved (i.e., made safer) by being ‘engineered’ or ‘controlled.’ The fourth recommendation for BP by the Baker Panel in its report states that “BP should involve the relevant stakeholders to develop a positive, trusting, and open process safety culture within each U.S. refinery.” (p. xvi). This recommendation is one of the 10 recommendations that were a key output of the Baker Panel Report. It clearly suggests a belief by the Panel, accepted by corporate and regulatory leaders, that culture not only could be controlled and constructed by the company, but that it was a corporate obligation to do so. This belief ignores the strong anthropological acceptance that human cultures are complex entities that cannot easily be engineered or replicated, because they are influenced by such elements as location, history, individuals, technology and natural events. Additionally, it is very specific type of culture that needs to be constructed, a ‘positive process safety culture.’ I suggest that approaching culture from this perspective *contributes* to safety failure because, I argue, *safety* is NOT a culture, it is a value, a belief, one of many held by a workplace community that constitute its culture.

Conclusions

My analysis of the Baker Panel report looked at both what the Baker Panel was saying about the concepts of culture, learning and leadership, as they related to safety, in general, but

also specifically about BP and its refineries, as they were in 2005. I also looked at how the Baker Panel was discussing those specific concepts, in hopes of revealing some insight into how industry was taking up and using them. Additionally, I was interested in how the Baker Panel was evaluating and investigating BP with respect to those concepts.

I have discussed that culture is important to learning, and both BP and the Baker Panel operated from an understanding of culture, and by extension safety culture, that was problematic. In its discussion about culture, the Baker Panel showed that it did not understand the true nature of culture and its impact on learning. Then, in its recommendations to BP, the Panel repeatedly implied that the company was responsible for the creation and maintenance of safety culture(s) at its facilities, as if it/they were a system that needed to be controlled by organizational forces.

I discussed the nature of leadership, and the Baker Panel supported BP's continued, hierarchical, chain-of-command organizational structure that legitimized positional leadership roles. Those positional roles wielded a *power over* relationship with front line workers that often ignored the importance of people/soft skills and trust in leaders.

Finally, I discussed learning. The Baker Panel berated BP throughout the report about its lack of investment in, and commitment to, training. As I have demonstrated, however, training is only one element of workplace learning, and, according to Boud and Middleton (2003), it is potentially of *less importance* than informal learning. Conspicuous by its absence, informal learning is a concept not dealt with in any way in the document by either BP or the Baker Panel.

I can therefore say that a community's values, such as safety, are embedded in its culture. That culture is derived from the community, is organic and evolves. Values, norms and beliefs are learned via community leaders that have earned the right to be role models with experience and a way with people. The learning that transpires around those leaders is informal, happening

interstitially, between the spaces of the day, in simple, meaningful, interactions. This is the missing piece of safety education in many workplaces, and where it does occur, like at Cherry Point refinery, it needs to be held up as a paradigm for improving safety everywhere.

Chapter 7 – Conclusion and Recommendations

Introduction

Over the course of my career, I have seen the results of supportive communities on employee satisfaction and learning, as well as the results of less supportive ones. I consulted as a training professional at BP's Cherry Point refinery over a two-year period from 2005 to 2007. I found the refinery to have an exceptionally caring and supportive, family-like workplace community. While I was working there, I was invited to people homes to have dinner, asked repeatedly about my young family, and generally showed kindness and compassion in a way I had never, and have never since experienced. I witnessed the interaction of the employees socially, beyond the gates of the refinery and far into the surrounding towns where they lived their non-refinery lives. The employee community at Cherry Point had relationship sinews that extended deep into the surrounding small towns, far away from BP, or industry regulators. The refinery had an impeccable safety record and employees were proud of their facility and their community. My anecdotal observations about the workplace community at the refinery came long before the Baker Panel reported Cherry Point as having a 'family-like feel' and a 'strong safety culture.' However, my questions about workplace culture and community began long before my work at Cherry Point. Several years prior to working at the refinery, I was employed as a training specialist at a large transportation company. I found this organization had several different work groups and communities, many based on job areas, and they were further defined by union membership. The 'cultural silos' (employee communities based on job roles and unions) were often barriers to the free flow of information and knowledge between employees in the company. After leaving the refinery contract, in 2008, I briefly worked for a small aircraft manufacturing company. The company's trades employees were all members of a strong national

union (CAW). Over time, a distinct barrier had developed between the 'white collar' and 'blue collar' employees. It was unclear why the barrier developed or how the presence of the union impacted the workplace community, if at all. Whatever the reason, a divided workplace community existed. Management felt that the trades workers misunderstood them and the trades employees mistrusted management and felt their well-being was not considered important. These instances, and more, suggested to me that there was something very important going on within these, primarily industrial, organizations concerning culture. There was often an 'us and them' divide, between managers and workers. Sometimes it appeared that they were entirely different communities with starkly different cultures, even when they worked in close proximity. Problems almost always arose as a result of management decisions that were based on a corporate profit motive that impacted the front-line workers.

Safety Culture

Safety, as defined by the Oxford English Dictionary (OED), is "The state of being safe; exemption from hurt or injury; freedom from danger." (OED). On the surface, the word safety, as it is used in industrial work settings, is relatively clear. It is about protection from harm, identification of hazards, and management of risks (Wildavsky & Wildavsky, 2008). It connotes a behaviour pattern that manages the risk of injury or death by avoiding hazardous situations, wearing risk mitigating clothing (e.g., hard hats, steel-toed shoes, high visibility clothing, protective eyewear, hearing protection), and applying risk mitigating controls to hazards (e.g., energized system lockout/tagout). In this sense, safety is less about individual choice than it is about organizational requirements. Whether employees choose to follow safety protocols and procedures mandated by the organization (and regulators) is another story. Sometimes employees choose to do things the 'easy' way to avoid extra work, or the 'quicker' way in response to

corporate pressure to save time. They are doing so within a context of productivity and cost reduction that the Baker reported were all too often the priorities. If the workplace community permits or ‘suggests’ that these priorities are to supplant safety, it can shift the entire community’s value set, pushing safety down the list. However, blindly following rules and procedures is not always the safest option. Occasionally, other variables making the normal (accepted) course of action less safe. Employees in a ‘culture’ of safety must feel empowered enough to say ‘no’ when they believe that they or their fellow employees are at risk.

Safety and health have undoubtedly become an important factor of working life, as they should. I am not convinced, however, that ‘safety’ defines a discrete ‘culture.’ The term ‘safety culture’ can be problematic because it shifts responsibility for safe behaviour to a non-entity (e.g., ‘we lack a safety culture around here.’). Instead of the widely used term ‘safety culture’, I suggest (as does Hale, 2000) that it is specific cultural elements that impact safety. BP’s refineries each has a single, unique culture, with its own set of values and value prioritization. These communities and cultures evolved over the long history of the individual facilities, beginning long before BP owned them.

For much of my career I have questioned the validity of current practices in safety education. I observed a distinct difference between the safety training that was commonplace in organizations, and learning that was concerned with safety as a value. For the better part of the past 20 years, I have been working as a workplace learning professional and the distinction between how and what people were taught and how and what they learned was incessantly problematic. As a result, questions about safety education that underpin the discussions found in this research have driven me to conceptualize and develop a curriculum designed to support the growth and development of safety values and attitudes within a workplace community. This is

how we build a culture that values safety, by finding several community leaders that have an observed history of safe behaviour (prioritizing safety), supporting them to become coaches and mentors, and providing them with a unified safety narrative that they help shape and thereby have ownership in. Following are the elements that are found in what I call a *critical safety curriculum*.

Elements of a Critical Safety Curriculum

When developing a critical safety curriculum, there are some assumptions about a workforce community that must be made. We must assume, for example, that a group of workers in a given workplace are de facto members of a community of people in that space that includes their co-workers. We must also assume that the community will have its own culture, including agreed upon but often unspecified beliefs, norms and values. Additionally, we must assume that there is a prevailing element of caring within the group, in order to see the group, and its individual members, thrive and succeed. With these basic assumptions, we can create the framework to support the organic, informal learning that is so critical to safety values education within a specified workplace community, though we cannot actively "engineer" a culture of safety. The most important concepts that will drive the development of our critical safety curriculum are 'leadership', 'mentorship' and 'apprenticeship.' With these concepts embedded in the workplace culture, the transmission of the culture can occur and along with it, the critical values of the community, including the value of safety, can be acquired by the members.

Leadership

It is first important to identify, plant, and support leadership nodes in a workplace community. Critically, the leaders I refer to must hold expert and referent power (French & Raven, 1959), and must exercise it near the very front lines of the workforce. It is critical that

this Front-Line Leadership be seen as part of the workplace community; they cannot be part of corporate management or they risk being look upon as an outsider, an 'other.' Despite what senior managers, vice presidents and other corporate leaders may think or wish for, they are not active players in the workforce community at the front line; despite how affable they may behave or how they are received when touring a work site, there is almost always an element of mistrust. Front line workers almost always assume that they are expendable to some degree, and if they are not seen as adding enough value to the bottom line, they risk being eliminated. The front-line leadership are often immune from blame for terminating front line workers, as dismissals they carry out are often seen as a decision made above them in the organization.

Thus, effective leadership is critical. It is important to qualify, however, that simply providing someone with a title does not afford that person the qualities of a good leader. The leaders required for this curriculum to work are those that are role models for their personnel. They need to be looked up to, admired to a degree, so that new and junior workers will want to emulate their behaviours and embody the same values that they embody.

In creating the critical safety curriculum, the community must first choose leaders as values 'seeds' or 'nodes,' selecting them according to the values they historically have shown and planting them at critical places organizationally, to cultivate safety as an embodied value and an attitude amongst the workplace community. Thus, they must embody safety; it must be their lived experience, always operating as an assumption before doing any task. In current practice, organizations will choose 'safety leaders' and install them as separate roles from organizational leaders. Safety leaders who are not organizational leaders lack any power to influence change because the workforce does not seek to be like them, and they usually lack referent or expert power. It is important to note that community leaders are not necessarily selected by the

organization, they may be informally chosen by the community. These informal leaders have enormous influence in shaping culture, but as with hierarchical organizational leaders they can influence the community in both positive and negative ways.

Apprenticeship and Mentorship

The way safety beliefs or values are learned in a workplace community could be considered a safety apprenticeship. In this case, like informal apprenticeships suggested by Lave and Wenger (1991), the apprentice is learning how to become a respected community member in the organization. The apprentice must learn that safety, as a belief, is held in very high regard by the community, and they must learn this from a respected community 'elder' or leader (i.e., a Foreman or other Front-Line Supervisor). The community leader in this case cannot be a member of the disconnected "executive" or other corporate leadership, he or she must be in a reasonably relatable position where consistent interaction takes place, but must be in a place where the new apprentice will naturally look for the social cues of fitting in (such as always wearing personal protective equipment (PPE), or taking time to do a job hazard analysis). That position, in many cases, is a field level supervisor or foreman.

Safety, measured in units such as LTIs (Lost Time Incidents) or TRIF (Total Recordable Incident Frequency), is driven from the community's belief in its importance. This belief (its value) is manifested in the individual worker's safety ethic, that choice to do the 'safe' thing or to do the 'fast' thing or to do the 'cheap' thing or the 'easy' thing. That ethic is developed over time in response to the community values that the worker learns informally everyday on the job, an informal apprenticeship of safety from impromptu mentors, leaders and coaches that he or she has relationships with every day.

The concepts of apprenticeship and mentorship are important because they highlight and help to deconstruct informal learning at work. This is necessary to analyze the ‘how’ and ‘where’ a community’s norms, beliefs and values are learned. While much learning in these areas inevitably happens between key front-line leaders and their personnel ‘interstitially,’ within the spaces of the day, the learning process is not usually the focal point of the relationship. Although it is important to have front line leadership that serve as strong role models, it is an incomplete formula. They must, occasionally, become educators and mentors to the ‘safety apprentices’ in their charge.

Mentoring is unique in its ability to bring a mentor’s personal model of a code of ethics to relevant situations. It exposes the protégé to the “tacit knowledge” required for functioning as a team member. Modelling personal values in the culturally significant context of the workplace cannot be explicitly taught. Formal education can provide the standards of conduct, but only a mentoring relationship can explore the complexity of applied ethics and values. (Epstein 1999).

I suggest that it requires role modelling and a sense of ‘wishing to become like’ for safety apprentices to adopt the safety values and then embody them as part of their own personal ethics. This process requires a mentor who becomes the master (historical terminology) in this apprentice style relationship. It is the process of becoming a safety journeyperson.

In today’s industrial workforce, the concept of apprenticeship is relatively common. Many industries require the attainment of a qualified ‘trade’ to be hired. Certified trades programs (apprenticeships) are essential for providing a predictable and valuable labour force (value added labour) (Avis, 2010). Most apprenticeships involve novices working with an already certified member of the trade (journeyman) for a prescribed length of time to acquire the knowledge and skills required to perform the activities of a specified trade and job. The

journeyperson selected to work with an apprentice in a given situation is not, however, specifically responsible for the education of community held values, such as safety, though she or he may do so both explicitly and implicitly during the apprentice's time with them. As a result of the typically inconsistent messages about safety values, the trades apprenticeship process presents a somewhat incomplete picture. Because of this inconsistency, and the fact that many positions in an organization do not require a formal apprenticeship, safety should have its own independent apprenticeship, layered over other requirements. The safety apprenticeship should be a more general approach, aimed at educating all new and junior employees. Each new and junior member of a given community should have a community mentor as the safety 'journeyman' (or master). That mentor would be a senior and well-respected member of the community, but not necessarily a front-line leader.

In the critical safety curriculum, community leaders, which include front line leaders (such as foremen, supervisors etc.) became the community values mentors. This approach to mentoring and apprenticeship nurtures the development of the next generation of workplace community leaders and educates the junior members of the workplace community in the expected values, including safety. The 'safety apprenticeship' is then a critical part of role acquisition in a given workplace community beyond knowledge and skill development, and it is supported by essential mentors and leaders who educate the beliefs, norms and values of the workplace community, that is, they are the core conduits for the culture of a given community.

Informal Learning

Understanding how and why informal learning works helps to create a curriculum that encourages and supports those learning opportunities and spaces that occur throughout a

workplace during the day. Informal learning is less about designing programs and more about creating opportunities where learning can occur.

The literature suggests that informal learning takes place wherever people have the need, motivation, and opportunity for learning. After a review of several studies done on informal learning in the workplace, Marsick and Volpe (1999) concluded informal learning can be characterized as follows:

- Integrated with daily routines.
- Triggered by an internal or external jolt.
- Not highly conscious.
- Haphazard and influenced by chance.
- Inductive process of reflection and action.
- Linked to learning of others. (p. 28)

The process of informal learning is crucial to the success of the critical safety curriculum because it is the most important avenue for the education of cultural norms, beliefs and values among the members of a workplace community. If the safety narrative is the context within which the community's values of safety are embedded, the informal and interstitial learning reflects how the narrative is passed on and shared.

Ethics

With any value such as safety, an individual chooses how to prioritize and reflect that value or embody it. This choice becomes part of an individual's ethics. Ethics, according to the Oxford English Dictionary, is defined as "the moral principles or values held or shown by an individual person" (OED, 2015). In addition, Dictionary.com defines ethics as "the rules of conduct recognized in respect to a particular class of human actions or a particular group, culture, etc." Ethics then can be defined as both the internal compass guiding our actions based on what we believe to be right and wrong, as well as the external system of principles and

expectations that are defined by the community and the culture within which we live. Ethics thus is both a part of our culture and the way we as individuals put our values into practice. There is necessarily a convergence of those two ethical perspectives; if they do not align there will be tension and conflict; employees who do not reflect the same values and principles as the rest of a workplace community will be ostracized and eventually expelled from the group. It could be said that the external system of principles and expectations defined by the community are an amalgam of the community members' individual ethics and those ethics are developed over a period of many years for each individual.

The Safety Narrative

Having in place the right leaders and mentors in an apprentice-like relationship with junior members of the community is a large part of the solution. These cultural nodes remain static and isolated however, unless they have a message, i.e., the community discourse around safety. Thus, another important part of developing a critical safety curriculum involves a safety narrative. The safety narrative is the collective of stories that reflect the history of the workplace community, within which are embedded the community's cultural norms, beliefs and values. In many organizations, the safety narrative (good or bad) is part of the 'hidden' curriculum. In creating the critical safety curriculum, it is necessary to tap into this hidden curriculum and bring forth the safety narrative that exists. The safety narrative for a given workplace community is not necessarily good or bad, it is only a reflection of the general beliefs, norms and values of the community. Unpacking the safety narrative (naming the world) for a given workplace community will catalyze change and help to frame the critical safety curriculum. When the safety narrative gets revealed through community discussion and analysis, it can be changed, cultural myths and untruths can be debunked. What we seek to develop is an open safety

narrative, focussed at community leadership (front line leaders and mentors) that are willing and capable of spreading the narrative throughout the community.

The first thing that is needed is to share and record the stories that reflect the workplace community held values, norms and beliefs about safety. This can be done with key community leaders in a focus group style workshop. Once the stories are shared and recorded, they can be reflected upon and learned from.

In the critical safety curriculum model I created (see below), the safety narrative workshop took the form of a yearly Safety Summit. The Safety Summit initially involved (in 2014) only safety specific personnel, that is, those positions whose specific jobs it was to monitor and regulate safety on the job sites. The following year, the Safety Summit (2015) included many key front-line leaders and as a result, some of the company safety narrative began to emerge, though the primary focus of the 3-day workshop was not on teasing out the safety narrative. This is interesting because it showed that the narrative is a powerful and living phenomenon, occurring in the interstitial spaces of the community.

By bringing the safety narrative to the surface, the deeply held community values and beliefs around safety are revealed. A generally strong and positive narrative about safety is desired. If the stories have elements of negativity, then it may be up to the community leaders to introduce more strong and positive elements into the narrative.

Opportunities need to be available during the day for the stories of the community safety narrative to be shared; those places, spaces and times need to occur. Sometimes those opportunities occur in informal ways, while driving to and from work together, during breaks and after work gatherings. Sometimes they occur during work gatherings and meetings, such as toolbox talks, job planning meetings or scheduled project or other staff meetings. These methods,

because they happen so frequently, are essential conduits for the safety narrative, but they are unpredictable and the narrative cannot be coerced and forced into these spaces, or it risks being viewed by community members as inauthentic, managed or engineered.

The community leadership needs to be identified and brought together. That leadership needs to be provided with education that builds on, and celebrates their importance to, the processes of leadership, role modeling, mentorship and employee coaching. These community leaders should include company identified and legitimate leaders such as foremen, supervisors, superintendents or any other designation of front line managers. Additionally, senior employees who demonstrate a strong commitment to safety and advocate and prioritize safety over other values such as productivity or efficiency should be identified as community leaders included in the training.

Once the community leaders have been selected, provided with learning in coaching and mentoring and educated in the safety narrative, those community leaders will then be encouraged to share the stories and the elements of the safety narrative wherever and whenever possible. Often times, the observable safety narrative is thin and ineffective. A safety mantra, for example, such "Safety is our number 1 priority!" becomes well known as a companywide response to the question "What is your view on safety?" Deeper down however, the true safety narrative exists in the stories that are told authentically in informal and uncontrolled interactions, they are part of the lifeworld (Habermas, 1981).

The Critical Safety Curriculum

Once the elements are in place, much of the safety critical learning will begin to occur naturally. The Critical Safety Curriculum requires an open and positive safety narrative that is infused with core safety values embodied by front line leaders, who are respected by the

community. That community leadership can be found in legitimate positions (those installed by the organization) but also in community identified leaders, individuals with natural leadership and mentorship abilities. These leadership positions, legitimate and informal, serve as cultural nodes, from which the safety narrative emanates. The informal and interstitial learning required for values education is strongest around these community cultural nodes. These leaders model behaviour and an ethical model to which junior and novice community members will hopefully aspire. An important element is to provide these community leaders with an understanding of their importance to the community, the culture and its values around safety. Additionally, they need to have an understanding of the role they play in mentoring junior employees. They need to be provided with some training about what it means to be a mentor and a community leader at work. They also need to understand the importance of the safety narrative and what it potentially can convey about the workplace community's norms, beliefs and values concerning safety. They need to ask "What are the stories that are a part of our community safety narrative and what do they say about our commitment to safety?"

I suggest that the way safety beliefs or values are learned in a workplace community is much like a safety apprenticeship, taught through a safety narrative and supporting role modelling by front line community leadership in an informal and interstitial way, outside the operational performance-driven curriculum pushed by management and regulators, as part of the system (Habermas, 1981). The concept is similar to the situated learning and informal apprenticeship suggested by Lave and Wenger (1991). The apprentice learns how to become a respected and capable member of the community. The apprentice must learn that safety, as a belief, is held in very high regard by the community, and he must learn this from a respected community elder (i.e., a Foreman or other Front-Line Supervisor). The community elder in this

case cannot be a member of the disconnected “executive” or other corporate leadership, he or she must be in a reasonably relatable position where consistent interaction takes place, but must be in a place where the new apprentice will naturally look for the social cues of fitting in (such as always wearing PPE, or taking time to do a job hazard analysis). That position, in many cases, is a field level supervisor or foreman, but could also be an experienced senior employee.

When I began working at the construction company in 2013, the position that was at the right level for representing the ‘community elder’ was the foreman (foreperson). There had been some issues where the foremen were unsure of their responsibilities and were becoming more of burden to the senior field leadership (superintendents). It was suggested that the company create a program to support and educate the foremen so that they became more confident and had the skills to complete some of the managerial tasks that were being offloaded onto the project superintendent. I suggested an expanded program aimed at developing the coaching and mentoring capacity of these foremen, to bolster their ability and understanding surrounding the education of safety beliefs in the company.

The company had, in previous years, boasted an impressively good safety record with a significantly low rate of recordable incidents (total recordable incident frequency or TRIF rate). At the time in 2013, however, there had been a flurry of incidents, with the year culminating in an incident where an experienced (though new to the company) employee sustained permanent physical injuries and brain damage. An initial review of the event showed an experienced tradesperson who was attempting to show initiative to his new supervisor and was severely injured as a result. This highlighted the need to make sure that front line leaders embodied safety as a belief and a value, and shown that from the very beginning of the relationship with a new employee.

By better understanding the nature and complexities of the way that community, culture, narrative, ethics, apprenticeship, education, informal learning and mentorship interact in the workplace, I have developed a model for encouraging the development of a workplace community that places a high value on making safe choices (see below).

In the case of the construction company, the growth of a culture that values safety above all else is contingent on having field level leaders (front line supervisors) and other community leaders that clearly embody and demonstrate (with a strong personal ethic) the values that are desired in the community. Selecting the correct front-line supervisors and community leaders for supporting a culture and community where safety is primary is difficult. Construction workers are famously rough and tough, and the industry's demographic historically places a high value on risk taking and being fearless (despite a general societal increase in social awareness of, and a push toward, gender equality, these traditionally male organizations are still shockingly misogynistic, in my experience). Field level leaders are often caught between their own supervisors (superintendents or project managers) who expect things to be done expediently, but without incident and their crews which tend to hold risk taking and overt power in high regard. The field level leaders need then to have enough confidence to stand up for their beliefs, which are hopefully the right ones.

Once the field level leaders with the desired beliefs and values are identified, the next step was to provide them with a development plan or curriculum that included improving their understanding of their own roles as mentors and leaders. The following is a description of the curriculum developed for field level supervisors at the construction company I was working for between September 2013 and November 2015. The curriculum critically includes a course on coaching, mentoring, role modeling and some associated approaches.

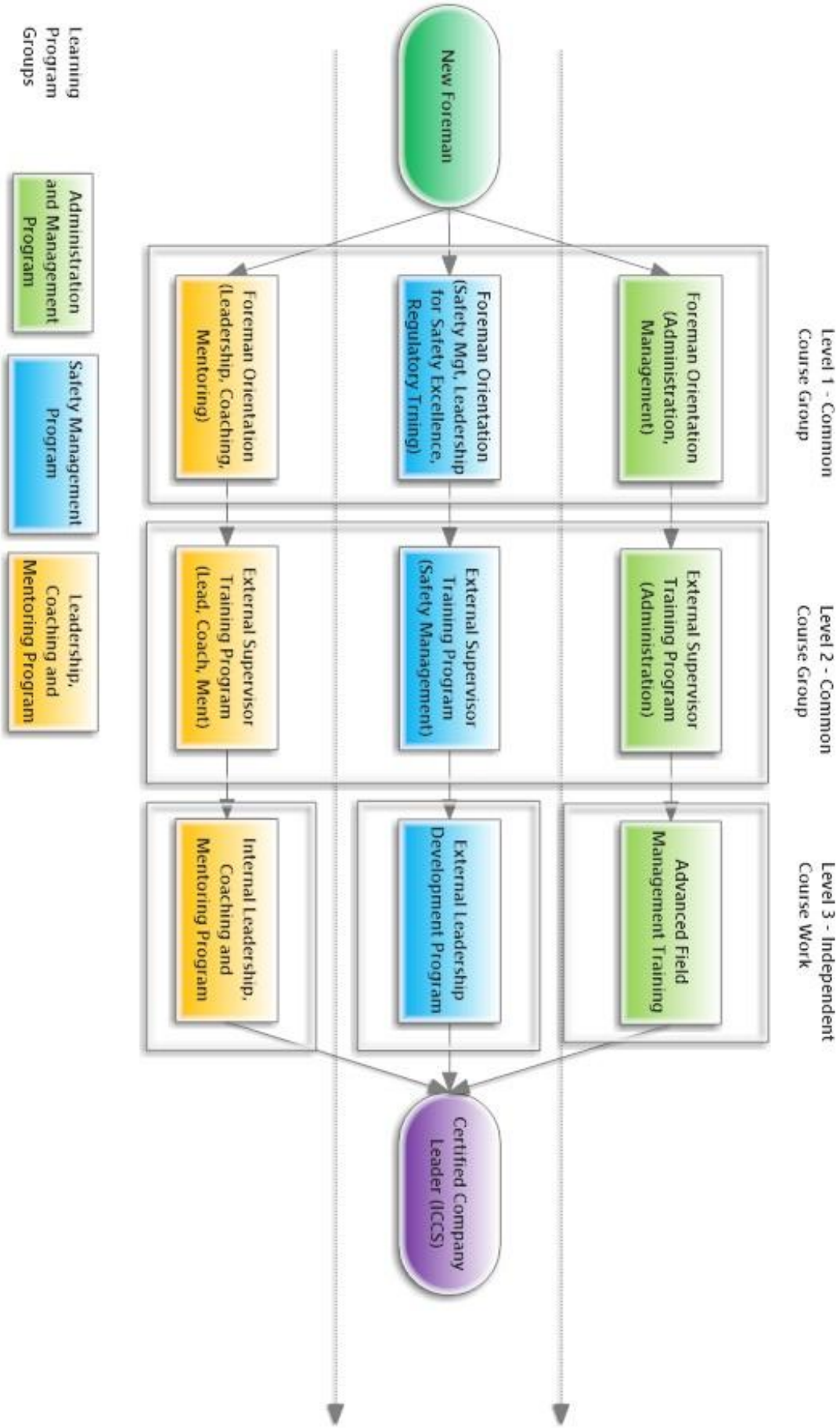
The Foreman Competency Development Program

Front line leadership is critical to the development of a safe, competent and effective workforce. Front line leaders serve as the latticework upon which the workplace community and its culture can grow and thrive. The foreman competency development program was developed to provide a comprehensive and clear pathway for the development of front line supervisors into strong leaders, mentors and role models. In addition to its focus on apprenticeship, mentorship, leadership and the safety narrative, it was created to achieve some very concrete industry certifications. It meets the requirements for the Industrial Construction Crew Supervisor (ICCS) and Blue Seal certification through Alberta Apprenticeship and Industry Training (AAIT) as well as the Canadian Construction Association (CCA) Gold Seal Certification.

The program was created by starting with the development of an occupational profile (competency analysis) for front line supervisors. There were many types of foremen at the company, but a large percentage of the tasks and responsibilities they have are common. I started by building and validating a common core occupational profile. That common core included elements leadership, mentorship and coaching (See Appendix 1 foreman occupational profile)

Once we had created and validated the common core occupational profile, the competency specifications were mapped to existing or required learning events. Once the competency specifications were mapped, a curriculum or program map was developed.

Figure 2 – Critical Safety Curriculum



The first level (Level 1) of coursework is specified as internal company training and incorporates an existing internal safety leadership course. It also includes "Leadership for Safety Excellence," which is a regulatory requirement for front line leaders in the construction industry and is offered by various private training providers. In order to assist the newly minted foremen with their added administrative responsibilities, level 1 includes training on administrative and management competencies (responsibilities) as well as programming designed to begin developing leadership, coaching and mentoring competencies.

The second level (Level 2) of course programming is exclusively external programming and consists of a Supervisor Training Program offered by an industry association. The specific Supervisor Training Program recommended is normally offered as a series of 11, three-hour evening classes. It qualifies for gold seal (CCA) and blue seal (AAIT) credits. Completion of the Level 1 Foreman Orientation is NOT a prerequisite for entering this external provider's Supervisor Training Program.

The third level (Level 3) of course programming includes both internal and external course components and consists of Leadership, Coaching and Mentoring (internal), Advanced Field Management Training (internal) and Leadership Development for Supervisors or LDS (external). The Leadership, Coaching and Mentoring program and Advanced Field Management Training are higher level training programs and are taken independently of one another. The Leadership Development for Supervisors recommended is normally offered as a series of 11, three-hour evening classes. It qualifies for gold seal (CCA) and blue seal (AAIT) credits.

As part of the groundwork required for the critical safety curriculum, it is necessary to provide the front-line community leaders with an understanding of the importance of their roles as leaders, coaches and mentors. As such, a component of the foreman competency development program is the series of courses designed to support the development of role modelling, coaching and mentoring for these front-line community leaders. As is outlined in the curriculum, there are three progressive levels of Leadership, Coaching and Mentoring courses designed to develop the front-line leaders over several years, giving them time to practice and hone their own strategies, as well as provide support for the development of and reflection on the community safety narrative. The first course is designed to give them an introduction to some of the basic concepts and is delivered as part of project orientation training. The course outline for this first course is attached as Appendix 2.

The foreman competency development program will provide front line leaders with the knowledge and skills they require to fulfill their roles as leaders, trainers, coaches and mentors. It is their commitment to safety as a priority, however, that is the important content they will share with their reports. This strategy provides the opportunity, the space and the capacity for critical informal learning opportunities leading to the growth of a strong culture and community where safety is a priority.

Conclusion

Year upon year, accident after accident, reports are produced and disseminated throughout industry, adding to a widening discourse around safety. Yet more serious incidents continue to occur. We have seen reports subsequently reference prior reports of previous accidents, seemingly in perpetuity. The perspective of learning from the past is valuable, but what if the narrative and the discourse are misguided or wrong? Those reports then disseminate

untruths, misinformation, and myths like that of a ‘safety culture.’ Creating these kinds of reports has become, in many ways, a self-perpetuating industry. Some lessons are undoubtedly learned from post-incident analyses and the related reports, but we cannot afford to accept the conclusions and inferences wholesale.

Through these types of reports, investigators such as the Baker Panel hold tightly to misinformed ideas about culture (including ‘safety culture’), perpetuate a rigid, narrow view of leadership, and avoid discussion of informal learning completely. In a world where the complexity of human learning and behaviour meets the technical-rational, this can be enormously oppressive, and, as we have seen over and over, highly destructive.

We can conclude from the literature that learning to ‘choose safety’ requires community leadership and mentorship to transfer the culturally held values of the workplace informally from one generation to the next. While the system is complex and imperfect, providing opportunities for abuse of power and systemic control, these ways of learning already exist, as they did at Cherry Point, creating extraordinary communities of caring and growth in many workplaces. Those extraordinary communities need a voice, and we all need to learn from their example.

Cultures are as unique as the communities that embody them. They cannot be controlled or influenced for the benefit of corporations. Change can be encouraged however. In order for cultures to change, that change must involve the community members themselves, for it is the community members who decide who they will actually follow and trust as leaders, and what values and beliefs are important to them as a group. Front line leaders function as cultural nodes for the values and beliefs of the community. If the community decides that safety is important, all the front line leaders should be identified for their commitment to safety, as well as natural pedagogical skill. These leaders and potential leaders should be supported by developing their

teaching and coaching skills, and further education that can help them be more effective leaders and employees. If these cultural nodes are trusted, skilled, and come with the message that "in our community, our people and their safety are most important" then the community's culture will gradually start to prioritize safety.

Learning to prioritize safety happens in the narrative (story telling), role modeling, leadership and mentoring relationships that happen in the workplace community. These occur interstitially, informally throughout the workday in spaces and occasions that are not always, or even often, considered training or learning events. This informal learning is a function of the organic nature of culture and community. It cannot, and should not, be controlled by external systems.

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