

Why Safety Needs a New Paradigm

By Thomas A. Smith

Management isn't a tree, it's a television set. Dan Pink

The Safety Problem

In our fast paced world of mega-safety disasters such as the BP oil spill in the Gulf or the Massey Upper Big Branch mine explosion in which 11 workers and 29 miners were killed it is easy to forget about the dangers people face in their daily routine work duties. But the fact is in 2008 alone 3.7 million workers were injured and 5,214 were killed on-the-job and a preliminary total of 4,340 fatal work injuries were recorded in the United States in 2009.¹ The pain and human suffering from injuries and fatalities incurred on-the-job is unknown and unknowable. The economic loss from these injuries is staggering as well. The National Safety Council estimates the costs of work injuries alone in 2008 at \$183 Billion! Yet for most Americans safety on-the-job is more of an afterthought. The purpose of this article is to examine the paradigm of safety management and see how it actually prevents people from being “safe” at work.

Paradigms and management

The word *paradigm* became a buzzword in management circles in the 1990's but it is not a frivolous idea. Thomas S. Kuhn applied the term to what he called normal science in his essay *The Structure of Scientific Revolutions*. According to Kuhn paradigms are “Universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners.”² He showed that moving from one scientific paradigm to another involves a revolution not a simple genteel evolution of ideas.³ Kuhn revealed that scientists, the very people expected to adhere to the principles of the scientific method usually have a very difficult time accepting a new paradigm. He found it usually takes a revolution to transform from one paradigm to another.

Joel Barker, a management consultant, was one of the first to suggest paradigms are not limited to the scientific community. Although Kuhn was insistent paradigms only existed in science Barker popularized the word in business when he suggested paradigms exist in all fields where a measure of expertise is required. They help prepare people to enter a specific management community in which they will practice.⁴

Basically a paradigm is the set of rules which determine what problems are important and how you go about solving them.⁵ When a paradigm has been established it helps us study some particular subject matter in a specific way. It gives us a model to follow for solving problems that field. Although it helps you solve most of the problems you encounter eventually problems develop for which the paradigm cannot provide answers. When that happens people start to look at problems differently and a new paradigm evolves to handle previously insoluble problems.

Management's move to knowledge workers

Management is a human invention. For the last one hundred years in the U.S. we have favored the command and control methods invented in the late 1800's by Frederick Taylor and refined by various practitioners after him. But for the last forty years this theory has been undergoing a paradigm shift. We now have a full blown revolution involving the conflict between command and control vs. continual improvement. The continual improvement model abandons the practices of command and control with its goal of improving production and replaces them with problem solving techniques directed at improving quality. The two methods have nothing in common with each other. They cannot be reconciled.

The only requirement of workers in the command and control management model was to provide manual labor. Their jobs were standardized and no thinking was required on their part. *Control* in this world of management means getting the workers to do what management directs. In the new economy workers must provide both manual and mental labor or they will not be productive. The majority of jobs of new economy in the 21st century will be filled by *knowledge workers* who will know more about their job than their boss does.⁶ Managing knowledge workers requires a new management paradigm. One in which *control* is concerned with making the system do what you want it to.

The safety management paradigm

Inherent in any process are the hazards that can cause bodily harm. As a result safety must also be managed. All of us have experienced some form of safety management, for better or worse, in our jobs. These efforts range from simply displaying safety posters; or reviewing safety rules prior to every meeting; to full blown safety management systems overseen by professional safety managers whose only job is to implement, administer and monitor the safety program. Companies and CEO's publish their "safety philosophy" or "safety policy statements" which are prominently posted in corporate lobbies.

In this world safety managers are required to complete special training on how to plan, organize, implement, monitor and control safety. This system employs and relies on command and control techniques to meet safety specifications and regulations. To practice these techniques safety managers must be certified to learn how to conduct safety training, safety inspections and audits, evaluation of personnel and accident investigations. They learn about the three E's of safety; Engineering, Education and Enforcement. Since the 1970's when OSHA was enacted the main focus of safety management has been to ensure companies avoid penalties and fines due to safety violations.

To become a "safety professional" you must be certified in this subject matter and use it to prevent accidents. This will help you determine what problems are important and how to go about solving them. To confirm this all you have to do is read the job descriptions of safety positions. The primary responsibility of the position requires knowledge about compliance with OSHA or regulatory safety agencies. Ultimately these are tools management uses to control workers so they will work safely. They have established the safety management paradigm.

Most managers believe once safety rules or regulations are complied with the level of safety afforded workers by management is "good enough." Safety is under control. From that point on being safe is mostly a matter of employees exercising their own common sense. This sounds good. It seems

logical. But is it adequate? Judging from the persistent number of employee injuries and deaths every year it is not. It is obvious there are a number of problems the current safety paradigm does not solve.

Looking critically at safety we see a disconnect between what science has discovered and what business practices. One thing we have learned is command and control and meeting specifications has little or nothing to do with continual improvement which is driving successful management in the 21st century. The data tells us our existing safety paradigm has problems it cannot solve. There are still too many people injured or killed on-the-job every year. And this happens in spite of the fact millions of manufacturing jobs have been eliminated in the U.S. in the last ten years.

Problems with the safety paradigm

Basically the current safety management paradigm fails to connect with what we have learned from science in two key areas. First, is the premise most accidents (88%) at work are caused by the unsafe actions of individual workers.⁷ Second is the idea that if workers don't comply with safety rules and regulations and/or do not behave *safely* it is management's job and obligation to motivate them to do so.

The thinking about unsafe acts originates from an axiom foisted upon business through research conducted and published by H.W. Heinrich way back in the 1950's. There was no solid scientific evidence confirming or challenging his theory about unsafe acts. It was just accepted. Subsequently over the years managers have paid little or no attention to research which advanced our understanding about what causes accidents in work systems. Consequently, the emphasis of safety management since Heinrich has been to control worker's behavior to ensure they comply with company safety rules and safety regulations.

The second idea was incorporated directly from command and control management which relies heavily on extrinsic motivators to get people to work faster and harder. These motivational methods have evolved to subtle applications of carrots and sticks. In safety this calls for rewarding or praising workers for "good" safety behavior, or relying on subtle forms of fear to correct "bad" ones. These techniques are based on *behaviorism* the prevailing theory in the field of psychology in the U.S. from the 1920's thru the 1960's.⁸

These two ideas; the belief that workers are the main cause of accidents and they lack the motivation to work safely drive the dominant *safety paradigm* practiced in business today. Dominant paradigms do not have to be seen or stated explicitly. They can exist through an unquestioned, tacit understanding transmitted throughout the organization. These two ideas may not be taught specifically but they are built into the culture. They are often hidden below the surface of what you can see in the daily work routines.

Causes vs. symptoms

Nonetheless it is essential to remember since the 1950's at some point in their training most managers have somehow learned unsafe actions cause most of the accidents on-the-job. To this day you will find articles restating Heinrich's theory in various forms. The idea is in management's DNA. But in the early 1990's management was introduced to "systems thinking" by Peter Senge in his book "*The Fifth Discipline*." Systems thinking involves the shift from just seeing parts to seeing wholes. Without it problem solving is often directed at removing symptoms instead of causes. Russell Ackoff in his book

“Beating the System” states: “*understanding systems is essential to beating them. But systems are understood by understanding the interactions of their parts, not the parts taken separately.*”

By applying systems thinking we can see how the interaction of the parts of the system, or lack of it, affects the outcomes of the system. Non-system thinkers do not have the ability to see this. It is why the view unsafe acts as causes. They aren't able to link them to anything else. Consequently they believe the individual is in total control of their job and therefore solely responsible for their actions. In command and control management the solution for this problem is a given. Managers must simply hold the individual accountable for their own actions. This sounds good. It has a facile logic to it. It nips the cause at its source. But it isn't the proper way to address the situation.

Command and control managers are biased toward single-event thinking which prevents them from seeing how the interactions between the parts of the system and the individual influence what a person does or does not do. With systems thinking you can see how unsafe actions are actually symptoms of deficiencies in the management system.

Dr. W. Edwards Deming, one of the most profound system thinkers of our time, helped solve the problem. He said most accidents and defects (85-99%) stem from what he called common causes built into the system.⁹ He was quick to point out we should only hold people accountable for things they can control and individual workers don't control the system. That duty falls to management and it cannot be delegated to anyone else. Common causes are not the fault of the workers. The remaining 1-15% of accidents come from special causes workers may be able to do something about.

Since you must handle common and special causes differently the most important activity of management is to determine which type of problem you are dealing with and then take the appropriate action. Deming's accident causation theory is almost exactly opposite of Heinrich's thinking and brings us much closer to the truth.

Extrinsic vs. intrinsic motivation

The command and control paradigm about motivation and work was created by combining the ideas of Frederick W. Taylor and his principles of scientific management with the psychology of *behaviorism* refined and advanced by B.F. Skinner. This model was developed during the early part of the 20th century for jobs that entailed routine, repetitive, mind-numbing tasks. It was based on traditional “if-then” extrinsic rewards which work just fine for the kind of work that involves no mental labor. i.e. shoveling coal. It was the beginning of the implicit management message for workers to “*Park your brains at the door and pick them up before you go home tonight because you won't need them while you work. Management has done all the thinking for you.*”

The science of psychology has demonstrated how exclusive dependence on extrinsic motivation does much to destroy any intrinsic motivation or pride and joy in work.¹⁰ It has also found extrinsic motivation fails miserably when applied to jobs that require even small amounts of rudimentary cognitive effort.¹¹

But this knowledge hasn't been translated to business where money is assumed to be a major motivator. (Study after study has shown it isn't.) And it hasn't prevented management from applying these outmoded motivational techniques to safety. We have continued the uncritical application of

rewards and “positive re-enforcement” to encourage workers to change their unsafe behaviors. Many current safety programs rely heavily on changing worker behaviors as *the way* to prevent accidents on-the-job.

What the safety paradigm does

Adherence to the current safety management paradigm which focuses on unsafe actions of worker’s and the belief management must spend time motivating them actually prevents people from seeing and using a better way. Barker called this the Paradigm Effect.¹² What is perfectly obvious to a person with one paradigm might literally be invisible to a person with a different paradigm.

If two people with a different paradigm are asked to examine the same data or information they will come up with entirely different conclusions. Kuhn relates the story about a physicist and chemist who were asked whether a single atom of helium was molecule because it behaved like one with respect to the kinetic theory of gases. Both gave different answers based on their own research, training and practice. The chemist saw a molecule, the physicist didn’t.¹³

If a person doesn’t get *systems thinking* he is going to have a difficult time seeing why unsafe acts are more accurately defined as symptoms instead of causes. If you accept *behaviorism* as an adequate psychological theory to explain human behavior you are not going to see how thinking and intrinsic motivation affect how people behave.

The paradigm shift in management for the last forty years involved a revolution. On one side you managed to achieve production on the other side you managed to achieve quality. In the 1970’s if you asked American managers; What happens to costs when you improve quality? Most responded that costs would go up. They had been trained to believe this. It was their management paradigm. They honestly believed improving quality required extra work and ultimately added costs.

These same managers also blamed defective parts and poor quality on the poor attitudes and behaviors of the workers. They believed if workers would only try harder and comply what they were told to do no defects would be made. Unfortunately this line of thinking was easily adapted to safety. It became the dominant safety paradigm and remains so today.

In the 1980’s Deming exposed the fallacy of this thinking. He pointed out the true costs of defects, scrap, rework and accidents. He proved improving quality in the system actually reduces costs. He saw things differently. He was viewing the same operations as the managers but with a different management paradigm and it proved to be much more effective.

Conclusion

Focusing on unsafe actions and extrinsic motivation of workers turns safety management into a myth. People believe something is happening when in fact nothing is being done to fix the system. The approach exposes the inability of the present safety paradigm to fulfill its false promise all accidents can be prevented. These techniques merely encourage workers to apply heroic efforts to avoid accidents caused predominantly by the system.

To solve the remaining safety problems and achieve better safety performance management must embrace the theory and techniques of continual improvement. Managing safety to maintain the status quo and meet specifications to achieve compliance gives you something but it is not enough. As it is with any paradigm shift it will be difficult and may be impossible for traditional safety practitioners to accept the new way. For one thing it requires managers trust workers and rely on them to solve safety problems created in the system that cause the majority of accidents. This is just the opposite of the present safety paradigm that calls for constant inspections and observations of workers to make sure they are complying or behaving properly. The implication being they can't be trusted to do so.

The three E's in the new safety paradigm stand for Engaged, Enthused and Empowered workers. Subsequently safety excellence is achieved not by limiting workers and prescribing what they can do and how they behave; but by giving them freedom to think about, study and change the system to make it right. This approach can produce defect free products customers desire and continually improve safety performance. The current safety management paradigm fails in this regard.

When it comes to managing the first rule of business is; there are no rules. We invented it and we can change it. How you manage your business is purely optional. The accident data proves our current approach for managing safety is not adequate. To solve these problems we must see things differently through a new safety paradigm.

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Endnotes

¹ BLS Statistics Census of Fatal Occupational Injuries Summary, 2009

² Kuhn, Thomas, 1996, *The Structure of Scientific Revolutions*, The University of Chicago Press, p. X

³ Kuhn, p. 12

⁴ Barker, p. 38.

⁵ Barker, Joel Arthur, 1992, *Future Edge*, p. 32,

⁶ Drucker, Peter, 1999, *Management Challenges for the 21st Century*, Harper Collins, p. 18

⁷ Heinrich, H.W. 1950, *Industrial Accident Prevention: A Scientific Approach*, McGraw Hill, p. 17

⁸ Hunt, Morton, 1993, *The Story of Psychology*, Doubleday, p. 257.

⁹ Deming, W. Edwards, 1986, *Out of the Crisis*, MIT, p. 479

¹⁰ Pink, Daniel H. 2009, *Drive: The Surprising Truth About What Motivates Us*, Riverhead Books, p. 37-40

¹¹ Pink, p. 62.

¹² Barker, p. 86

¹³ Kuhn, p. 50.