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LEADING VS. MANAGING A Tale of Two Organizational Processes

By Richard N. Knowles

This article has two objectives. The first is to introduce a new way to look at how people can lead organizations to reduce the number of people being injured and killed, and the second is to provide a long-term case study that illustrates the merits of leading in this new way.

This case study contrasts a highly participative leadership approach with the traditional top-down management approach, showing how these approaches affected a large chemical plant's safety and environmental performance. The data analyses show that the participative approach resulted in superior OSH and process safety management (PSM) performance. The use of the cycle of intelligence builds the capacity to acquire and use knowledge, lifting the organization to higher levels of understanding and performance.

The author used these ideas of participation, partnering, collaboration and building trust to turn around the 1,300-person plant from one of the poorest performers among roughly 150 plants worldwide to one of the top two or three plants in the system. In 4 years, the total recordable injury rate had fallen by about 97%, emissions had dropped by roughly 95% and earnings had risen by about 300%.

Following the author's transfer, when subsequent managers using a traditionally focused top-down approach took the PSM responsibilities back to themselves, the collaborative approach was abandoned and the plant's PSM performance fell. But they did not change the collaborative approach to OSH work because it was running well under the control of the second- and first-line supervision. The new managers did not have to pay much attention to this part of the safety effort, so they left it alone.

The result of this was that from 1996 to 2010, the PSM, which was being managed using the top-down approach, was

Vantage Point

Vantage Point articles in *Professional Safety* provide a forum for authors with distinct viewpoints to share their ideas and opinions with ASSP members and the OSH community. The goal is to encourage and stimulate critical thinking, discussion and debate on matters of concern to the OSH profession. The views and opinions expressed are strictly those of the author(s) and are not necessarily endorsed by *Professional Safety*, nor should they be considered an expression of official policy by ASSP. operating in parallel with the collaborative approach that was used to lead the OSH work. The levels of emissions increased tenfold from 1996 to 1998 and the PSM discipline fell apart, resulting in a fatality in 2010. On the other hand, the OSH performance remained at a world-class level of a total recordable case (TRC) rate of about 0.3 for 19 years. This level was sustained for 14 years after the author's transfer.

This case study uses the TRC injury rate, as reported in the OSHA log, and the EPA's Toxic Release Inventory (TRI) report data to compare the effectiveness of these two leadership approaches. The case study covers 19 years of actual performance at the DuPont (Chemours since 2016) chemical plant in Belle, WV.

Introduction

There are three main levels of focus that the author used when leading the Belle plant. The first level of focus (level 1) was being sure that the best technology, safety, health, and PSM techniques and tools were being used. Level 1 is where the hands-on work of doing the operations takes place in the organization. This is the area of first order cybernetics, which defines the system that needs to be controlled (S. Umpleby, personal communication, n.d.). The author's mantra was, "I don't have a right to make my living where it is OK for you (the plant people) to get hurt." Level 1 is where the author worked when he was using the top-down management approach.

The second level of focus (level 2) involved using the best ways to engage and involve all the people. Level 2 is where the people work who are designing and controlling the level 1 work. This is the area of second order cybernetics. Level 2 is where the author used his self-organizing leadership process of abundantly sharing essentially all information, treating people with respect and building trust, and helping people to see the importance of their contributions. The author calls this approach Partnering Through Collaboration Using the Cycle of Intelligence, which is based on 35 years of work developing a tool to bring people together and build collaboration (Knowles, 2002).

The third level of focus (level 3) was encouraging everyone to work toward the greatest good of having everyone go home in one piece, reducing the burden of our wastes on the environment, building confidence and trust in surrounding communities, and creating and sustaining a healthy, viable business. This is third order cybernetics, which addresses the ethical component of the work.

Initially, the author focused on level 1 with little understanding of the importance of levels 2 and 3. Currently, most managers and safety professionals are focused on level 1. Making progress here is slow and difficult.

When the author began moving to a collaborative approach, the safety team took over the level 1 work, and the author shifted to a strong focus on level 2 and 3 work using the self-organizing leadership process as he walked the plant for about 5 hours every day for 5 years. He walked, listened, watched and spoke with the people, seeking ways to help them improve their work, encourage, support and open up the free flow of information. He asked for help to improve himself and received lots of feedback, both positive and negative, as trust was built. However, he did not make decisions when he was walking around since that would undermine the line supervision. When he returned to his office, however, he had many observations, questions and concerns he shared with the higher levels of management.

Working in all three levels resulted in a culture of learning, growing and excitement. The workers came together to do terrific work. This was a more positive experience in leading as compared to the author's early days as a top-down manager.

Another important step was bringing occupational safety (e.g., slips, trips, falls), health (e.g., repetitive motion, exposures to hazardous substances) and PSM (e.g., process hazards reviews, incident reports, prevention of toxic releases, fires and explosions, improved process stability and yields) together under one umbrella. In the monthly central safety meetings, all three of these were discussed. Each area reported on progress so that everyone knew what was happening. There was a lot of sharing in these meetings and in the plant as each discipline helped the others.

All three of these areas must be managed and led with strong skills, high operating discipline, intensity and dedication. Each of these areas requires a different skill set and technical knowledge. OSH is best managed by those who are close to and doing the hands-on work, while PSM has more input from the engineers and upper management who make the technical decisions, allocate resources and decide what needs to be done. It was found that bringing all three of these together was powerful.

Since readers are skilled practitioners in the technology of OSH and PSM, this article focuses on levels 2 and 3 where engaging and involving everyone and sustaining the work were so important. The different but complementary roles of what managers and leaders do and the collaborative approach are described.

Managership Is What Managers Do

Most organizations in the U.S. today use a top-down management approach, whereby the directives from management go down to the employees doing the work who are then expected to comply. A top-down management approach values reliability, stability, predictability and control, which is good for the chemical processes but demoralizes the people. Its philosophy and practices are deeply connected with the 1911 work of Frederick Taylor, the father of scientific management. Taylor's work led to many productivity improvements such as vastly improving the productivity of Ford's production lines in the 1920s.

The author was well trained in this management approach when he first became a plant manager in 1980, but he became increasingly dissatisfied with the average results and the harsh ways he was expected to drive and treat the people. He began exploring more effective and humane ways of leading. He became aware of chaos theory and began to explore the implications of this nonlinear science on leadership (Gleick, 1987). He had also read Gibbs's (1978) *Trust: A New Version of Human Relationships for Business* and Bennis's (1989) *On Becoming* *a Leader*, which helped him develop his thinking about leadership.

During this period, he also studied the work of John Bennett, who taught about the deeper, hidden patterns and processes going on around us as we interact with others. Bennett (1961/1987) called his work systematics.

All this work came into focus as the author first developed partner-centered leadership, which then evolved into the collaborative approach described in this article.

Becoming a Leader

These ideas and insights led the author to shift from managing and working in level 1 to doing more leading and working in levels 2 and 3. He began walking in the plant for 4 to 5 hours each day and having focused conversations with the people. Everyone learned to listen to each other and learn together. Positive changes began to occur such as reduced injury rates, lower emissions, lower turnover and fewer grievances. Change came slowly at first, but as everyone openly talked together about the important issues and trust began to build, the rate of change increased. About 1,300 people at the plant handled many highly hazardous chemicals, so learning to lead in a new way was a tough challenge. This is the basis for the author's self-organizing leadership process.

In 1992, the author met Margaret Wheatley after she had written Leadership and the New Science, which examines the implications of chaos and complex adaptive systems theories on leading organizations more effectively. When Wheatley visited the plant where this author was plant manager, she found that he was leading from a complexity perspective like that espoused in her book. He had been intuitively developing this way of leading already for 3 to 4 years. In working with Wheatley, this author realized that this way of leading was a fundamental paradigm shift away from the top-down management approach. He also realized that the patterns and processes that Bennett described provided the language and models that were useful as he thought about and used the ideas and insights from the sciences of chaos and complexity. Wheatley's work on applying the sciences of chaos and complexity to leadership, combined with Bennett's systematics and the author's intuition, had a profound impact on the way he learned to lead.

Since then, others have written about leading from the complexity paradigm.

Stacey et al. (2000) describe complex responsive process; Steinbrecher and Bennett (2003/2014) discuss heart-centered leadership; and Dekker (2014; 2016) explores safety from a complexity perspective.

Partnering Through Collaboration Using the Cycle of Intelligence

The author continued to study, refine and apply ideas from complexity, complex adaptive systems thinking and systematics to his leadership at the plant because the performance results kept getting better. This work led to development of the theory, the complexity tools and the leadership processes of Partnering Through Collaboration. In working in level 2, the author found that leaders value people, change and the future, and focus on the self-organizing leadership process, openly talking with the people, listening, learning together, building trust and acting on what is learned. It is a recursive, cyclical process of understanding and engagement called a hermeneutic circle whereby everyone is learning from each other and contributing their unique knowledge and perspectives (Bortoft, 1996). A culture of trust is created so that it is safe to openly talk with anyone about ideas, provide feedback and explore better ways to do things. A metaphorical container is created (called "the bowl") that simultaneously provides order and focus for the organization while freeing those close to the work to make decisions needed to perform their jobs more safely and effectively. Organizations are seen as living systems: They are complex, adapting, self-organizing networks of people.

In just 4 years, the people at the Belle plant reduced injury rates by about 97%, emissions dropped by roughly 95% and earnings rose by about 300%.

The author developed a theoretical basis for this work:

•Dynamical organizations theory addresses how organizations change (Knowles, 2017). It is based on Bak et al.'s (1987) self-organizing criticality theory. The organization changes one conversation at a time.

•The Process Enneagram was developed from 1986 to 2022. It is a complexity tool for focused, disciplined conversations that shows who and what the organization is, and how and why the processes of the organization work. It bridges the theory of complex adaptive systems and practical application (Knowles, 2002; McCarter & White, 2013). With this tool, the whole, the parts

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and the interaction of the parts can be seen and understood.

•The bowl, a metaphorical container, is developed during a workshop with the people and holds the organization together, providing order and focus as well as freedom for the people to make decisions about how work more effectively and safely. In chaos language, it is the strange attractor for the organization (Knowles, 2002).

•Sustainability ratios are practical leading indicators for evaluating potential changes so a more sustainable future can be created (Knowles, 2002).

•Developed in 2019, practical definitions for "leadership" and "managership" define the roles for the people who are leaders and managers. Leaders focus on people, change and the future. They use the self-organizing leadership process. Managers focus on reliability, stability, predictability and control. They want to maintain the status quo.

•In 2022, the author reinvented the introduction to this work to make it easier and more accessible. In the Partnering Through Collaboration Using the Cycle of Intelligence process, the people address an important question, such as "How do we really improve safety here?" from nine related perspectives. People lift themselves up, see their question from a new perspective, revealing new opportunities and possibilities. Everyone participates, ideas bubble up, people learn, excitement builds, and progress is made quickly, often in just 1 or 2 days. The people cocreate their future. The collective intelligence of the people continually rises as the process is sustained by continuing to use the cycle of intelligence. People do not resist change when they have created it. This significantly improves level 2 and 3 work.

•As people learn to use this collaborative process and experience successes, this level 2 and 3 work spreads across other parts of the organization, having a strong, beneficial impact on the organization's total performance.

The Partnering Through Collaboration Using the Cycle of Intelligence process can be used to move from Hollnagel's (2014) Safety-I to Safety-II. Carrillo's (2020) *The Relationship Factor in Safety Leadership* is also a good step in this direction. All this work is aimed at providing leaders a clear, simple, practical way to lead that produces outstanding results.

The Case Study

In this case study, OSH data as well as toxic emissions release data, an indi-

cator of the PSM performance, are used to show how the Belle plant actually performed using partner-centered leadership (an earlier version of Partnering Through Collaboration Using the Cycle of Intelligence) on the one hand and topdown management on the other hand.

As noted, occupational safety addresses injury prevention relating to injuries such as slips, trips, falls, burns and bumps. Occupational health addresses injuries such as repetitive motion injuries and long-term exposure to hazards, and is measured by the number of OSHA recordable injuries reported in the OSHA log. PSM addresses the use and handling of hazardous chemicals and the safe operation of the chemical processes and equipment. The goal in PSM is to keep hazardous materials "in the pipes." A way to measure the PSM performance is by considering the volume of chemicals released to land, air and water by the processes. Low levels of releases indicate a stronger PSM operating discipline, better standards and procedures, fewer upsets and higher yields, while high levels of releases indicate a weaker PSM operating discipline, standards and procedures, more upsets and poorer yields.

Partner-centered leadership was used in the first half of the 19-year case study, and the top-down management approach and partner-centered leadership were used in parallel during the second half of the study. The two approaches are summarized as follows.

Partner-centered leadership involves:

•a strong focus on level 2 and 3 work

•leaders taking a stand and having clear messages about the vision, mission, safety and environmental performance, and current business situation

•everyone spending time together in the operations, out of their offices

•listening, talking together and learning from each other every day about the important issues

•providing feedback to each other regardless of organizational level

•sharing information abundantly and respectfully with all the people

•being authentic and consistent in building trust and interdependence

•helping people to see how their work is important to the success of the whole

•making decisions at the correct level, closing the gap between work as imagined and work as done

This results in the creation of a culture that brings the people together, is safe for anyone to share information, allows people to ask questions of anyone at any level, is full of feedback and enables the people to make appropriate decisions related to their work with a high level of operational discipline. This is an exciting culture where people can become the best they can be and business results greatly improve.

Top-down management involves: •a focus primarily on level 1 work

•only sharing information with a few

people and only on a need-to-know basis •managers usually staying in their

offices

•directions and orders being passed down from upper levels to lower levels •employees being expected to do as they are told

•little feedback

This results in creating a culture with a we/them climate with a wide gap between work as imagined and work as done and where it is not safe for people to openly share information, ask questions or develop better ways to do their work. This is a culture where morale is often low, and people just try to get by. Business results are not as good as they could be.

Figure 1 shows the TRC rate for the Belle plant from 1986 to 2006. The procedures used to classify injuries and decide the injury rates for each year were consistent throughout the study.

Figure 2 shows the annual TRI as reported to the EPA under the Clean Air Act. The data are in pounds of toxic materials released to the air, water and land from the Belle plant operations from 1987 to 2006 (Homefacts, n.d.). The charts stop at 2006 because business conditions changed so much after 2006 that the TRI data lost their significance, and the plant changed the way it kept its TRC data.

Comments

As the Belle plant manager from April 1987 to February 1995, the author first used a top-down management approach from 1987 to 1988 to restore the standards. As noted, his mantra was "I don't have a right to make my living where it is OK for you (the plant people) to get hurt. We also have to make a living, so let's figure how to do this together." He helped to strengthen the operating discipline and drove the safety processes; both the TRC and TRI dropped quickly. But then these metrics got stuck at a TRC of about 0.8 and an emissions level of about 2 million lb. Infighting among the managers struggling to lead this way was unsustainable.

So, the author shifted to the partnercentered leadership approach and, as noted, began spending several hours a day in the plant for several years talking with, listening to and learning together with the people. He talked a lot about the mission, vision and the standards that were needed. He emphasized the need for high operating discipline. He explained the competitive markets and the constant need to keep getting better (building the bowl).

Most of the people wanted West Virginia to be cleaner and healthier. People began to work together and making decisions about, for example, the best way to fix a pump, unload a tank truck and brace a ladder, thus sustaining the excellent TRC performance. They also were making decisions about PSM, such as shutting down a unit to fix a small leak or shutting down the

FIGURE 1 TOTAL RECORDABLE INJURY CASE RATE, BELLE PLANT



FIGURE 2 POLLUTER DATA, BELLE PLANT

Polluter information (toxic release inventory) Chemours Belle Plant pounds released to air, water and land.



Note. Data from "Polluter information for Chemours Belle plant," by Homefacts, n.d., https://bit.ly/3fNu56G. entire plant when there was a huge rain and electrical storm to prevent an uncontrolled release if there was an electrical failure at the plant. The engineers worked hard with the supervisors, operators and mechanics to improve PSM. The entire workforce was proactive in their efforts to improve operating discipline and reduce the release of toxic materials into the environment. Everyone was learning.

As the people came together to make improvements in all aspects of the work, after 1988, the TRC dropped quickly to about 0.3 and remained there for 17 years (Figure 1). The TRI also dropped to about 278,000 lb by 1995. Both the TRC and the TRI had dropped by more than 95%.

Partner-centered leadership positively impacted everything. During the time that the author was using this leadership method and both the TRC and TRI had fallen by more than 95%, the productivity and earnings had risen by about 45% and about 300%, respectively.

After the author left in 1995, five different plant managers were sent to the plant. They liked the TRC performance, so they rarely went into the plant and spoke with the operators, mechanics and shift supervisors who continued to use what they had learned with partnercentered leadership to maintain the excellent TRC level until January 2010. The people close to the work sustained the TRC rate of about 0.3 from 1991 to 2010 for a total of 19 years.

But the volume of TRI emissions shown in Figure 2 rose from 275,000 lb in 1995 to 2 million lb in 1997, and to about 3 million lb in 1998, remaining in that range until 2010, a tenfold increase. The TRI pattern did not follow the TRC pattern shown in Figure 1. The new plant managers used the traditional top-down management approach like the author had used when he first arrived at the plant in 1989, and they achieved a TRI level similar to that time.

The author made multiple visits to the plant in the years after his transfer and conversed with many people. He found that the new managers were using the traditional top-down approach and did not value information sharing and building relationships of trust and interdependence. They were under severe cost pressure just as the author had been. They pulled many decisions back to higher levels of management attempting to gain more control, focused more on cost reduction, deferred maintenance, did not fund needed preventative maintenance, delayed completion of work orders, allowed inspection frequency to drift to longer intervals, ignored nuisance alarms, and even failed to follow the company's standards. The operating discipline fell apart. In many cases, the engineers were frustrated by the lack of top management support for their PSM efforts. These activities are at the heart of strong PSM programs.

The managers lost contact with the people by staying in their offices, so the gap between work as imagined and work as done widened. Morale fell, cynicism grew and trust eroded.

On Jan. 22 and 23, 2010, the plant had a roughly 25-lb oleum release that made a corrosive white cloud, a roughly 15,000-lb methyl chloride release and a phosgene release that killed an operator. The events that took place showed that by not measuring key process safety leading indicators (CCPS, 2019), the business missed opportunities to protect people and the environment from loss of containment incidents. Even if the plant had the correct PSM systems in place, its poor operating discipline had disastrous effects (Klein & Vaughen, 2007).

Just 8 months later in September 2010, there was a release of about 160,000 lb of methyl alcohol to the Kanawha River. Then on Dec. 3, 2010, two men were burned with hot methyl amines at a poorly designed sampling port. CSB (2011) conducted a thorough investigation and noted in its report that while the Belle plant had the best TRC record in the entire DuPont company before Jan. 22, 2010, the PSM shortcomings described in the preceding paragraphs were devastating. It was clear that PSM operating discipline had broken down, as reflected by these incidents, the volumes of emissions shown in Figure 2 and the death of one of the operators.

Conclusions

As shown (Figures 1 and 2), people behave and work differently when impacted by different leadership and management approaches. Partner-centered leadership with a focus on level 2 and 3 work enabled the people to be the best they could be, allowing them to share information, discuss their problems together and make decisions about how best to do their work. They worked with a high level of operating discipline. Their TRC performance was excellent and sustainable. The gap between work as imagined

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and work as done was small and the performance results were positive.

The top-down management approach used by the managers after 1995 focused almost exclusively on level 1, disempowered the people and prevented them from making the best PSM decisions. The gap between work as imagined and work as done grew wider, operating discipline weakened, emissions significantly increased, and the performance fell.

These different results all happened with the same people except the managers, the same plant, the same time, the same business conditions and environment. The two different approaches resulted in two vastly different outcomes.

This case study shows that partnercentered leadership—arising out of the new sciences of chaos, complexity and complex adaptive systems, and Bennett's systematics—is far superior to the top-down management approach arising out of Taylor's work on scientific management.

The author has successfully used partner-centered leadership concepts in hundreds of workshops in many countries with organizations ranging from businesses to governmental organizations to health services to manufacturing and not-for-profit organizations. This work helps organizations improve, provided the people are willing to have purposeful conversations and learn together.

Postscript

The work continues to improve as the author continues to grow and learn. The evolution to Partnering Through Collaboration Using the Cycle of Intelligence is a significant step forward.

In 2019, the author's team conducted a workshop with a group of 35 people who built trucks to deliver hazardous liquids. The group was experiencing five to six recordable injuries per year. The workshop focused primarily on level 2 work. By the end of the workshop, the group had formed teams that involved everyone to improve communications, safety, weld quality, design and shop housekeeping. Change happened immediately and is sustained in weekly team meetings. In the 3 years since the workshop, the group has had only one recordable injury instead of a potential 15 to 16 injuries had they stayed on their old path.

In spring 2022, the author's team conducted a workshop with a crossfunctional group of engineers at a large manufacturing plant where inconsistent



coordination of supplying parts to the production line was causing problems. In using the cycle of intelligence for just 1.5 hours, the people identified the source of their problems, changed their behavior from blame to helping each other, and agreed to meet biweekly to update and coordinate their efforts. These meetings are facilitated by one team member using the self-organizing leadership process to sustain their work.

Partnering Through Collaboration Using the Cycle of Intelligence is a fundamental shift in the way to lead. It produces excellent cooperation, trust, teamwork and results. This is not a flavor of the month approach or a silver bullet. It takes openness, honesty and courage, producing amazing results that come quickly. **PSJ**

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Cite this article

Knowles, R.N. (2022, Nov.). Leading vs. managing: A tale of two organizational processes. *Professional Safety*, *67*(11), 42-46.

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