

Harnessing the Power of Human Ingenuity

Abstract

People and process are the two basic building blocks of management leadership. The trouble is, you can have happy people doing a great job, and still go out of business because the world keeps changing. Careers and organizations come to an abrupt end when traditional skills no longer matter. There is a third discipline that is very different from the first two. Human ingenuity adapts to a changing world and invents the next new thing. Without ingenuity every organization and every career is in a death spiral of diminishing returns. How do you build an environment where human ingenuity flourishes, and still maintain the world of quality process and human dignity? The answer is to do all three well.

Key Words

Process, People, Ingenuity, Disruptive Innovation, Innovation Scientific Management, Leading People, Chaos Theory, Butterfly Effect

JAMES L. RAIRDON, DM, FLMI
National American University
The Harold Buckingham Graduate School of Business
1325 S. Colorado Blvd Suite 100
Denver, Colorado, 80222
(303) 876-7180
jrairdon@national.edu

STEVEN F. WILLE, PMP, MBA
Rocky Mountain Information Management Association
1790 E. Easter Ave.
Centennial, CO 80122
720-934-7667
swille@rmima.org

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In the early twentieth century, scientific management demonstrated how process improvement leads to gains in efficiency and product quality. As the century progressed, social sciences became increasingly important as tools for understanding human motivation and improving productivity. Are things different in the twenty-first century? Is there more to learn or is it sufficient to follow a path that worked so well in the past? At one time, a corporation could be expected to last longer than a person’s career. Today, that is not the case. In the mid-twentieth century companies lasted an average of 61 years on the Standard and Poor 500 list. Now, the average is 18 years (Regaldo, 2013).

Clearly, management leadership in the twenty-first century must change to face the new reality. Disruptive innovation wipes out the value of past performance. Consider the great companies of the twentieth century that fell behind to companies that did not even exist a generation ago. The greatest hope for organizational survival, and career survival, is to increase the value placed on human ingenuity.

This paper will look at the historical evolution of management leadership starting with Scientific Management followed by a shift in focus towards human relationship management. Historically, *process* and *people* disciplines were proven important for sustained organizational success. This paper proposes a third discipline is of equal importance, a focus on *human ingenuity*. Today, one cannot expect market leadership or market dominance to last because somewhere on the globe someone is inventing a new way to make current products and services obsolete.

Turn on all the lights

This paper uses the analogy of how red, green, and blue images on a television monitor combined to form a full color, high definition image. When all three lights are of equal intensity, we see white. In the following diagram you see how white light is formed from red, green, and blue lights in equal intensity. Likewise, the three disciplines of process, people and human ingenuity come together to form the area of maximum management leadership effectiveness. (See Appendix 1 for 3 Filters by Larry Nelson).

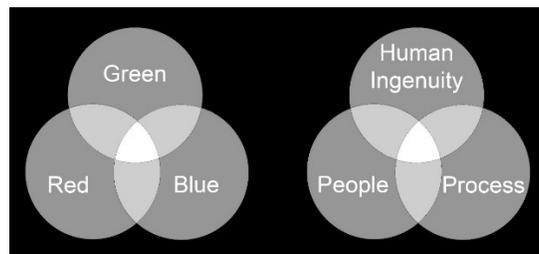


Diagram 1. Three Colors and Three Disciplines

Process and People

Literature on management leadership frequently discusses *task* and *relationship* perspectives which are represented in this paper as *process* and *people*. In the 1940s, The Ohio State University conducted a series of experiments in leadership behavior. The study revealed that leaders' behaviors were in two dimensions, initiating structure and consideration. Initiating structure included things such as organizing work and defining responsibilities. Consideration involved the relationship behaviors of the leaders. Based upon this study, and others, Robert R. Blake and Jane Mouton developed the Managerial Grid in the 1960s. Blake and Mouton (1964) found that any particular manager can be high or low in concern for people and concern for production. They describe leadership styles for various levels of each. Additionally, Paul Hersey and Ken Blanchard developed the situational leadership model that looks at supportive (people) and directive (process) behavior, each being high or low (Northouse, 2007).

These and other popular management leadership models focused on the general perspectives of *task* and *people*, but did not have the third dimension proposed in this paper. Consider the popular 1980s book, *In Search of Excellence* (Peters & Waterman, 1982). The companies studied and featured in the book were selected because of long term higher than average performance. Unfortunately, some of these highly successful twentieth century companies did not make it into the twenty-first century. Others that did make it are no longer what they used to be. The game changes over time. Companies that do not adapt to disruptive innovation will not sustain past performance. In reaction to his own book, Thomas J. Peters went on to write a book from a completely different perspective. In *Thriving on Chaos* (Peters, 1987) he says excellence is not enough, companies must innovate.

It is over time that the interplay of the three dimensions comes to light. At any particular time one of the three lights may shine brighter than the others. Over time the situation changes, making deficiencies in one of the three areas more apparent.

Historical Perspective

Process Management

Over the past century management theory has evolved, leading to increases in productivity and general wealth. In the early 20th century, Scientific Management was popular because it delivered a significant increase in worker productivity. Process engineers did time and motion studies, looking for the one best way to perform every task (Taylor, 1911). Frank Gilbreth, through motion studies, minimized the movement required to lay bricks. Adjustable scaffolds minimized the amount of stooping and standing. Stacking bricks in a certain way minimized the effort for grabbing a brick from a stack. Careful mixing of mortar maximized brick laying efficiency. Productivity climbed from 120 bricks per worker per hour to 350. Fredrick Taylor reported that some union bricklayers were prohibited from laying more than 275 bricks per worker per day for public contracts, and 375 for private contracts (Taylor, 1911). Peter Drucker (1974) believed that the surge of affluence in the second half of the twentieth century raised the lot of the working people, as well as the rich, was due largely to scientific management principles.

In the late 20th century, process improvement programs focused on quality improvement, which was required to compete globally (Dory & Schier, 2002). W. Edwards Deming, the quality management leader in both Japan and America in the late twentieth century said that if

you do not know what you are doing, if you cannot describe the process (W. Edwards Demming, 2014).

Human Relationship Management

A shift from scientific management towards a human relations emphasis emerged in the mid-20th century. The Hawthorne studies, starting in the 1920s, at the Western Electric Hawthorne plant in Cicero, Illinois, discovered and documented the people factor. These studies started as a scientific management experiment to test how the intensity of light on the factory floor influenced productivity.

In cooperation with the National Research Council, Western Electric decided to conduct an experiment to determine the level of electric lighting that would prove to be most productive for assembly of telephone equipment. Western Electric's Hawthorne plant was chosen as the site for the experiment (Pennock, 1930). Prior to beginning the experiment a baseline was established for the work rate. Starting with an initial illumination level of 7 foot-candles, well above the levels in most factories, the level was increased to 23 foot-candles. Productivity went up when the brightness of the lights went up. To validate the illumination effect, the experimenters turned down the lighting, and the production rates remained above the baseline

Fritz Roethlisberger (1941), wrote that the illumination was increased from 24 foot-candles of illumination to 46 foot candles and then to 70 foot candles. The workers' productivity in both the experimental and control groups increased at about the same rate. In another experiment, the light was reduced from 10 foot candles to 3 foot candles, and productivity remained above the baseline. It was not until the illumination was reduced to the illumination level of ordinary moonlight (0.06 foot candles), that the level of production dipped below the baseline. In other experiments the illumination remained the same, but the workers were told that it had changed. In each case, the workers described that the new levels made work easier.

At this point, the experimenters had what appeared to be a failed scientific management experiment. The intensity of lights did not directly affect productivity, even though there was an initial, but unexplained gain in productivity. George Pennock (1930) stated that the illumination experiments, which were conducted on the shop floor, had too many variables to have any hope of measuring the effect of one variable. The Relay Assembly Test Room was established in order to try to control for fewer variables. It began as an outgrowth of the illumination experiment. It changed into a human relations experiment under the leadership of George Elton Mayo and others (Mayo, 1933).

The human relations evaluators found that working conditions have more effect upon results than the length of the workday. Outside influences can affect the work, and the supervisor's method is the single most important variable. They found that pay incentives did not affect production if other working conditions were wrong, and that the workers responded to the positive concern of the experimenters (Roethlisberger, 1941).

When Elton Mayo became involved with the Hawthorne studies the interview techniques changed (Mayo, 1931, 1933). Using techniques similar to psychotherapy, the interviewer was to speak only as needed to continue the conversation, to show interest in the subject, and not to offer advice. Traditional question and answer interviews with workers were not as successful for gathering the type of information about the worker's feelings about work. Workers needed to talk freely without interruption. The interviewers were instructed to give their full attention to the interview subject, to listen, not give advice, and never argue. They were to periodically

summarize what the subject had said, and to keep the information confidential (Mayo, 1933; Mayo, 1945).

With supervisors listening to workers there were changes in behavior. M. L. Putnam, of Western Electric, noted that there was continuous improvement in the output in the relay assembly test room. This increase was due to improved attitudes toward work (morale). The way to improve morale throughout the factory was the increased friendliness and confidence of the workers, so that they felt that practically no supervision was necessary. The workers were actually given closer supervision than before, but the supervision was of a higher quality (Mayo, 1933). An outcome of the interview program was that supervisors were taught to listen to workers, instead of talking to them. In this way, the quality of supervision improved. While the employees talked about the improvement in the quality of the supervisors, the supervisors reported that the workers were easier to handle (Mayo, 1930b).

The Hawthorne Experiments showed that the old way of thinking about employees was not complete. Roethlisberger (1941) concluded that pay was only part of what motivated the employees. The theory that workers only wanted to be told what to do and be paid was called into question by the experiment's results. He concluded that employees want to be recognized as an important part of the transaction, it is the social dimension of work. He concluded that employees are not worker units, but are social beings (Roethlisberger, 1941).

Human Ingenuity

Clearly, the Hawthorne studies contained process and people components, but to understand them fully, one must consider the innovation component (Mayo, 1945). The Hawthorne studies are often cited in management text books specifically because of the surprise element. There was something more going on and significant effort went into solving the mystery. R. L. Kahn (1975) likened the discoveries at Hawthorne to the serendipitous discovery of penicillin. While the Hawthorne effect has been used to describe unintended consequences in social science experiments, Kahn believed that participation in the studies is the key, that is, the workers' participation in decisions that affect their lives. He concluded that when people take part in the decisions regarding things that are important to them, the decisions are better. Henry Boettinger (1975), the Director of Corporate Planning at AT&T in 1974, noted that the experimenters at the Hawthorne plant did not discover what they set out to find, and the researchers had had sense enough to recognize what they had found. He believed that the Hawthorne phenomena was the discovery that one factor cannot be isolated in social science experiments, and that the observation, the showing of management concern, and the interaction between the observers and the workers, all contributed to the overall effect.

There were surprises and unexpected results, leading to innovation in management theory that ushered in a new era in management leadership. In this particular case, the unexpected results from a scientific management study lead to a new understanding in how humans interact in a factory setting, and how to increase productivity by focusing on behavior in addition to engineering.

The human ingenuity discipline could not adequately be described until chaos science and complexity theory appeared in the 1960s. Edward Lorenz, a meteorologist working in 1961 gave us the term, *Butterfly Effect*, saying we will never be able to control or predict a complex system, such as the weather, because we cannot factor in the smallest of variables, like the butterfly flapping its wings (Gleick, 1987). Lorenz discovered that even the smallest change in the initial starting conditions can cause dramatic change in outcome, particularly as time

progresses. Lorenz is recognized as the father of chaos science. Many others have followed, showing ways to look at things under a different light.

Human ingenuity management acknowledges a world out of control that self organizes, responding to new challenges as they arise. Think about the electric light bulb. Thomas Edison did not have a detailed project plan. He and his team simply tried everything they could think of until something worked. The successful filament in a light bulb was made from a piece of common cardboard. Edison said: "At the time I experimented I did not understand Ohm's law. Moreover, I do not want to understand Ohm's Law. It would stop me experimenting" (Evans, 2004, p. 51).

The time to get ready for the new realities is before they take hold. For the corporation to survive it must innovate, or at least follow where others have already innovated. Survival requires the organized abandonment of things that have been shown to be unsuccessful. What is needed is an exploitation of success, including unplanned success, and continuous improvement (Drucker & Maciariell, 1993).

Efficiency and profits are essential for business success, but not sufficient for long-term growth. Consider the explosive growth of Apple Computer. Regardless of what else is written, as people examine the work of Steve Jobs, no one will say he or his companies lacked innovation (Feroz, 2012). Innovation is more than thinking up a new idea. It means doing something with the idea, taking it to market, creating demand, and selling it. Anyone can think up an idea. It takes an entrepreneur to do something with it. Entrepreneurs are people of action, loaded with optimism and determination (Clifton, 2011).

Turning off a Light

We use the analogy of a color television to demonstrate the additive properties of these three disciplines. Before you turn the TV on, the screen is dark. When red, green and blue images combine in a television, they form a full color picture. Without all three images the picture would be off color and inaccurate. (Brain, n.d.).

Consider what can happen when an organization subtracts one of the disciplines. A cover story in *Business Week*, showed what can happen when innovation is replaced by process, rather than being allowed to continue. The headline read, "3M's Innovation Crisis, How Six Sigma Almost Smothered its Idea Culture" (Hindo, 2007). According to the article, 3M people had been expected to spend 15% of their time on innovation. The famous Post-it yellow sticky note came out of this innovative culture. When Six Sigma was stacked on top of this, it blocked unplanned and uncontrolled activity. Initially, profits went up as 3M cut jobs by eliminating their traditional 15% of time for innovation. Quality was maintained with an emphasis on quantitative controls. Unfortunately, the company leadership became blind to the slow death of innovation. Five years later, innovation was gone. The problem was that quality improvement and unplanned innovation were seen as mutually exclusive.

A Proposal

Based on the preceding discussion, we have demonstrated the importance of process, people, and human ingenuity. That is like saying why to do it without saying how to do it. What really matters is what you do with this information. There are often a few simple guidelines that help bring order from chaos. It is sort of like the simple rules that bring order to a kindergarten classroom: work and play well with others, share your toys, and do not run with scissors. Follow

these rules and everything else will probably work out. If you want to harness the power of human ingenuity, there are three simple rules: show respect, get feedback, and get engaged. For each of the three rules there are three colorful variations that pull together to put you into the full color zone.

Show Respect

Process - blue. Respect the position, regardless of the person in the position. Respect your boss and the chain of command. Respect government authority. Respect customers. If you fail to respect authority, you will not last long in the organization.

People - red. Respect everyone equally. There is a person behind the position. Regardless of the situation, respect each person's human dignity. This is not in conflict with the process view; it is in addition to it. When people are not respected they have a way of getting even. If you treat all people with respect they might be there to help you when you need them most.

Ingenuity - green. Respect the individual. We are not all equal with the same skills, experiences, wants, and needs. You cannot treat everyone equally and expect to draw out the ingenuity with each person. The age old golden rule works well under the red light symbolizing people, but in the green light of human ingenuity each person is different and might not want to be treated the way you want to be treated. If you fail to respect each individual appropriately, it is unlikely that his or her unique contribution will be maximized. You will be wasting valuable talent.

Get Feedback

Process - blue. Measure everything. If you cannot measure it in numbers, it is probably not worth doing. If you do not keep score, how will you know how you are doing? Are the outputs getting better or worse? Are you operating within standards? Objective, quantitative measurement helps you to hold people accountable. You can reward the results you want to reward and punish what must be punished. Numbers are your friend.

People - red. Walk around, listen to people, and respond with empathy. Feelings matter. Perception is not reality, but it is important. Responding with empathy shows that you care and it encourages openness. There is no other way to find out how people really feel. If you do not demonstrate that care about them, why would they care about you?

Ingenuity - green. Wait and see what happens. You cannot measure or control human ingenuity in real time. It will happen when it happens. Often, failure precedes success. If you take away the opportunity to fail and you also take away the opportunity to succeed. It takes great patience to stand back and watch. When the time is right look at the whole picture. That will be your feedback on performance.

Get Engaged

Process - blue. A fully engaged employee (or volunteer in a non-profit organization) is one who is making a meaningful contribution to the organization. Engaged people are given meaningful assignments and they perform in a meaningful way. We can plan, measure, and reward meaningful performance. Under the blue process light you challenge yourself and others to achieve what the organization wants to accomplish.

People - red. A fully engaged employee is one who feels valued for his or her contribution. If you simply pay for performance and fail to express a sincere thank you, the

money is soon forgotten and a disappointed attitude can linger on forever. Express appreciation when you see a co-worker go the extra step, reflecting a higher level of engagement.

Ingenuity - green. A fully engaged employee is empowered to think and act. Empowerment is earned as a person demonstrates competence and good judgment. Set the example by acting like you are empowered, and encourage others to take the initiative. Conversely, beware of disempowering others because that is a fast route to disengagement.

Turning a Light Off

Just as turning off one of the lights makes the television picture off-color, the manager ignores a color pays a price over the long run. People have a way of getting even when you least expect it. The manager who ignores the numbers while trying to make people happy will pay a price that could lead to bankruptcy. Shutting down human ingenuity leads to a slow death of obsolescence. Our proposal is that all three disciplines are essential for successful management leadership.

Appendix I - 3-Filters

We must recognize the contribution of Larry Nelson, who invented the idea of *3-Filters*. There are so many useful models of human behavior it would be easy to stick with the most popular ones. *3-Filters* takes a slightly different perspective.

The story behind using three colors to represent three management perspectives begins with a filtered view of Abraham Maslow's hierarchy of needs (Daft & Marcic, 2008). The hierarchy is popular because it seems to explain why people are not all motivated in the same way all the time. As a need is satisfied, you move up to a higher level need. As a management consultant, Larry Nelson was a big fan of the hierarchy of needs. Using it in his management training company, he was troubled by some inconsistencies. He noted that some people, who were clearly operating at a higher level in the hierarchy, still had very strong social needs (Larry Nelson, Personal Communication, 2010). Nelson proposed that all human needs are present all the time, but certain ones fall from view because they are filtered out. He further proposed that each person has a unique blending of needs as represented by a blending of colors. Regardless of the situation, some people show a stronger social need than others. Some have a stronger security need than others. Nelson further thought that if you can create any color from the blending of just three primary colors, perhaps there were three strong human needs that could be blended. The authors of this paper, with Nelson's collaboration, adapted this approach to organizational management.

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