

Developing the Art of Listening: Studying Occupational Cultures

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Introduction

Workers in high-risk industries like mining, commercial fishing, construction, or oil and gas extraction experience injury and fatality rates far higher than workers in other industries. While it is true that the nature of those industries includes exposure to more risk, it is also true that these types of industries put a much higher emphasis on hazard recognition and safety and health training than do other industries, and that many of them employ safety directors or trainers to help mitigate the problem. Why, then, are the accident/injury rates still so high? Federal and state laws require that workers in most high-risk industries receive some sort of basic safety and health training in addition to the skills training they need to do the work, yet miners and loggers, roughnecks and fishermen, iron workers and construction workers are still getting hurt and killed on the job. Companies involved in high-risk work often have well-designed safety programs, spending valuable resources on protecting their employees. Yet we still cannot seem to approach the elusive goal of zero occupational fatalities or injuries. Is the problem that workers in these industries are just risk-takers and therefore injured more often? (This is a common belief among those not employed in high-risk industries.) Are regulations not strong enough? Do safety training materials miss the mark? Are the work environments and the equipment used in drilling oil wells, mining coal, harvesting timber, catching salmon, or erecting skyscrapers inherently dangerous and in need of more engineered controls to keep workers safe? Do we need more and better personal protective equipment? All of these “solutions” will have their proponents, and all may be true to some degree. There is reason to believe, however, that none of them can solve the problem alone, and that protecting workers without involving workers is simply not going to work.

Trying to “sell” safety to high-risk workers can be a challenge. It can be argued that those who chose to work in industries like these have a higher than normal tolerance for risk, and that convincing them to be more cautious would be difficult at best because they view risk as just part of the job. In fact, discussions with these workers suggest that many choose to work in high-risk occupations precisely because they love the thrill, and are convinced that not everyone has what it takes to do this work. There are many excellent programs and training courses available that provide the facts about common hazards such as Lockout/Tagout or working in confined spaces, but research done by NIOSH suggests that training must be customized to work within the specific occupational culture or it will not be taken seriously (Cullen, 2008). People who have worked as miners, roughnecks, fishermen, etc. have a high tolerance for risk, and believe they

know more about how to do this work than others do, and they can be quite resistant to “outsiders” telling them how to do their work. If a trainer or training developer is going to be successful with these workers, it is imperative that their work culture be both acknowledged and understood.

Ethnography is the term used by anthropologists for the study of a group of people. This field of social science is usually applied by sociologists to the study of groups such as indigenous tribes, religious sects, or even age groups such as young teenagers. It is an excellent tool, however, to gain knowledge about the norms and beliefs, the expectations and behaviors, the cultural “rules” for occupational groups. In fact it may be the most valuable tool available for those seeking to change workers’ behaviors, for in order to convince people to willingly accept change, we must understand what motivates them to behave as they do. An occupational ethnography, or culture scan, can help provide this understanding.

Studying Culture

The term “culture” has many definitions. In the broad sense, it is simply “the way we do things around here.” It provides guidance to members about what is acceptable and what is not, as well as warnings about what the penalty will be for ignoring that guidance. Patton (2002) defines culture as “that collection of behavior patterns and beliefs that constitutes:

- Standards for deciding what is;
- Standards for deciding how one feels about it;
- Standards for deciding what to do about it;
- Standards for deciding how to go about doing it” (81).

In a sense, culture provides a roadmap for people to make sense of their world and to negotiate successfully within it. Because culture is created and sustained by the members of a group, it is inherently social in nature, and will be very resistant to change from external forces. Hofstede believes that creating a sense of belonging and exclusivity are important roles of culture and describes it as “the collective programming of the mind which distinguishes the members of one group or category of people from another” (1999, p.5). Culture defines both who is a member of the group, and perhaps more importantly, who is not.

Workplace cultures, especially those found in high-risk industries, often draw their strength from the dangers faced by the members. Van Maanen and Barley suggest that it is the shared dangers coupled with the belief that outsiders can’t possibly understand what it takes to do this type of work that strengthen and sustain these work cultures.

Danger...invites work involvement and as sense of fraternity....Recognition that one’s work entails danger heightens the contrast between one’s own work and the safer work of others, and encourages comparison of self with those who share one’s work situation. Attitudes, behaviors, and self-images for coping psychologically with threat become part of an occupational role appreciated best, it is thought, only by one’s fellow workers. (301)

You only need to consider the camaraderie seen among members of military groups, commercial fishermen or roughnecks, for example, to see that there is a strong sense of occupational community, and an equally strong belief that “outsiders don’t get it.” People in

these careers identify strongly with their workmates, and can be distrustful of outsiders, especially those who come into their environment and try to tell them what to do or how to do it. These occupational cultures often use task rituals, initiation rites, behavioral norms, work codes, and stories to reinforce the standards expected of members. This will be even more prevalent in occupations that pass these values and stories from one generation to another. If a safety person is going to be successful in changing or co-opting these workers to choose to work more safely, (s)he must be familiar with the rites and rituals, the language and customs of the culture. Hansen agrees, stating that new information (such as that provided by safety and health training) will always be filtered through the occupations' cultural lens, and only then will workers decide whether and how to use that information (1995). Because they believe that "members have the exclusive right to perform a given set of related tasks," members of these occupational groups will not adopt changes easily unless it is congruent with the norms of their culture.

There are many ways to study an occupational culture, but none of them as effective as simply being there. Going to the work site, whether it is a mine, an oil rig, a fishing boat, or construction site is the best way to observe and gather information about what the work culture expects of its members. You must be an active listener when you are gathering ethnographic information, and it is crucial that you not be critical or dismissive of what you see or hear. You must conform to the expected safety and behavioral rules as well. You are an outsider but it isn't helpful to emphasize that fact, since these industries have a strong belief that others don't understand them, or worse, look down on them for the type of work they do. One of the NIOSH training videos developed for the mining industry successfully used this theme in a humorous manner to communicate safety lessons (Cullen, 2004). "Gerald Rivers," an investigative news reporter dressed in PPEs totally inappropriate for a surface mine site, shows up at a series of mining operations with very strong pre-conceived ideas about what the hazards are and why they are occurring. In spite of the best efforts of experienced miners to teach him – and the trainees watching the video- what is actually happening and what to do about it, he refuses to abandon his theories, and is "frequently in error, but never in doubt." While presented in a humorous way, this video contains a valuable warning to those studying an unfamiliar culture to lay aside their preconceptions and practice the art of listening.

If you are developing new training materials that will be more effective for a selected industry, you should visit work sites and workers with an organized plan to gather information, such as a set of questions you ask different people to gain different perspectives. It should be obvious that experienced workers and new hands, or foremen and journeymen workers will have different ways of seeing their world and the problems or hazards they face on a daily basis. If you are accompanied by someone who is an insider in the culture the workers will generally be more open to talking to you. Capturing information on camera or video tape is a good idea, with the permission of the company and the work crews themselves. And being trustworthy is fundamental – no-one will share information if they believe it will be used against them. It is the same principle used to gather "near miss" events; people will not share these if they suspect they will be punished in any way for doing so.

What are the things you should pay attention to in a culture scan? Each industry has its own unique environment, but a starting list could include:

- The environment itself. What environmental factors influence the way the work is done? These might include extreme weather, cramped quarters, working from heights, leaky boats,

long shifts, underground hazards, etc. Understanding that workers live with these conditions every day provides insight into how they perform their work and why they do things certain ways.

- The “semiotics” or visible signs and symbols used around the workplace. These could include hardhat stickers, hand-lettered signs, information or photographs displayed in common areas, or even tattoos seen on the workers. This could also include what type of transportation the workers use, the bumper stickers they may have, and if a uniform dress-code is not mandatory, how they chose to dress. While mandated signs such as safety posters are included here, it is those things that the workers themselves display that are most informative.
- The stories told by the members. Stories are used by workers for many reasons. They may just be entertaining, but they can be used to illustrate what happens to those who ignore the rules. Stories provide a wealth of information, much of it encoded. Workers keep track of their history through storytelling, particularly by sharing stories about workers who were outstanding (the heroes) or who were miserable failures (the fools or the villains). Workers are usually eager to share stories about those people who trained them or who provided valuable lessons along the way. These stories include the dominant norms of the culture, but listeners must pay attention, because cultural values are usually not openly stated. Stories provide more information about culture than any other thing, and if you can get people to tell their stories, you can learn much about why they do what they do. For a full discussion on the value and power of stories, as well as the types of stories you may hear, see Cullen (2008).
- The “tribal language.” Work cultures generally develop a language of their own. This allows workers a way to communicate effectively with other members, but it also serves to keep outsiders in the dark. Knowing the language is a sign to others that they are insiders, and can therefore participate in the culture. The tribal language may include the nicknames workers give each other, as well as the names they have for tools or processes. Safety trainers who ignore occupational language brand themselves as outsiders, and also send a strong message that they don’t value that particular work culture. For training sessions, one size does not fit all. It is a basic courtesy to use the language of the work culture to communicate within it, but doing so also conveys a subtle message that the training is for and about the members, who are much more likely to pay attention to it. Training sessions that use legal or highly technical language will not be viewed positively, and in fact, may be ignored by workers.
- Leisure time activities. While these may be difficult to observe, you can gain a lot of information about the occupational culture by looking at how and where its members play, and who they include among those they spend non-work hours with. In strong occupational cultures, it is common that the members “work hard and play hard” and when they do, they do it together. Many things influence these activities, such as whether workers are away from home for weeks at a time, whether or not they are married or have children, how long the work shift is, whether they live in man-camps or on board a boat for long periods at a time, etc. What people do with their free time is a strong indicator of what they value, which is another mirror on their culture. While you may not be able to observe these directly, getting workers to talk about what they like to do is also very valuable.

It should be obvious that occupational ethnography is not a quantitative study. This is a qualitative activity, where you are seeking information on why things are the way they are. There is an art to analyzing qualitative data according to LeCompte & Schensul (1999), who suggest

you have only three types of data to work with: what people say, what they do, and what they choose to create in the form of manufactured artifacts or documents. For safety people who are looking for clues on how to change risky behaviors, one needs to look for the underlying norms that either demand or condone those behaviors, and then for insiders who will provide testimonies or stories on why those must change. Near miss stories or those that share first-hand experiences with injury or the death of friends or co-workers are particularly powerful for providing proof that “the way we do things” should change. It is important to remember that cultures generally cannot be permanently changed from outside (unless they are first destroyed), and that credible insiders are much more convincing to the members than outsiders can ever be. Using the strengths, interests and beliefs of the culture to bring about change is not only possible, but perhaps is the only way to convince workers that change is necessary and acceptable. If trusted insiders advocate for change, it will be much more likely to be adopted.

A Case Study

Tame the Flame – a Safety Awareness Campaign for Underground Coal Miners

2006 was a deadly year for the U.S. coal mining industry, with three incidents claiming multiple lives. After the third, Kentucky’s Darby Mine Fire that was started by flames from a cutting torch igniting methane gas and coal dust, causing an explosion that killed 5 people, researchers at the NIOSH Spokane Research Lab were asked to develop a comprehensive safety awareness campaign for underground coal miners that would address the hazards associated with flame cutting and welding in an environment that is solid fuel and constantly leaking natural gas. We were given less than six months to develop a program that was national in scope and relevant to new or experienced miners working in mines of varying sizes and production methods. The team had a great deal of experience in developing training materials for non-coal miners with nine training videos and numerous publications (see Cullen and Fein, 2005), but only the team leader had any experience in the underground coal industry. For the team to begin development of effective materials for cutting and welding, we needed to understand the history of the problem and the culture of coal miners across the nation.

In order to understand what problems are commonly associated with flame cutting and welding activities, we started with the Mine Safety and Health (MSHA) accident/injury data base to see what types of injuries and incidents were due to using cutting torches and welders. We also looked at what workers were most likely to be involved. We gathered information on NFDL injuries as well as multiple-fatality disasters over the years and looked for patterns. We split the team into smaller groups and set up mine visits to observe different types of operations and conduct informal interviews. Each team was instructed to gather information on the following information:

- Mine name, company and mining method
- Location of mine and size of workforce
- Union affiliation (if any)
- Contractors (if any)
- Rough percentage of new hires in workforce (defined as miners with less than one year experience)
- Training practices (formal/informal, on-site, in-house, contracted out, etc.)

- Training preferences regarding trainers, formats, materials, facilities or ability to use multi-media
- Workers' perceptions of flame cutting and welding (FCW) processes, including which people generally do these tasks, and how one is trained to do them
- Best practices for FCW, and mine policies for doing these jobs (especially for "gassy" mines requiring Hot Work Permits)
- Identification of role models and trusted spokespersons, and why they were viewed as such
- Experience with fire/explosions/flame cutting accidents, etc
- Knowledge and perceptions of the Darby Mine disaster.

Although these information categories were used as a starting point, researchers encouraged miners and safety people to talk at length about these or other topics and probed for additional information in an informal manner. Because the teams would bring this information back to the full team, they were encouraged to take as many photographs as possible and to "follow leads" in order to better gain insight on the culture. The teams were reminded that the RAP (Rapid Assessment Process) would be used to analyze the qualitative data, and that "The goal of RAP is to have people tell their stories and not to have them answer your questions." (Beebe, 2001)

We visited seven mines in the first couple of months of the study. These included the largest operating long wall in the country, a "dog-hole" with only 6 employees, a very gassy mine, a mine with a coal seam less than 42" high, and a mine that was mining a 12' seam. We included mines in the eastern Appalachian area, and the West. We gathered ethnographic data as we went, using interviews, observations, field notes, informal conversations, photographs, videography, and questionnaires to gain understanding of coal mining culture and the safety issues related to flame cutting and welding. We were particularly interested in discovering any differences in culture due to geographic location, union affiliation, ethnicity, size of the workforce, age and experience of the workforce, type of mining, company ownership, etc. As the teams returned with their data, we analyzed it for prevalent themes that could be used to design the training materials and messages for the campaign. Because no member of the team visited every mine, field visits were discussed thoroughly by the group, allowing each person to share perceptions and experiences. Mines were compared and contrasted, with common topics identified. Four categories were selected, as being most relevant to new training or awareness materials:

- Hazard identification and reduction
- Site preparation, execution of task, and clean up
- Personal safety including appropriate PPEs
- Best practices.

Miners, like other high-risk workers, do not learn how to mine in a classroom, but rather, from other skilled, experienced miners. This is a master-apprentice model that relies on expert miners to teach new hires not only how to do the job, but how to do it safely enough not to put everyone in the mine at risk. Learning about mining, and about what it means to be a miner, is very much a social activity in that new miners watch others and either do what they do, or avoid doing things that are viewed as unacceptable based on cultural norms. Every miner is required by law to complete an MSHA-certified safety training program before starting their career (24 hours for surface miners, 40 hours for underground miners) but it is in doing the work itself that new miners learn and practice the "how and the why." The materials included in the new hazard awareness campaign would need to fit into this model, to avoid being viewed as coming from

“outside” and therefore ill-informed. We decided, therefore, to create a video using the expert miners from several different mines to provide the lessons and the cautions for the program. These men were credible insiders and trainees would be much more likely to pay attention to what they had to say than if government employees or paid actors were used. They spoke the language of mining, and understood the hazards faced by coal miners every day. They were masters at translating the theoretical (what the law and company policies require) into the practical (how to stay alive).

Our team had a great deal of experience developing training for the hard rock segment of mining, and used many of the lessons learned from that sector to identify cultural norms that would impact the acceptance of our training materials. These included the following values or beliefs common to miners:

- The ability to work hard and be productive is respected.
- Not everyone has what it takes to be a miner – those who do are admired and accepted within the culture.
- This is a macho culture. Although there are a few women in the mines, it is a male-dominated industry.
- Miners value safety, and understand that one wrong move puts everyone at risk.
- Miners are proud of their ability to solve the problems that come up as they do their work.

Although mining in general has its own tribal language, coal mining in particular used unique terms for equipment, mine structures, processes, etc. Because this campaign was targeting coal miners, we used coal mining jargon where-ever possible. Some products were much more amenable to this, such as video, Power Point presentations, posters, calendars, and hard hat stickers. Others, such as the curriculum guide provided for trainers, included the pertinent regulations in the legal language in which they were written, but also a “translation” section that explained in common language what the regulation actually meant.

Miners love hard hat stickers. They are considered “trade goods” in this culture and are often collected by miners and traded among them. Stickers may be mini-advertisements for suppliers or products, or may commemorate milestones for the mine, such as reaching a production or safety goal. They have a practical application in that they are generally made of reflective



Figure 1. A hand-lettered sign



material and therefore increase the visibility of workers for moving vehicle operators. The NIOSH team understood the value of stickers and used them in a novel way to gain acceptance among the miners when it was time to shoot footage for the training video that was included in the campaign. During the initial visits to the mines, we were exposed to the term “coal hog” as we traveled through the underground work areas. It was hand-stenciled on buggies and other equipment, (Figure 1) and miners often greeted each other as

they moved through the mine by squealing like pigs. We were told that this meant they

recognized each other as coal hogs, and that this was a sign of respect. A coal hog, we learned, was hungry for coal, greedy for coal, and could never get enough of it. You had to be tough and productive to be considered a coal hog, and to be recognized by your peers as being a coal hog was an honor. We took this concept and designed a coal hog sticker for the project that featured a tough, muscular hog with the tag line “Coal Hogs Work Safe,” suggesting that miners who are injured can’t mine any coal at all, and that productivity and safety are tightly linked. (Figure 2) We took these stickers with us when we returned to shoot video footage, and hopefully to trade them for cooperation in setting up scenarios and mining shots underground.

The coal hog stickers were a huge success. Miners lined up to get theirs, and were willing to help us in any way they could with our project as a result, especially if they could get another sticker to share or trade. Many voiced surprise that “the gommint” would create something like this, and stated that we were OK if we would produce these, since doing so showed that we understood and honored the coal mining culture. The stickers were inexpensive, but inside this culture, they were solid gold. We did not know whether the term coal hog was a regional one, but quickly found that miners in all parts of the country knew the term and loved the stickers. They became our ticket into the culture, and into getting enthusiastic cooperation for our project from its members.

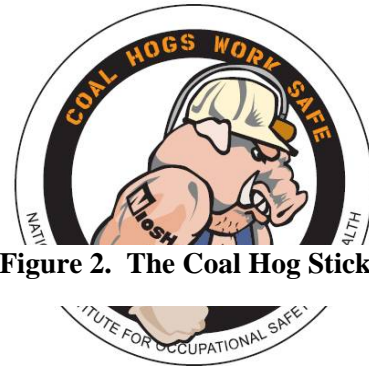


Figure 2. The Coal Hog Sticker

The NIOSH project eventually developed a kit with multiple products in it to help trainers teach about flame cutting and welding. It included materials suggested by safety trainers across the country, as well as multi-media options for mines with a wide variety of abilities to use these materials. Technical experts for the development were mine safety people across the country, as well as from MSHA, and their preferences were considered throughout the development phase of the project. The video we produced was based loosely on a popular TV show that introduces viewers to “Dirty Jobs.” One of our team members acted as the host, and interviewed miners, mechanics, and safety trainers at three different mines, all with different conditions and production methods. The miner-actors were encouraged to explain cutting and welding hazards and procedures in their own words, as well as to demonstrate how to do these tasks in a variety of conditions. We also captured several accounts of what happens when things go wrong. The entire kit included:

- A full curriculum book for use in New Miner Training or as a reference for trainers that included pertinent regulations, associated hazards, and suggested training activities,
- An electronic version of the curriculum in Power Point format,
- A shorter Power Point presentation for use in Annual Refresher Training, including Tips for the Trainers,
- A “Tool-box Training” booklet with short stand-alone “tail-gate training” modules on various hazards that were modeled after prior NIOSH training research (Boldt, 2004), and could be used for pre-shift training meetings,
- A safety awareness poster,
- A calendar with safety tips from the video as well as portraits of miners who were in it,
- A DVD version of the video *Tame The Flame*,
- A VHS version of the video,

- Two separate reflective hard hat stickers, the coal hog and a *Tame the Flame* sticker.

Results and Conclusions

The *Tame the Flame* training awareness prototype kit was completed by November of 2007, and taken out for review with the safety directors, trainers, operators and managers in the coal mining regions of the country. Comments were gathered from reviewers, and adjustments made to the products to bring them into alignment with the technical reviews. In general, reviews were very favorable. Production and development had been collaborative throughout, with mine safety people involved in the choice of topics, hazards, and training methods used. The entire project reaffirms the necessity of including the “customers” in the development of training. They are the ones who understand the unique hazards they face daily, as well as how they manage to work safely in these environments.

Safety and health training has a primary goal of changing the behavior of those who participate, but without their willing cooperation, this will not happen. Understanding the norms and values of the occupational culture, however, as well as the culture’s expected behaviors and those that are prohibited by the members, the tribal language commonly used, and the heroes and respected, credible leaders will help a safety trainer develop training that works inside the culture, and will be much more effective in starting to change that culture to accept and expect safe behaviors. Using the stories, the language, the environment, and the members of a work culture will strengthen training programs and move us all closer to the goal of zero occupational fatalities.

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