ON TIME AND UNDER BUDGET™

The Ultimate Power of Team Leadership

Michael Vallez

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The Ultimate Power of Team Leadership

Michael (Mike) J. Vallez. PE (Utah)
Mike Vallez Projects LLC
Also dba Mike Vallez International

Dedicated to
men and women at work, everywhere.

Many thanks to Maggie Webber, Managing Director and Head Coach at Shift Happens Now Coaching, for her selfless assistance with perfecting the text of this book with her outstanding command of grammar and punctuation.

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—Doug Nufer, Program Director, onTrack Project Services

* * *

This book will provide you with the insights to deliver On Time and Under Budget and so much more. As a seasoned change practitioner, Michael provides an honest and authentic account of what it takes to deliver projects successfully. Michael covers everything that new and experienced practitioners need to know (or remember) to go above and beyond the fundamentals of the methodologies and management of teams. He takes you on a personal journey through his career which brings to life the processes, templates and experiences which contribute to making an inspirational, successful leader of project teams. Some project managers will not have the good fortune to receive one-on-one coaching on the job as there are so few leaders like Michael in the profession; this book will fill that gap.

Although the premise of the book is based on Michael's experience in engineering and construction, the insights and lessons in life, acceptance and giving back are all transferrable to other sectors and industries. This is a must read book, whether you are new to the discipline of project management or you are *an experienced professional you will have your passion for the leadership reignited.*

—Dawn D. Adams, Programme Director &
Transformational Change Consultant

* * *

Since the beginning of my career in mining finance, which began in 1980, I have yet to see a project anywhere in the world that was built on time and under budget. Over the years, I developed a philosophy of "thinking differently" to achieve elusive outlier status and used that approach to coach CEO's and Boards of Directors to create great new wealth in mining. Mike Vallez's insightful book, "On Time and Under Budget™" digs deeply into so many of the practical ways that executives can learn to think differently and improve upon their successes. All mining participants I coach will enjoy reading this book!

—Jean-Pierre Colin, Mining Executive

* * *

Mike Vallez's book, "On Time and Under Budget™", is a long overdue update of what it takes to successfully complete a project in today's warp-speed software development world.

—Ginny Williams, Career and Executive Coach,
Former Senior IT Project Manager, HP

* * *

It is not often to find such a successful business owner with the intelligence and insightful ability to see the missing links in many businesses. Michael brings his years of successful insights to you showing you there is a much more mindful way lead people to high performance and profit. He shows you in great detail how to achieve the right balance between time, cost and scope to bring *about superior results, all with a proven and effective leadership style. This book will open many business owners and managers to a new way of thinking on how to run a more productive, profitable business with a committed and empowered work force.*

—Donna Swanson, Business owner

* * *

I am very impressed with the readability of "On Time and Under Budget™" *by Mike Vallez. I like the style—it is an easy read even concerning the complex subject of leadership and team performance. You have done a great job in explaining concepts in a way that they are easily understood. I like the quotes and examples as well.*

"On Time and Under Budget™" *is one of the best books I have read regarding the subject of team leadership. It explains the concepts in a way that is easily understood and actionable. I've got sections bookmarked and intend to use it as a reference in my project work on a daily basis.*

—David P. Brown. P.E., S.E., Vice President, Engineering, Precision Systems Engineering

* * *

"On time and Under Budget™", The Ultimate Power in Team Leadership, *is a must read for all individuals involved in project management and team leadership. Michael clearly defines what is need to succeed in a project, and gives compelling examples of successes and failures in project management. From Michael's extensive project management and leadership experience, he is able to present his experience in a way that readers can easily relate to and apply in the workplace. After reading this book, readers will have a clear understanding of how to achieve their project management goals, what critical information is needed during* *the different stages of the project, and how to quickly create a high performance culture throughout the project lifecycle.*

—Jeana Kuczmanski, President and CEO SDR LLC

* * *

I really enjoyed reading "On Time and Under Budget™—The Ultimate Power of Team Leadership" *by Michael (Mike) J. Vallez. PE*

Mike has put together a complete, must read "How To Guide" for anyone who aspires to be a world-class Project Manager. However, you do not have to be a Project Manager to enjoy this book.

His 30+ years of experience in Project Management shines through virtually every page. He tells us many stories to make his point. I truly believe that I could use "On Time and Under Budget™—The Ultimate Power of Team Leadership" *to manage a large scale project. If I did, I would bring it in On Time and Under Budget™.*

—Tony Sidio, 2X Best-Selling Author, Professional Speaker and Coach

* * *

This book by Mike Vallez presents a unique and refreshing treatment of the complex topic of leadership from the perspective of a seasoned and proven professional. It combines practical wisdom supported by clear examples of effective team coaching, and backed by cutting edge theory in human performance. This is a must read for anyone who leads or works on a team.

—Yahaya Baruwa, Bestselling author of "Struggles of a Dreamer"

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PART I
THE BEGINNING

PREFACE

One of my favorite holiday traditions is watching old movies at Christmas. There's the 1940's *A Christmas Story* about a young boy, Ralphie, who tries to convince his parents that a Red Ryder B.B. gun is just the perfect gift for him, and the immortal classic *A Christmas Carol*, the unforgettable story of miserly old Ebenezer Scrooge, who is given the chance of redemption when he agrees to be visited by three spirits on Christmas Eve. But my hands-down favorite is *It's a Wonderful Life*, with Jimmy Stewart playing George Bailey, who gives up a life of adventure to stay in his hometown to work in his father's local Savings and Loan.

There is a scene in *It's a Wonderful Life* that strikes close to my heart no matter how many times I watch it, when the young George Bailey is talking about his life dreams:

> *I'm shakin' the dust of this crummy little town off my feet and I'm gonna see the world. Italy, Greece, the Parthenon, the Colosseum. Then, I'm comin' back here and go to college and see what they know . . . And then I'm gonna build things. I'm gonna build airfields, I'm gonna build skyscrapers a hundred storey's high, I'm gonna build bridges a mile long . . .*

None of these dreams come true for George Bailey. After sacrificing them for a humdrum life of toiling away in Bedford Falls' hometown bank, facing a financial catastrophe caused by the evil millionaire Mr. Potter and being weighed down by a sense of responsibility to his family and community, George is ready to end his life. He stumbles through town, downhearted and despondent, and stands on the bridge, ready to throw himself into the raging waters, convinced his life insurance policy will be of more value to his penniless wife than his continued existence.

However, it's Christmas Eve, and divine intervention is at hand. Up in heaven, the angels have been listening to the prayers George's family and friends are sending skyward, beseeching God to change George's mind. Clarence, an angel yet to earn his wings, is sent down to help. Hearing George's bitter wish that he had never been born, Clarence shows him a nightmare vision of what life in Bedford Falls—renamed Pottersville—would be like had George not fought the malevolent and grasping miser all his life. Reminding George of the hundreds of acts of human kindness he's performed over the years, beginning with saving his brother from drowning when they were youngsters, Clarence explains that by staying in Bedford Falls throughout his life, George has saved the town from descending into squalor and degradation.

George is convinced of the truth of what Clarence has told him and runs joyfully home to his wife, where he finds a crowd of townspeople who have joined together to donate more than enough money to save the day. The angel Clarence earns his wings and George realizes that it is indeed a wonderful life.

Over the last 40 years I have lived a wonderful life and have had had the supreme good fortune to make manifest the dreams that George Bailey was unable to realize. I have built everything from underground mines to skyscrapers, from power plants to schools, bridges, and almost everything in between. I used to think every project I worked on would stand beyond my lifetime, but I have lived long enough to have seen the demolition of buildings I built, the closure of mines that I developed and the obsolescence of many more of 'my' projects. Witnessing the impermanence of my life's work has taught me a humbling lesson: Nothing I have accomplished in the physical world will ever make a lasting difference to humanity.

However, I have come to understand that there *is* a way that I have made a lasting difference, and can continue to do so—by touching the lives, hearts and minds of men and women where they spend a large part of their waking hours—at work. I am grateful for the opportunities that I have had to work with many thousands of people in the course of my life, and what I've learned from them. But I am also mindful that wisdom came at a price and came slowly, and early on, I missed many opportunities to make a difference to the people I've led. I wish that I had had *On Time and Under Budget* in 1975 when I formally started my working life. It would have saved me a lot of time and trouble and trial and error. At that time, however, very little of the material in the book was available, or if it was, it was not traditionally applied in the work place.

Legendary football coach Lou Holtz said that if God had intended for us to look back over our lives and events, he would have put eyes in the back of our heads. So, I look forward to the coming years with fresh eyes, eager to spread and apply the "gospel" of *On Time and Under Budget* as far as it will go. Writing this book is but one step on that quest.

I have written this book for you. Because regardless of your rank or position, this book will equip you with the knowledge, skills and power to transform your work environment into a most highly functioning and fulfilling place to work for everyone—including yourself.

Mike Vallez
Salt Lake City, 2014

1 WHY ON TIME AND UNDER BUDGET?

"Great art is not found in coloring books, it is found in creativity and imagination."—Mike Vallez

In the course of writing this book, I have come to recognize the universal value that humans place on having things done on time and under budget in a deeper way that I did not previously appreciate. In this chapter, I would like to share some thoughts and insights about the value that human beings place on time and money. Consider this chapter as a combination of facts and personal musings about the subject.

My entire focus for the last 40 years has been on *how* to get things done on time and under budget, not *why*. Before exploring *why* being on time and under budget is important, I would like to share a story. The story is about a recent college graduate who did not know what he wanted to do in his life. To find out, Sean Aiken created the quest he called the "One-Week Job Project". For an entire year, he switched jobs every week to find out what interested him. During that year, he traveled over 55,000 miles and tried every job he could, including dairy farmer, baker, stock trader, firefighter, bungee instructor and others.

At the end of his quest, Sean made several observations and shared them in a Vancouver TED talk. One of the stories Sean shared was about a dairy farmer he worked with. "After working on a farm for a week, getting up at 5:00 AM to milk the cows and shovel manure, I could not understand how anyone could enjoy doing this." I looked over at George, the dairy farmer, who told me that he loved it. "People need to eat. I feed thousands of people with food from an organic farm that is healthy and also good for the environment."

Listening to George talk of his love for and connection with farming apparently provided Sean Aiken with one of the moments he was looking for on his journey. It was an "aha" moment that forever changed the way he looked at things. "Those who are most passionate about their work are the ones who are connected to the meaning behind it. The actual job is not nearly as important as your relationship with it. People need to show up to work every day because it gives them an opportunity to contribute their gifts, and the world is made better because of it."

While writing this book, I have conducted interviews with scores of leaders, and have talked about it with friends, colleagues, and relatives. Every time I mention the book title "On Time and Under Budget," I get a reaction from people, regardless of their personal background or profession.

"I would buy a book with that title," says a former computer project manager for Hewlett Packard.

"We all know it's important, but we've never described it," says my barber.

"Everything in healthcare is around that," says a friend who is a hospital administrator. "Not just building and remodeling projects—we just finished a $100 million investment in information technology projects that we struggled to keep in budget and on time, and we are working on analyzing the cost and time it takes to perform every type of surgery, test and procedure that is performed in the hospital."

Another friend of mine owns and operates some gas stations with service bays, gas pumps, and convenience marts. "Mike, aside from getting their cars serviced or repaired in a way that fixes their problem, people all want the job done on time and within the cost estimate that we gave them. This is critical to success in the service business."

Time and money—these two apparent abstractions seem to defy a clear definition, as evidenced by the number of lines written about them by philosophers, economists, and physicists. Yet, despite the abstract nature of time and money, they elicit deep feelings and reactions from everyday people.

Our human approaches to time and money are complex. Eckhart Tolle, philosopher and spiritual teacher suggests that time is merely an illusion—that everything happens "in the now."

"Time isn't precious at all, because it is an illusion. What you perceive as precious is not time but the one point that is out of time: the Now. That is precious indeed. The more you are focused on time—past and future—the more you miss the Now, the most precious thing there is."

—Eckhart Tolle, *The Power of Now, A Guide to Spiritual Enlightenment*

Sean Michael Carroll, Senior Research Associate, Department of Physics, California Institute of Technology, has dedicated some of his professional energy to answering the fundamental question: What is time?

"The apparent distinction between past and future is only apparent. We treat the past different than the future, but the laws of physics don't."

—Sean Carroll

Albert Einstein studied time in his work.

"The only reason for time is so that everything doesn't happen at once."

—Albert Einstein

And:

"My favorite things in life don't cost any money. It's really clear that the most precious resource we all have is time."

—Steve Jobs

Even Dr. Seuss had thoughts about time:

"How did it get so late so soon? Its night before its afternoon. December is here before its June. My goodness how the time has flown. How did it get so late so soon?"

—Dr. Seuss

According to the Oxford dictionary, the word time is the most-used noun in the English language, and the concept of money is no less abstract or commonly used than time is. Ask anyone what money really is, and you will get a variety of answers. Money is merely an idea that exists by an agreement of society.

Throughout history, before there was paper currency, there was a barter economy where people simply traded their excess goods, and gold represented a store of value that was tradable for real capital and resources. Gold had value for its scarcity and beauty, and because people agreed it had value.

It is the same with money today. Instead of just paper currency and coins, we now store money digitally on computers in a system where accounts are debited and credited when parties conduct a transaction. We all agree that those digits on our bank statements have meaning. We trust that our bank is keeping an accurate accounting of the inflows and outflows. The FDIC guarantees our deposits up to $100,000.00.

I believe that our collective consciousness about money is rooted deeply in our behavioral DNA as humans. What exactly is money? One of the ways to view money is as stored wealth created when production is in excess of consumption. For example, in the Bible, Genesis: Chapter 41 recounts the story of the Pharaoh's dreams, in which seven lean and ugly cows ate seven fat cows. This, according to an interpretation of this dream by Joseph, was to direct the Egyptians to begin storing $1/5^{th}$ of their grain harvest during the good years to prepare for seven lean years which would follow. This stored grain resulted from an excess of production over consumption, and it helped save the Egyptians from starvation during seven lean years that followed seven fat years.

I also believe that a connection exists between the energy endowment of the universe and money. According to the Big Bang Theory, (not the TV show by that name) the Universe that we know began its existence with an event called the "Big Bang" that happened 13.7 billion years ago. That cosmic event led to the creation of all the known and unknown galaxies, stars, and planets in the universe. Our sun emits energy that strikes the earth and fuels a process called photosynthesis, a process by which green plants and certain other organisms use the sun's energy to convert carbon dioxide and water into glucose that feeds the growth of plants. As a result, photosynthesis provides the basic energy source for virtually all organisms. This process of life on the surface of the earth is what led to the creation of carbon fuels over millions of years, including coal, natural gas, and oil—fuels on which our modern society depends.

The connection between the sun's energy, photosynthesis, and the global human population is clear. Our current food production system requires 10 calories of hydrocarbon fuel to make one calorie of food. In that sense, the photosynthesis that has occurred over millions of years has provided the energy means for our global population to grow to over 7 billion people today. Furthermore, carbon fuels have allowed mass groups of people in modern societies to experience lifestyles that were unheard of in pre-industrial times. The total energy used by the average American equates to 60 barrels of oil per year, which is the equivalent of the work force of 720 Egyptian slaves. Our lifestyle today has reached the level of the Egyptian pharaohs, based on cheap energy, albeit in a different form.

Today, money is a store of value created when production exceeds consumption. Another way to view money is as something that arises in a transaction when the benefits to a receiver in a transaction exceed the cost to the producer in the transaction. Money can also be viewed as a store of energy, because all human life and production is based on energy.

Energy resides in many other places. As physicists come to understand and explain the nature of matter through quantum physics, we are starting to grasp how mysterious life really is. In 1935, the basic understanding of matter at the smallest particle level postulated that there were molecules made up of atoms, comprised of protons, neutrons, and electrons. Since then, scientists have discovered quarks, neutrinos, gluons, and now the Higgs Boson, announced on July 7, 2012, at the CERN laboratories of the European Organization for Nuclear Research.

Quantum physics says that the deeper you look into the workings of the atom, the more you discover that there is nothing there but energy waves. It says that an atom is an invisible force field emitting waves of electrical energy. The energy waves of quantum physics are measurable, and their effects are observable, but they are not a material reality as we conventionally think of particles. They have none of the properties of matter as we have historically viewed it—because they are just energy.

Science now embraces the idea that the fundamental building block of the universe is energy. Many people have talked and written about the intimate relationship that we humans have with time and energy. Here are some examples:

"If you truly want to attract the right attention, you must devote your energy to what calls your soul."
—Melchor Lim

"Never waste time and energy trying to figure out why some people stick their noses up other peoples business."
—Jummai Abdullahi

"Worry is a massive waste of time and energy."
—Ritu Ghatourey

"STAGES OF LIFE:

TEENS: you have all the time and energy, but no money.
WORKERS: you have the money and energy, but no time.
OLDIES: you have all the time and money, but no energy."
—Unknown

"Don't waste valuable time and energy on things that don't matter, obstacles, challenges and tough times are all part of the deal. So deal with it and keep moving."
—Ricardo Housham

"If someone loves you, they should not be envious of your pouring your heart and time and energy into the things that you are passionate about, but instead, they should love you MORE because you are involved in those things."
—Sharon Swan

As I began my career, it was obvious to me that time and money were corporate concerns when it came to the execution of projects of all kinds. I never saw, nor did I even consider, that time and money (stored energy) might have some deeper meaning within the quantum field of our subconscious minds.

Today, I see the connection. I see it in the face of everyone I describe my project to for the first time. I see it in the $55 billion wasted per year on IT projects in the United States alone. I see it in the 80% cost overrun on building projects of many kinds, representing hundreds of billions of dollars around the world. Globally, we waste time and money to the tune of hundreds of billions of dollars every year, that otherwise could be used to improve the quality of life for humanity. Those resources are lost forever at a time when we need them the most.

Aside from the enormous economic cost to society of busted budgets and schedules, I know something else from my life experience. Completing programs and projects on time and under budget on a consistent basis require the best from people engaged in the process. And people who are operating at their best, and most likely to find fulfillment in what they do every day. They are well led by empowering leaders. On the other hand, projects which fail usually become a spiraling vortex loop of cyclical defeats, frustration, danger, and dysfunction. Shouldn't we try to be on time and under budget?

The root causes of the problem are complex. In a survey of 23,000 Americans working in key industries Harris Interactive found conditions in the workplace environment that are shocking. Only 15% of those surveyed felt that the organization enables them to execute key goals. Only 37% said they had a clear understanding of what the organization is trying to accomplish and why. Only 15% felt that they worked in a high trust environment. And only 20% said they have a clear line of sight between their tasks and their teams and organizations goals. However, these problems cannot co-exist with a high performance On Time and Under Budget™ culture.

For those of you readers who toil away working in teams to get projects and programs done on time and under budget . . . for those of you who lose sleep when things are not going according to plan . . . and for those of you who yearn for good leadership from others or who want to grow into a world class leader yourself, let this be your "George the Dairy farmer" moment. Because the challenges are dire, the needs are enormous, the rewards great, and the opportunity to make a big difference is in your hands, if you keep on reading and choose to take action.

2 WE HAVE A PROBLEM

To address any problem, whether professional or personal, we need to examine and identify where we are and how we got there. The last 40 years of my working life is one that I am most familiar with, so I will cover that ground to bring us to where we are today.

I started my career in construction in 1975 when there was very little reading material available about professional project management. Other than a segment on CPM scheduling in one of my college computer classes and a short course on construction methods, an engineering student at Michigan Technological University in the early 1970s had to fend for himself to learn how to manage and lead projects.

By 1983, I had worked for two major construction and mining companies and was working full-time for Dravo, as chief engineer for its engineering, procurement and construction [EPC] projects in the Salt Lake City office. By that time in my working life, I'd worked for leaders I admired and for leaders I did not think deserved their titles. I had worked on teams with motivated and enthusiastic colleagues and with those who were disgruntled and hated their jobs. I'd worked on projects that ran like clockwork and finished on time and under budget, and on those that seemed doomed from the start, plagued by accidents and setbacks, with morale and profits low and costs too high.

Naturally, I became interested in the root causes of such diametrically opposed results. Organizational and human performance became the focus of my MBA studies at the University of Utah, where I assembled a "tool kit" of best practices and concepts in human performance and project management.

At that time, industry efforts to contain costs had been ongoing for many years. In 1969, a group of CEO's formed the

Construction Users Anti-Inflation Roundtable. In 1972, that group merged with others to form The Business Roundtable, an association of 200 CEOs from major corporations. The Roundtable's Construction Committee engaged in a multi-year study of problems in the construction industry, involving participation by 125 representatives of businesses, universities, labor unions, and other industry groups. This study culminated in 1983 in a report titled *More Construction for the Money.*

The industry has made progress toward addressing the 23 separate action agendas that made up the Construction Committee's final report. Widespread adoption of information technology and automated data processing has fostered a new paradigm of productivity measurement and feedback. Management's safety performance has improved significantly since the 1980s, and the "safety first" attitude has become part of the construction culture. The 1971 U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) played a major part in this. The Merit Shop contracting movement has forced labor unions to loosen many of their restrictive and costly practices. (A précis of the precepts of Lean Construction, along with those of other current best practices mentioned in this introduction, appears in the appendix.)

Leaders in the industry have greatly improved the processes and knowledge areas of project management. Prior to 1983, the aerospace and construction industries had made strides in advancing the practice of project management. In 1977, I worked with the director of project controls for Anaconda Mining's Carr Fork Copper Mine Project who was a former projects man from Boeing. The Project Management Institute (PMI), founded in 1969 at the Georgia Institute of Technology, further advanced things with the creation of the Project Management Body of Knowledge (PMBOK) in 1986. With the publication of the

PMBOK, the Institute made great strides in advancing project management as a profession.

The intention of the PMBOK was to identify and catalogue all aspects of Professional Project Management known at the time. The Institute developed an outline of key concepts that were vital for the project manager to master, and created a testing and qualification process for individuals to become a "PMI Certified" Project Management Professional (PMP). The PMI established a baseline for project management. It continues to advance its work every year through committees, conferences, and continuing education.

In 1989, the U.K. government agency Office of Government Commerce (OGC) developed a project management method known as PRINCE2, an acronym for Projects in Controlled Environments, Version 2. A project professional can also obtain a certification in PRINCE2, just as one can become certified through the Project Management Institute as a Project Management Professional.

In the 1980s, the work of the Construction Industry Cost Effectiveness Project (CICEP), and the PMI stood as two of the major industry efforts to improve the cost effectiveness of the construction industry. I studied the principles and findings of these entities, and added them to my project management "toolkit".

The Business Roundtable did a good job of identifying the major issues facing the construction industry of the day, but they addressed only problems specific to construction itself. The scope of the CICEP was to address construction cost effectiveness, and it did not address the entire spectrum of challenges that arise for an owner from the conception of a project to its commissioning and completion. This is unfortunate, because in a recent study of 47 mega-projects (projects over a billion dollars) by Price Waterhouse Coopers, the average cost overrun was a whopping

88%! Further investigation by Edward W. Merrow revealed that the major causes of project failures (cost overruns of 25% or more) rest within the owners own processes and leadership, not the contractors. Merrow's findings are so compelling, that I have included some of them in Chapter 4, Look Before you Leap. I have worked on both sides of the owner/contractor equation in this industry, and I have no personal bias toward or with either side. As is the case with every profession, a wide range of competence exists between the top and bottom ends of the spectrum.

The PMI has done an exemplary job of drawing attention to and promulgating the key project management and control techniques. Many companies now require that their project managers be PMI certified. Adoption of concepts like Earned Value Management (EVM) has helped with the transparency and reporting of project status. Robust scheduling programs like the Primavera P6 Scheduler and others have also contributed. Yet despite the widespread adoption and availability of project management principles, there is still something missing. Even on projects staffed with PMI certified professionals (PMPs), costs have spiraled out of control. A recent internal study by one of the world's top mining companies found that the average cost overrun on capital projects was over 80 percent, which confirmed the studies by PWC and Merrow. Some companies have gone bankrupt because of massive cost overruns. (It's not as though a cost overrun is a new phenomenon. The Suez Canal cost 20 times the original estimates; The Sydney Opera House cost 15 times more than was originally projected; The Concorde supersonic plane cost 12 times more than predicted and The Channel Tunnel had a cost overrun of 80 percent (1)).

Needless to say, the application of the PMBOK, PRINCE2, and other best practice platforms have made great contributions to the state of professional project management, but they cannot guarantee project success. Poor leadership, inflation, scope creep, lack of controls, poor planning and project formation, inexperienced project staff, on-site accidents and lack of accountability are just a few of the pitfalls waiting to ensnare the unprepared and add hundreds and thousands, if not millions or billions of dollars to an estimated project cost.

Since beginning my personal career emphasis on Operational Excellence in 1980, I have worked consistently in the construction and resource industries, as a leader, a project manager and company executive. My focus on project schedules, budgets and operational excellence has been relentless for 35 years. When I assembled that body of knowledge for my postgraduate degree, where I tried to discover why some projects failed and others succeeded, I had been working in the field for less than a decade. That knowledge base and my personal "toolkit" has expanded, project by project, over a span of 40 years, and my focus has never wavered; what can be done to optimize the chances of project success and minimize the chances of failure?

It's my belief that the answer lies within the pages of this book. I say this not to boast. I have had my share of failures and mistakes and they have taught me to remain humble. *On Time and Under Budget* is a distillation of everything I've learned from the projects that went wrong and those that went right, and I'm happy to say I've been able to salvage some of those that were on the verge of failure and turn them around. The single most important factor that I've learned is crucial to success, is the presence of an honorable and respected leader and an effective team, which is why I've devoted a large part of the book sharing what I've learned about leadership and teamwork. You can have the most devoted and faithful crew in the world, but without the hand of a capable captain on the tiller, the chances of any ship "sailing into harbor" on time and under budget are slim.

3 WHERE DID ALL THE LEADERS GO?

"Leaders aren't born, they are made. And they are made just like anything else, through hard work. And that's the price we'll have to pay to achieve that goal, or any goal."—Vince Lombardi

In 2009, the Queensland University of Technology (QUT) performed a research contract "to investigate the role of PRINCE2, and the other project management frameworks in successful project delivery." The researchers at Queensland found that problems and issues with the PRINCE2 framework had nothing to do with PRINCE2 methodology. Instead, "…poor project leadership and lackadaisical implementation of PRINCE2 received trenchant criticism from the PRINCE2 group." (2) Paraphrased, the most effective set of methodologies in the world cannot be effective without good leaders to carry them out.

This conclusion from QUT confirms my own observation of what is happening in many organizational work cultures, and we can trace the roots of these problems back to the 15th century. Prior to that time, there was no distinction between the engineer, architect, or builder. We just had "master builders"—people who worked their way up the ranks from breaking rocks in a stone quarry. Just as architecture became a separate profession from the master builders in the 15th century, project management is becoming "professionalized", and I see organizational structures where the project manager is in parallel with a construction manager, engineering manager, procurement manager and so on. Matrix organizations are diffusing accountabilities and responsibilities to a point where everyone is responsible, but no one is in charge or accountable. The almighty processes have become the master instead of the slave.

With the advent of enterprise-wide technology and information systems, people have become small cogs within big wheels. Organizations seem to frown on independent thinking. Line managers and specialists can hide behind their group decision analysis. Top business executive leaders have come to think that work groups using statistical queries can make better decisions than a good experienced project leader can make, getting input from his or her team, and applying sound reasoning and experience. There is an apparent fear in putting too much power and decision-making in the hand of one leader. Yet leadership is most lacking in successful project execution. In Chapter 30, The Buck Stops Here, I encourage a return to a time when projects have an assigned leader who is empowered for success within clear boundaries, accountabilities and parameters. One of Vince Lombardi's rules for being an effective leader was to "demand autonomy." The year before Lombardi took on the Green Bay coaching job in 1959, the Packers experienced their worst season in history with a 1-10-1 record. One of his conditions for accepting the coaching job at Green Bay was that he would serve in the both roles—team manager and head coach. Vince did not want someone there questioning every move he made, because he knew that to turn the team around was going to be a tough job. Nor did he want someone else there for the team members to cry to if they did not like something Vince was doing. We often see a combination of responsibilities at the top of corporations with many CEO's also holding the position of president, and even chairman. But at project manager and project director levels, the strength of these positions have been weakened over the last 30 years. It's no wonder that a lack of leadership exists on too many projects today.

In the military, a commanding officer has ultimate authority over the unit, and has wide latitude to run the unit as he or she sees fit, within the bounds of military law and the command structure. Without this autonomy, the unit could not operate effectively in the heat of battle. I have personally experienced working in both types of organizations—those that assign "commanding officer" responsibility to their managers, holding them with a high degree of accountability, and those that use project managers merely as scorekeepers, where project functions are performed by a centralized corporate staff. I can unequivocally say that those organizations having cultures which empower their project managers and project directors with the license to make key decisions, and with full accountability for results, have by far the greater on time and under budget success. Only when the team leader is accountable can the team be accountable. At this point, a distinction needs to be drawn. I am not suggesting a dictatorial and autocratic style of leader. However, it requires an empowered leader to be in a position to empower his team members, and hold them accountable for their delegated responsibilities. Effective leadership exists in organizations where authority is delegated as far as possible into the organization, and closest to the front line. (See Chapter 32)

Over the last several years, since the appearance of email, I have seen more project functions become centralized under the umbrella of corporate staffs, both inside the owner organizations and within contracting companies. A good example is with the purchasing and subcontracting functions. In an accountability run organization, the responsibility for securing the materials, equipment, and subcontractor services for a project, generally belong in the line organization—in the project team, not in a staff position that is outside of the project team. Why? The answer is simple. A project's success is highly impacted by timely delivery of materials and subcontractor performance. When you take those functions away from the line organization, and place them with a company staff, you disempower the project team, cause internal friction, and raise the complacency and frustration levels all around. The most successful construction organization I ever worked for did not have one single person with "purchasing" in their title, and that company executed a billion dollars in projects a year—much faster and more profitably than the industry norms.

An age-old question is asked about leadership almost as many times as the one about the chicken and the egg: Leaders—are they born or made? According to a 2009 article in *Psychology Today* by leadership expert Ronald E. Riggio, the answer is simple: mostly made. 'The best estimates offered by research," he writes, "Is that leadership is about one-third born and two-thirds made. The job of leading an organization, a military unit, or a nation, and doing so effectively, is fantastically complex. To expect that a person would be born with all of the tools needed to lead just doesn't make sense based on what we know about the complexity of social groups and processes."

The article goes on to mention some of the innate abilities that predispose people to be leaders in the schoolyard and in the boardroom: extraversion, boldness, assertiveness and being willing to take a risk.

Does that mean that cautious introverts aspiring to a leadership role in life should simply give up and abandon the dream? Definitely not. The answer to the 'born or made' question was two-thirds made, remember, and while that risk-averse and reticent wannabe leader will have a much more difficult time of it than his more confident fellow, there are effective leadership development courses at most universities today, and, of course, available online.

I have had the privilege of working alongside and learning from people I consider the best in the land, the kind the QUT study seemed to suggest are hard to find. This book is in part a grateful homage to them, for the exemplary leadership qualities they lived and breathed. I have done my utmost best to follow in their footsteps throughout my career; and if you aspire to being the best leader you can be, I can say with confidence this book will help you achieve that goal, because it contains so many of the precepts I learned from them. One-third born and two-thirds made—remember.

Life Lessons

To be successful in our personal lives, we have to see ourselves as the captain of our own ship and the master of our own destiny. Yet the great majority of people I meet still fail to take personal responsibility for the outcome of their lives and experiences. They always seem to find an outside force for their woes, or lay fault with someone or something their boss, spouse, neighbor, or parents did or failed to do. In leadership, and in our personal lives, those who succeed the most are those who take personal responsibility for the experiences and outcomes that occur in their lives and in their careers. By taking personal responsibility for all the things that happen in your life, you will have a foundation to stand on, with the power of taking action to create the life that you want to live.

Many people have difficulty assuming the attitude of full responsibility. One might truly say that you are not responsible for the weather, outside influences, or action of others. But you have a choice in how to respond to these outside influences and occurrences. You can wade through a cloudy and confusing existence where your life is at the effect of the world and outside circumstances—where you are victim—or you can take charge and make things happen. Believing that you are responsible is an empowering stance to take, both in life and in work. For example, if a hurricane hits your home, you did not cause the hurricane;

but you have a choice to either live in a hurricane prone area or not. Another example is in the workplace. If an employee makes a mistake, or things go wrong, who is responsible for that? Is the employee, or the manager responsible? An effective leader always takes responsibility when things go wrong, and gives praise when things go right. After all, maybe the manager did not give the person adequate training. Maybe management put into effect a standard work procedure that is flawed. An employee can make a mistake for a variety of reasons. A true leader takes responsibility for what happens under his leadership, including mistakes. Unfortunately, most organizations do not operate this way. In many companies, employees spend 80% of their time trying to cover up their mistakes or throwing someone else 'under the bus' when things go wrong. In this environment people hide their mistakes. When mistakes are out in the open, there is an opportunity for continuous improvement.

PART II
SETTING THE STAGE FOR SUCCESS

4 LOOK BEFORE YOU LEAP

Thoughtless risks are destructive, of course, but perhaps even more wasteful is thoughtless caution which prompts inaction and promotes failure to seize opportunity."—Gary Ryan Blair

I grew up in Minnesota, the "Land of 10,000 Lakes." To most Minnesota kids, it was the "Land of 10,000 Swimming Holes". To me, growing up amongst all those lakes was like living in a paradise. Everyone with a piece of lakeshore also had a boat dock, so in the summer Minnesota became the land of a million piers. Because of this, learning to look before you leap was part of every swimming class and safety course given in Minnesota. Every time we swam, our instructor would first make us wade into the water and check its depth, before allowing us back onto the dock to take that first glorious dive of the day. It was one of my early lessons in deferred gratification. I will never forget that feeling of disappearing under the cool lake water and emerging a minute later into the sunshine, shaking the water out of my hair. Even when I swam alone I always checked the water first, remembering the dire warnings the swimming instructor gave about what would happen if we didn't. Sure enough, every summer, there would be a headline or two about some poor kid who failed to look first and was injured doing a swan dive into shallow water.

In today's business world, many project owners and even CEOs of large multinational corporations are aping those hapless kids by making headlines and breaking their metaphorical necks, because of massive cost overruns on capital projects. Price Waterhouse Coopers recently performed an analysis of 47 large global projects and reported that the average cost overrun was

88%. Xcel Energy is finding itself in a difficult situation with the Minnesota Public Utilities Commission as the result of a forecast 130% cost overrun on one of its major projects. Xcel wants the rate payers to pick up the tab, while the regulators argue that the shareholders should be responsible. Cost overruns are becoming more frequent and are causing a major erosion of shareholder value in those companies who made the investments. It is also a concern for the global community, which relies on natural resource commodities to support a global population of over seven billion people.

Based on my forty years of professional experience in building projects of all types, the most important advice I can give to those who are charged with bringing in projects on time and under budget is look before you leap. Like the kid getting ready to dive off the dock, project developers need to take a sounding before giving the green light and full funding to a project. This means doing the best practical job of feasibility work, front end loading (FEL), and advance due diligence. Sadly, from my own experience, I can cite numerous examples of project problems, if not outright failures, that were the result of inadequate pre-project evaluation and planning work by the owners. Taking heed of the information that follows in this chapter will prevent your project from a similar disastrous fate.

During the feasibility or front end stages of a project, a good understanding of the local labor market can be invaluable. Early in my career, the contractor I was working for assigned me to a field engineering position in the coal mining patch. The contract was to sink six mine shafts to the 2,000 feet deep coal seam. It was a turbulent time in the coal mining patch and the contractor I worked for had not predicted the difficult labor situation that we were met with. On any given day, and at least twice a month, we would find a picket line at the project gate which none of the union workers would cross. There was rarely a specific grievance associated with the wildcat strikes. Rather, the miners, most of whom came from out of state, were calling the strikes as a way to go home and visit the family, and after three or four days at home would show up again, ready to work. The contractor was unable to formalize a four day break every two weeks because they had a contract with the owner that included schedule terms—time was of the essence—and the union work rules did not necessarily provide the flexibility. The project ended up in a difficult bind.

On more than one of my projects, the pre-design geotechnical investigation was inadequate or completely non-existent, and I have had to re-engage structural engineers to implement major foundation design changes after the project began.

In addition to inadequate labor assessment and incomplete geotechnical investigations, another problem is with the lack of complete and accurate "base data". On a recent major industrial project, the owner solicited proposals for a process application, but provided basic water quality data that indicated, incorrectly, that the water would be clear of particulate matter (clear water). The low bidder on the pumps assumed, as indeed he was entitled to, that the base data provided by the owner was correct. The project turned into a "walk away" and was never completed.

On another project where inaccurate base data caused problems, the mine owner provided an EPC contractor with false information about the gradation of material to be fed into a crushing plant. Providing the correct data would have increased the cost of the project. At one point in the project development, prior to execution of the EPC contract, the specification originally stated that the maximum size of material to be fed to the plant was not to exceed six inches in diameter. After the owners' purchase commitments for equipment were made based on this criteria, the plant design specification to the contactor was changed to say that the plant would need to handle whatever came out of the mine. Needless to say, the plant had many start-up problems, trying to process boulders the size of refrigerators with completely inadequate equipment.

The general base data required for a minerals development include, but are not limited to:

- Lithology and stratigraphy
- Physical properties and structures
- Wedge and slab formation
- Cavities
- In situ rock temperatures
- Metals content and metallization process
- Types of impurities
- Waste characteristics and volumes
- Particle sizing characteristics
- Heterogeneity
- Size, shape and attitude
- Overburden features
- Topsoil depth
- Weathered materials
- Groundwater location, sources and character

The base data for an oil reservoir include, but are not limited to the following:

- Reservoir size (aerial extent and thickness)
- Reservoir properties (porosity, permeability, net-to-gross, compressibility)
- Fluids composition (gas/oil ratio, impurities, viscosity, gravity, etc.)
- Fluids composition variability across the reservoir
- Gas/oil/water contact points

- Reservoir temperature
- Reservoir pressure
- Drive mechanism, reservoir energy, or lack thereof
- Presence of faults, fault density
- Complexity, compartmentalization
- Channeling, water production

A project needs to pass through a set of "gates" on the way from concept through completion. Developing a complete and accurate characterization of the base data of a resource play is a crucial "gate," before moving on to the next phase. Because accountability passes from the owner to the engineer or EPC contractor once the base data is transmitted, it is essential for the success of the owner's venture that the base data set becomes a clearly identified document for the project. A good owner-engineer contract will define the accountability for the accuracy and timeliness of the base data, as well as the possible consequences of changes and errors in the data. Further, the scheduled delivery date and scope of the base data from the owner to the engineer should be identified. In many cases, the base data needs to be assembled prior to the engagement of the engineering firm that will do the detailed design and drawings. Mega-projects are global endeavors, involving design offices, fabrication shops, manufacturing plants and steel mills world-wide. Changing the base data after the project launch has significant consequences, including the loss of momentum, negative impacts on morale, and cost and time overruns.

Of course, the shape and look of the "best practical" feasibility work, including base data, will be different for every industry and circumstance. While I have been involved in all types of projects, in the interest of simplicity I will further address the circumstances associated with only the two most common categories, commercial and industrial.

Due Diligence for Commercial Building Projects

The various approaches to executing a building project are highly dependent on the kind of owner and the circumstances involved. An entrepreneurial developer is not going to use the same approach as an institutional or governmental entity. A hospital is much more complex than an office warehouse project. A private developer often uses a favored set of professional firms that provide architectural and engineering services, while a government agency will be bound by procurement guidelines and processes. The comments here are fairly broad by necessity, since each of the business arenas deserves its own treatise, something beyond the intent or scope of this book.

A commercial building project usually begins with site selection and acquisition. Every land purchase deal that I have been associated with has been initiated with a purchase option agreement, giving the buyer the right to perform certain essential tasks and site evaluations as part of due diligence work to be conducted during a specified period of time prior to closing.

One of the early tasks in evaluating a site for purchase is to conduct an environmental site assessment, and this may include both a Phase I and Phase II assessment. ASTM Standard E 1527-05 provides the standard details of inclusions for a Phase I assessment. It is important to understand the risks in this process, because under the "Superfund Law", Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the liability for existing site contaminants default to the purchaser in the absence of any agreement otherwise between the buyer and the seller. Other kinds of environmental assessments may be required. For example, on a recent project in Wyoming, I had to make accommodations for a particular law in place to protect the nesting habitat of the local sage grouse. On a recent project in Southern Nevada, I was liable for any disturbances of the habitat of the local desert tortoise. Some cases may require a wetlands determination by the U.S. Corps of Engineers or other regulatory body. On a major urban project that encompassed two city blocks in downtown Richmond, Virginia, we uncovered some intact remnants of historic river boats buried on the site, which was once the location of a turning basin for the intermodal transfer of goods from ocean ships and river traffic on the James River. We had to suspend the project while the historical society investigated. When constructing a project on an Indian Reservation, we had to consider the possibility that burial grounds might be disturbed. On that same project, which was federally funded, we had to comply with the provisions of the National Environmental Policy Act (NEPA).

In addition to the environmental due diligence, a technical due diligence of the property is necessary to discover any physical characteristics that may impact its suitability for the intended use. This is particularly applicable when the project involves the acquisition and adaptive re-use of an existing building or buildings.

Prior to the time of site acquisition, another best practice in due diligence is the preparation of a "bubble diagram" of the site and its layout of buildings, parking lots and structures, needed drainage infrastructure such as storm water retention ponds, setbacks, site lighting, traffic egress and ingress and other site specific features.

The acquisition of the site is one of the early gates in a project from concept to completion. The level of uncertainty in the cost estimate at this stage of the project will vary depending on the kind of owner and the intended use of the property. Because of cost and timing, it is often impossible to complete a fully developed schematic design during the land acquisition stage. If the owner has made the financial commitment to make a land purchase however, the level of cost estimate will have usually met the requirements for project screening for that particular owner. Most owners will not acquire the land (other than for speculative investment) unless it is ready to go forward with a project. With the site cost firmly estimated, and based on a bubble diagram of the site, a cost estimate in the range of plus or minus 15% or less can be established.

The entire project approach should be developed prior to the time of issuing the request for proposals to the architect and engineer communities. Each stage of the project development should be well defined in a project approach narrative so that the architects proposing on the project know what to expect, and what they will be expected to deliver during the course of their engagement.

Architectural fees are usually broken down into a schedule of values that mirrors the way drawings are developed, and as follows:

The cost of A/E fees on a building project can range from 6% to 12% of the total cost of the building, depending on its complexity. Those fees can be broken down into the following percentages. (3)

Project Phase	Percent of Basic Services Fee	Descriptive Guidance
Schematic Design	13	AIA - BP 14.02.02
Design Development	20	AIA - BP 14.02.02
Construction Document	36	
Bidding	2	
Construction	27	

Figure 4.1—A/E Fee Breakdown

The American Institute of Architects (AIA) Form B-101, Standard Form of Agreement between Owner and Architect, is generally based around these phases, although there is a good deal of leeway for defining what is to be performed in each phase.

The gate that occurs right before funding and establishing the final baseline schedule and budget is a critical one. The PRINCE2 project process (described in the appendix) provides for periodic validation of the business case for a project. The project should be taken at least through schematic design in order to establish a realistic project budget and schedule. Although this has been generally understood in the architecture and building communities, historically there has been a lack of consensus on exactly what should be included in schematic design, design development and final working drawings. This has brought about a good deal of frustration and conflict in the building community and between owners and architects. The AIA has a complete set of standard forms for agreements between the parties of a project including the owner, architect, contractor and subcontractors. While they do tend to favor and protect the interest of the architect, the agreements are basically good, and the AIA has been performing a valuable service to the industry by making them available.

In 2011, the AIA provided additional guidance in the form of a Best Practice guidance in document BP 14.02.02 to define the work of Schematic Design, and BP 14.02.03 for Design Development. The completion of the schematic design in accordance with the guidance of BP 14.02.02 might be advised prior to full and final authorization of a major corporate or institutional building project. The cost is not that prohibitive. If you consider that the schematic design is about 13% of the total A/E fee, and the total A/E fee is between six and 12 percent of the total project, the schematic design represents between 0.8% and 1.6% of the total project cost. This may seem like a lot of money, but it is nothing in comparison with a 50% cost overrun!

The general objectives of the Schematic Design Phase include the following: (5)

- Drawings and other documents indicating the scale and relationships of Project components in conformance with program
- Building areas and volumes demarcated
- Project images / renderings clearly depicting design intent
- Representative plan element(s) graphically complete
- Structural grid and representative exterior modules fixed
- Small scale building elevations graphically complete for typical areas
- Representative wall section graphically developed at a larger scale
- Structural and MEP/FP systems defined
- Project performance criteria established
- Schematic Design estimate of the cost of the work

A complete review of the requirements of AIA BP 14.02.02 and BP 14.02.03 is highly recommended for any owner engaging an architect. Ideally, in most cases, the Owner—Architect agreement should reference these descriptions, or scope descriptions developed by the owner, to define the scope for schematic phase and design development deliverables.

Again, prior to tendering proposals from A/E firms, the owner should define the scope in these phases in detail. The quality of the entire cost estimating, design and project execution experience is greatly enhanced when this discipline is followed, and things can go wrong when it is not.

There is a myriad of design / construction approaches available to the owner. In one approach to the design-build method of project execution, the owner hires the architect to complete the drawings up through the schematic design or design development phase, and then lets the design-builder complete the details of design from there. (This kind of approach can also be successfully used in industrial projects, and is discussed later.)

Another approach is the Guaranteed Maximum Price (GMP) approach. On the James Center Project in downtown Richmond, Virginia, the GMP between Faison Associates and McDevitt and Street Company (my employer) was based on a preliminary set of schematic designs and a detailed jointly developed description of the various building systems, including electrical and mechanical, which were performed by subcontractors under the design-build approach. I should add here that there were already strong working relationships between the main parties on the project, including the M & E contractors. It is not always possible to develop an overall GMP on such preliminary drawings.

I should give a word of caution here however, because not all architects are created equal when it comes to cost estimating ability. On a school project I developed for the Marty Indian School, funded under a Federal grant, it was impossible to have the general contractor on the team until the construction documents were completed because of the government procurement guidelines in place, and competitive bids received by all the trades. Consequently, I had to rely on the architects' abilities to design the project to cost less than or equal to a budget. In this circumstance, the owner-architect agreement contained a clause that required the architect to re-design the building if the bids came in over budget. This put a heavy burden on the architect that few firms would have been willing to accept. In this case, I used a company specializing in school design. The alternative is to competitively select a general contractor at the end of schematic design, using a GMP, CM with a guaranteed price, or design-build approach. In any event, the risks of proceeding past schematic design without some kind of price risk sharing is less than ideal.

There are different approaches to carrying out the schematic design phase on a project, and the approach used can have an effect on the ultimate ability of the owner to achieve its cost and schedule targets. On the Indian School project already mentioned, the chief design architect spent two weeks meeting with each member of the faculty and staff to gather their input, prior to actually commencing the schematic design process. This is called the programming phase. Some owners want to restrict the involvement of staff members in the creation of the design for new projects. The larger the project, the more prevalent this issue becomes. It may seem to an owner / sponsor that this level of involvement will make the project too expensive. However, when done properly, this "inclusive" approach can have the opposite effect and serve to keep the project cost and schedule on track. The reason is related to the scope creep that occurs when the actual occupants finally get to see the design and point out its deficiencies. It is difficult, at best, for an owner's project manager, sponsor, or administrator in charge of the facility to ignore or disregard this kind of input. The result is a change order which costs much more in both time and money to implement during the project execution. Far too many building projects are plagued with this problem. Although it takes time to do things correctly up front, getting full input from the users saves time and money in the long run.

Front End Loading (FEL) and Feasibility for Industrial Projects*

Building Projects	Site Due Diligence	Site Acquisition	Programming	Schematic Design	Budget, Schedule, Execute
Oil and Gas	Reservoir Appraisal	FEL-1 Venture Opportunity Definition	FEL-2 Scope Development	FEL-3 Project Definition	Fund and Execute
Mining	Mineral Resource Evaluation / Reserve Definition	Order of Magnitude Scoping Study	Pre-Feasibility	Definitive Feasibility	Fund and Execute

Information for this graphic is from *Industrial Megaprojects, Concepts, Strategies, and Practices for Success* by Edward Merrow, John Wiley and Sons, 2011.

Figure 4.2 - Comparison of Pre-Funding Authorization Stages for Building, Oil and Gas, and Mining Projects.

In a recent analysis of 47 megaprojects, the average cost overrun was found to be 88%. (7) The main root causes of this failure rate include the following: insufficient Front End Loading (FEL) or feasibility work; poor to no soils investigation; inadequate shaping of the business case and management platform; lack of team integration between operations and project teams; and incorrect or untimely base data.

The single most important predictive indicator of project success or failure for industrial, process, and resource projects is the quality and completeness of the work prior to full funding authorization. (6) The work required to adequately prepare an industrial project for full funding with confidence is far more complex than for a building project, and this book covers the topic only lightly, because it has been covered extremely well by Edward Merrow in his impactful book, Magaprojects—Concepts, Strategies, and Practices for Success. (6) I highly recommend that anyone involved in large projects read this book with red and yellow highlighter in hand.

What follows is a detailed definition of the Front End Loading phases described by Merrow.

FEL 1 is about the Business Case

BUSINESS CASE	+	TEAM DYNAMICS	+	ALTERNATIVES ANALYSIS	→	BUSINESS FEL 1 INDEX
• Market Experience • Competitive Analysis • Raw Material / Feedstock Costs • Investment and Economic Life • Legal and Regulatory Framework • Completeness of Business Plan		• Sponsorship and Leadership • Clear Authorization and Resourcing Process • Multifunctional Project Team • Clear Team Goals and Expectations • Clear, Timely, Effective Communications • Effective Decision Making Processes • Team Stability		• Competitive Technology Selection • Business Objectives, Statement and Charter to Team • Capacity Recommendations • Technical Plan		

Information for this graphic is from *Industrial Megaprojects, Concepts, Strategies, and Practices for Success* by Edward Merrow, John Wiley and Sons, 2011.

Figure 4.3 – FEL 1

FEL 2 Is about Scope Development

SITE FACTORS +	DESIGN STATUS +	PROJECT EXECUTION PLAN →	FEL 2
• Site Determined • Equipment Block Layout Identified • Preliminary Soils and Hydrology Report • Environmental Permitting Requirements and Strategy Identified • Health and Safety Requirements and Strategy Indentified • Labor Survey Completed if Needed	• Basic Process Data - Feedstock/Product Properties - Heat & Material Balance • Engineering Tasks - Written Scopes - Single Set of Complete PFDs - Sized Major Equip. List - Utility Infrastructure and Offsite Requirements - Analysis of Existing Equip. - Full Factored Cost Estimate • Clear Business Objectives • Participation and Buy-in of: - Operations - Maintenance/Turnaround - Business	• Execution Strategies (Not Plans) - Design - Procurement - Construction (Mod or Stick) - Turnover Sequences - Contracting - Team Participants and Roles • Integrated CPM Schedule - FEL 3 - Engineering - Procurement - Construction • FEL 3 Plans (Not Strategies) - Contracting - Long-Lead Procurement - Resource Requirements • Clear Project Objectives	

Notes: (1) When the PFD's are complete in FEL-2, projects tend to experience no cost growth during FEL-3. (2) When FEL-2 is complete, the accuracy of the cost estimate should be on the order of -15/+25. At this point, the project owners / stakeholders should make a decision whether to proceed to FEL-3 or not. (3) A final decision to fully fund the project is not made yet at this point, and there will be objection to this by some. There is still one last gate to pass through before full and final funding is made, at the end of FEL-3. Information for this graphic is from *Industrial Megaprojects, Concepts, Strategies, and Practices for Success* by Edward Merrow, John Wiley and Sons, 2011.

Figure 4.4 – FEL 2

FEL 3 is about Readiness

SITE FACTORS +	DESIGN STATUS +	PROJECT EXECUTION PLAN →	FEL 3
• Labor - Availability - Cost - Productivity • Local Minerals Availability • Plot Plans and Arrangements • Soils Data • Environmental Requirements	• Engineering Tasks - Detailed Scopes - Feedstock/ Product Properties - Heat and Mass Balance - License Packages - Piping and Instrumentation Diagrams - Electric Single Line Drawings - Major Equipment Specs - Take-off Based Estimate • Full Agreement/Buy-in of: - Operations - Maintenance - Business - Other Stakeholders	• Contracting Strategy • Project Environment - Community relations - Regulatory Liaison - Local Content Providers • Project Organization/ Resources • Team Participants and Roles • Interface Management and Communication Plan • Critical Path Items - Identification of Shut Downs for tie-ins - Overtime Requirements • Plans - Commissioning - Startup - Operation - Manpower - Quality assurance • Cost/Schedule Controls	

Notes: (1) Three tasks, when taken together, constitute the acid test of whether the design is ready for sanction: (a) The piping and instrumentation diagrams (P&ID's) are complete, reviewed, and approved. (b) The major equipment specifications are completed and the long-lead items are ordered. (c) The cost estimate was developed with take-offs of all material quantities from the P&ID's. If all three conditions are met, the design is very likely advanced study. If "no", or the more common "well, sort of", the design is limited study and the project is not ready for sanction.
Information for this graphic is from *Industrial Megaprojects, Concepts, Strategies, and Practices for Success* by Edward Merrow, John Wiley and Sons, 2011.
*Industrial Projects, upstream, petrochemical, refining, pharmaceutical, chemical, LNG

Figure 4.5 – FEL 3

The Roots of Megaproject Failures

Why do corporate executives proceed with projects before they are ready, even when presented with the evidence that such decisions can lead to project failures? Greed has been put forward as a factor; the operational line executives in charge of these projects have a vested interest in the additional profits that will accrue from a completed project, so the project is fully authorized when FEL work is rushed or incomplete. Another factor might be the workings of our capitalist system. In a rising commodity price environment, resource companies begin to accrue large cash hoards, making themselves a target for hostile takeovers. They are then faced with either returning the cash to shareholders or proceeding to invest in new capital projects. Since the long term viability of a resource company is based on the development of new resources, and there are corporate risks involved in hoarding cash, the incentive to rush into new projects is strong.

Achieving readiness for full project funding and authorization requires mental and technical discipline, and good corporate leadership and governance. This is where the discipline of the PRINCE2 project processes becomes indispensable. This is why, at the very beginning of project inception, a project roadmap and governing structure based on the PRINCE2 processes should be put into place,. The "Sprint" model found in the practices of Agile Development can serve to identify sequential accountabilities to deliver the needed components of a scoping study, pre-feasibility, and definitive feasibility study (FEL-1, FEL-2, and FEL-3 in the Oil and Gas Sectors). And the processes of the Project Management Body of Knowledge (PMBOK) of the Project Management Institute can be utilized to execute the project using best practices. Last but not least, the practices of Lean and Six Sigma can produce the leadership needed to achieve the best possible outcomes from the team members involved.

Aside from inadequate front end work, the other contributors to project failure are discussed in other chapters of this book. Inadequate execution planning, personnel turnover, poor leadership, lack of technology integration, weak project organizations, overly optimistic biases—any one of these factors can sabotage your project at any time once work has begun, and most of them will be (initially) out of your control. By following the FEL procedures I've laid out above, you will be on as solid ground as possible to fend off the saboteurs.

Life Lessons

I started this chapter with a story about the safe swimming practice of checking the depth of the water before diving in, and the deferred gratification that that involves. Mooney Player was a record-holding winning football coach in South Carolina in the 1970s-80s. After retiring from coaching, he operated a management consulting practice, teaching corporate team members how to play a winning game. Mooney taught that winners did two specific things that made them stand out: they paid the upfront price and did what they said they would do.

At about the same time Player was leading his football team to success in South Carolina, psychologist Walter Mischel was carrying out the Stanford marshmallow experiment, in which young children were faced with a choice that tested their propensity to defer gratification, or in other words, pay the upfront price. The experimenter would meet with an individual child, and put a marshmallow on a plate in front of him or her. The children were told that they could eat the one marshmallow immediately, but if they could wait for fifteen minutes alone in the room without giving in to temptation, they would be rewarded for their patience with a second sweet when the researcher returned. Of the 600 children who participated, a minority ate the marshmallow immediately. Of those who did not eat it immediately, only one third deferred gratification long enough to get rewarded with the second marshmallow.

Follow-up studies showed that the preschool children whom delayed gratification longer were described more than 10 years later by their parents as adolescents who were significantly more competent. Another study showed that the ability to delay gratification correlated with higher SAT scores. (8)

We can see from this that individuals have varying degrees of ability or tendency to defer gratification and "pay the up-front price", and this affects their life experiences as adults. Those corporate leaders and managers lacking the patience to wait while an adequate amount of due diligence is completed before fully funding and commencing a project, are the adult equivalent of those children who gobbled up the first marshmallow before the researcher left the room. Although the capacity to take risks and be entrepreneurially bold can be supportive of one's career advancement to a point, in the world of capital projects, rushing ahead before the project justification is ready, has led to many failures and career mishaps. Many CEO's of large corporations have been dismissed from their posts because they presided over multi-billion dollar projects which have failed, often because of lack of patience with proper evaluation and planning. Even when presented with the facts and risks of forging ahead with full funding and authorization, many leaders have ignored the warnings and moved ahead regardless. (6) The Stanford marshmallow studies, showing that people are wired differently when it comes to deferred gratification, may partially explain this phenomenon.

Look before you leap. Pay the up-front price. Wait for the second marshmallow.

5 ACCOUNT FOR THE OPTIMISM BIAS

"I believe any success in life is made by going into an area with a blind, furious optimism."
—Sylvester Stallone

Optimism is a good thing, because it supports the forward movement of human progress. In cases where optimism causes a misallocation of scarce financial capital, it has a regressive effect on society. One of the reasons that projects run over budget and schedule has to do with a human phenomenon called "optimism bias". Optimism bias is the tendency for humans to view the world through optimistic lens, often when the facts and circumstances do not warrant the level of optimism. It plays out in both the personal and business world. "All of my children will be healthy, physically beautiful, smart, and athletic." "Everything will go according to plan if we just have enough will." "I have a very low chance of getting cancer." "We will never get divorced". "We can complete this project for $X dollars, and in Y months."

It is self-evident that a project has a better chance of coming within budget and schedule if the baseline budget and schedule are realistic and accurate. Therefore, the time to address the optimism bias is prior to full project authorization, during feasibility and front-end loading. PRINCE2 also contains provisions for regular and periodic confirmation of the business case for the investment, as actual project cost and schedules become more apparent during a phased project execution. But during the pre-project phase, the optimism bias is somewhat more difficult to manage and control.

Studies have shown that there is a tendency for people to maintain an optimistic bias even in the face of facts that contradict the bias. If it were easy to control for the bias, there would not be so many cases of cost and schedule overruns across many industries and situations. However, the phenomenon is not equally evident across different project types. Standard building projects are relatively easy to estimate accurately because they use standard types of details and building systems. Retail; warehouse; office; lodging; medical offices; residential; and other such projects are relatively easy to estimate. The biggest variable on this type of project is in the foundation construction, and this is where I have seen the most surprises in this type of project. However, once the project gets out of the ground, it is common to complete this type of project within one to three percent of budget.

On the other hand, industrial projects; special purpose custom buildings; heavy civil and infrastructure projects; tunnels, mines; IT software projects; and other special situations are fraught with risks relative to the optimism bias. In an internal study of their projects across the globe, one of the top international mining companies found that their projects have run over budget by average of approximately 80%. Most mining projects are located in remote locations, and they involve work that involves custom processes and underground construction. An IT industry study by the Standish Group found that the average IT project cost overrun was 43%. (9)

In light of these dismal statistics, it behooves owners to take measures to account for the optimism bias in their project planning, analysis and feasibility phases. Here are some of those measures that can help account and control for the bias:

1. *Obtain third party expert opinions about the project cost and schedule estimates.* Apply judgment based on relevant experience in the project type involved. Sometimes it is helpful to get second opinions.

2. *Remove some of the project unknowns by deferring the projects “go / no-go” decision until sufficient design has been completed.* Of course, there is a balancing act to follow here. Because time is money, there is often a tension between the desire to commence a project on a “fast track” “design as you go” basis, and waiting until the project is completely designed before commencing construction.

3. *Account for and control overtime.* The use of overtime on a project drives the project cost up considerably. Too often, estimators assume a 40-hour workweek. However, on remote projects, overtime is necessary to attract skilled workers. Using a 60 hour workweek can drive up unit labor costs by 60 to 100 percent. This needs to be accounted for, either by increasing the project budget, or, by putting an overtime cost component in the projects contingency reserve. The impact of scheduled overtime on productivity has been the topic of many studies. Most analysts conclude that scheduling overtime for more than three sequential weeks results in diminishing returns—workers only accomplish 40 hours of work even though they work longer hours. You can find more information about this on the internet. Overtime is a subject that everyone in management should understand.

4. *Increase the amount of the contingency reserve, and have those funds available for the project if needed.* Of course, there is a practical limit to the amount of contingency on a project. This limit will be dependent on internal and external organizational “politics”, culture, capital constraints and other factors. A large contingency could cause the budget to impact the viability of the business

case for the project, or it could exceed the owner's guidelines for contingency. When you consider that IT and resource development projects regularly run over budget by 50% or more, the typical 5-10% contingencies are not sufficient.

5. *Examine organizational and cultural incentives to underestimate costs and schedules.* There can be incentives for a project team or business line executives to underestimate project costs and schedules. Well-intentioned but misguided pressure to use the budgeting process as a "stretch" goal exercise, can lead to a double jeopardy. Project leaders might present a rosy picture, particularly when the culture rewards this behavior. Then upper management might take that rosy estimate and adjust it further in an effort to create a stretch goal for the project team.

6. *Use historical data when available.* The availability of historical data may be limited, due to the uniqueness of the project. Whenever possible, a cost estimate should be based on historical cost information, along with applicable productivity factors for the work.

7. *Recognize that the optimism bias exists.* By recognizing that the optimism bias exists, an organization can develop realistic budgets and schedules.

The optimism bias can have a large impact on a project. There are a number of ways to mitigate the effect of the bias, but it is obvious that our current management practices have not yet found a way to control it. There is no guarantee that the above tactics will mitigate the impact of the optimism bias, because it is such a strong human tendency to be optimistic.

Life Lessons

"A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty."—Winston Churchill

In reading this chapter, you may get the impression that I am advocating pessimism, but this is not the case. If anything, life experience has taught me to be an optimistic realist. For example, I have spent a number of years working in the design-bid-build general contracting arena. In that world, you learn that bidding projects competitively against other contractors is a demanding and challenging exercise. If your price is too high, you will not get the work. If it is too low, you will get the work, but too many too low bids will eventually cause you to go broke. The contracting landscape is covered with the bones of overly optimistic bidders who bid too low. For this reason, you do not see too many contractors operate on the philosophy of unbridled and unrealistic optimism.

At times in our personal and professional lives, we need to temper our optimism with *realism*. I was raised in a devout Roman Catholic family, in a religion where divorce was traditionally considered "forbidden". Among my parents, grandparents, aunts and uncles, divorce did not exist. At one time, I thought that my eight siblings and I would be spared from divorce. Based on what I had observed and experienced in my world, it was a reasonable expectation. It is not turning out that way. No, not everyone is going to get married and live happily ever after with the same person "till death do us part."

Our children are not all going to be Rhodes Scholars, and we should not put that kind of pressure on them. I have four children, and no two of them are alike. My son David is in a group home for severely mentally handicapped young adults. On the other hand, my son Michael graduated cum laude with honors. All of my children have their own special gifts. My sister Laura Diamond is mother to 11 children, and each one of them is unique, despite coming from the same household by the same parents.

My father died at the age of 67, instead of living into his eighties and nineties like his father and grandfather did. Although he was one of the more optimistic people I have known, it did not prevent him from getting cancer that ended his life at a relatively young age, in terms of life expectancy. How long do you and I have to live? We don't know.

At first appearances, it seems that optimism and pessimism reside along a bi-directional continuum, with realism in the middle. However, there is a third attitude that resembles neither optimism nor pessimism—fatalism. Fatalistic people believe that their future is pre-destined by God or other unseen force in the universe. Fatalistic people believe that they will die when it's "their time", as pre-determined by the cosmos. Medical research suggests that fatalism can lead to cancer causing behaviors and a shorter life. (10) We know that exercise, healthy eating and smoking habits, are among behaviors that can affect our health outcomes. I definitely do not advocate a fatalistic attitude, and suggest that this mindset will not support you in serving in any kind of leadership capacity or team environment.

Despite the realities of life as it is, optimism is still the attitude of winners. In the above examples, we are illustrating the need to *accept reality*, not give in to pessimism or fatalism. In Chapter 37, I talk more about accepting reality, and how that is a healthy practice. The main point of this chapter is to acknowledge that the primary human tendency is toward optimism, and that is a good thing.

6 LEARN FROM THE PAST

"Live as if you were to die tomorrow. Learn as if you were to live forever."—Mahatma Gandhi

My first job after graduating from engineering school was with Al Johnson Construction. The two large bound notebooks given to me by the company contained job cost histories from over thirty years of projects across the country. These histories made a huge impression on me, and instilled within me the advantages of record keeping. The reports contained a full set of narratives and financial records of major projects, complete with labor and equipment rates. The estimating team used these records for budgeting and goal setting for new projects, and the results from those new projects became the records for the future. Today, of course, companies store this kind of information digitally, which makes it more accessible but certainly no more valuable.

Al Johnson Construction also did time and motion studies on some of its work operations, utilizing time-lapse cameras and work process analysis methods. In a way, these were 'lean construction' types of practices, before the term 'lean' became popular. Al Johnson Construction was a 'learning organization.' The company stuck to what it was good at, and learned to avoid most big mistakes. It used its successful projects from the past as models for those in the future and was in a constant state of improvement. However, like many large civil contractors, its heyday was during construction of the interstate highway system and navigable waterways. They were very good at building dams and bridges with union labor but did not change with the times. I have used some of what I learned at Al Johnson throughout my career.

Learning from the past is crucial to so many areas of our business and personal lives, including sports. During the week, the Green Bay Packers, like every sports team, spent a lot of time reviewing game films from the weekend before, asking themselves what went right, what went wrong, and doing drills and practice. Vince Lombardi often said that he focused on the fundamentals in his coaching of the Green Bay Packers. Football was a game of block and tackle. Like football, operations and projects are a cyclical game of plan-execute-debrief, plan-execute-debrief. When you courageously learn from successful and not-so-successful processes, projects, and procedures, you are on the path of continuous improvement.

Debriefing is a practice that originated in the military. It is becoming more widespread as an operational practice in industry at several levels, and in many forms.

As Ernesto Yturralde, experiential trainer and researcher, explains:

> *"In the field of experiential learning methodology, the debriefing is a semi-structured process by which the facilitator, once a certain activity is accomplished, makes a series of progressive questions in this session, with an adequate sequence that let the participants reflect on what happened, giving important insights with the aim of that project towards the future, linking the challenge with the actions and the future."*

The best projects and operations are now incorporating a daily front line planning and debriefing session in their routines. At the beginning of every work shift, the crew and their supervisor develop a daily work plan. The crew identifies the tasks planned for the day, as well as the hazards, risks, and necessary steps to control the risks. The relatively new practice is to do a de-briefing at the end of the day, to memorialize, internalize and capture the lessons learned during the day. Each day then becomes a learning opportunity.

There are daily learning opportunities, project wide learning opportunities and long-term learning opportunities to benefit from.

Life Lessons

"Learn from the mistakes of others. You can't live long enough to make them all yourself." —Eleanor Roosevelt

The benefit of learning from the past has led to the development of some sophisticated processes to conduct Root Cause Analysis (RCA) and Root Cause Failure Analysis in corporate and industrial environments. My first introduction to Root Cause Analysis in an industrial setting was associated with the identification of corrective actions that help to avoid the reoccurrence of industrial accidents and incidents. If you can identify the root cause of an undesired event, you can implement strategies and tactics to help reduce the probability of the undesired event from happening again.

Outside of my work life, I have learned about four common human psychological processes and beliefs that can affect Root Cause work. These mental processes are widely rooted in human psychology, and it is useful to understand them if one is to effectively learn from the past.

The Fundamental Attribution Error. The fundamental attribution error is one of the more common judgment errors that people make, and the ability to recognize it in oneself can lead to better relationships and a more fulfilling life in general. The error occurs when we interpret events or facts through our own lens, thereby often drawing false conclusions, instead of simply observing the fact or event for what it is in reality, without adding or subtracting to it with our interpretation. Jones and Harris demonstrated the fundamental attribution error in their classic study performed in 1967. In this study, each subject read an essay about Castro, which was either for or against his governance. The subjects formed opinions about the essay writers and whether they did or did not supported Castro. As expected, the subjects based their opinion about the posture of the writer based on the tone of the essay, either for or against Castro. The subjects were re-tested, and told that the writers wrote a pro or con Castro essay based on the flip of a coin. Even though the content of the essay was based on the flip of a coin, and the subjects were aware of this, there was still a strong tendency for the subjects to believe that the writers' opinions of Castro were consistent with the essays.

This kind of attribution error can interfere with the daily lives of those who make it. For example, consider the following hypothetical scenario between two high school girls who were Facebook friends. One of the girls (Girl A) wanted to work on her Facebook photo albums, so made them private—for her eyes only—while she worked on her albums over a week. When her friend (Girl B) tried to look at her Facebook photos, it did not allow her to do so. Her friend (Girl B) interpreted this event and concluded that she had been 'blocked' out of her photo album. In her mind, this may have seemed like a logical interpretation, because the two girls had been in a minor disagreement that week. So, Girl B decided to 'unfriend' Girl A. When Girl A noticed that Girl B had 'unfriended' her, she decided that Girl B was a b—ch, and 'unfriended' her also. That was the end of their relationship—all because of a fundamental attribution error.

The Cause and Effect Fallacy. The fallacy of cause and effect is a common one, and it occurs when someone concludes that A caused B, when in reality A might have been associated with B but did not directly cause it. There are other instances where causes and effects grow entangled in a feedback loop. For example, a wife might be having an affair, the apparent cause of her husband becoming angry and abusive. But maybe the angry and abusive behavior of the husband was a causal factor in the wife having an affair. Now the couple is caught in a cause-effect cycle pattern that might be difficult for them to escape from, and difficult for an outsider to determine what the root cause was.

The cause and effect fallacy can also occur when someone is not prone to take personal responsibility for the outcomes that occur in their lives, as a result of actions that they took in the past. Instead, they have to find something or someone outside of themselves to blame.

The Either/Or Fallacy: The either/or fallacy is when someone looks at a situation and decides that there are only two possible courses of action available in that situation. It is either one way or the other. President Bush famously said after the 9-11 attacks: "You are either with us or against us." Now that may have been statement with some diplomatic intent to sway the opinions of foreign governments, and may not have been a true "either/or" fallacy on the part of Bush. However, this is how an either or fallacy looks. Sometimes people use this false limitation of options as a negotiating tactic, and sometimes people actually only see two options in a set of choices. When we limit ourselves to an either/or point of view, we hinder our ability to find effective solutions.

Fatalism. An attitude of fatalism can prevent us from making prudent choices about the future, and hinder our ability to learn from the past. When I worked for a large international mining company, they were struggling with safety at one of their South African operations. There were many reasons for this, but one of them was the prevailing cultural attitude of fatalism. If someone died in an industrial accident there, the attitude that "it was just his time" was a factor that hampered the ability to perform Root Cause Analyses. I also encountered this fatalistic attitude when I was doing volunteer work in another African country. I learned that fatalism is hindering the change of behaviors that are associated with the spread of HIV/AIDS.

7 BALANCE SCOPE WITH TIME, COST AND ROI

"You can have your cake and eat it too, but if you change scope, time, budget, or expected ROI, one or more of the other ingredients has to change too."—Mike Vallez

I will always remember one of my great mentors and friends, the late Steve Thomas of Odell Associates Architects in Charlotte, North Carolina. I met Steve when I was working for McDevitt and Street Company (later absorbed by Lend Lease), overseeing the construction of The James Center, a large mixed-use project in Richmond, Virginia. Steve was the project manager for the integrated design team, and watching him operate gave me some life-long lessons in how to get things done. The project had become somewhat contentious with the developer, Faison Associates of Charlotte, when they wanted to make some very significant changes in the project. One day, while Steve and I walked together from a parking lot to attend a team meeting to discuss these changes with Faison, Steve gave me a great lesson about project management. As we walked, Steve said to me: "Mike, there are three things you need to always address when changes are made—scope, schedule and cost. You cannot talk about one without also talking about the other two." Steve had suffered an injury in Vietnam, and his left forearm was now an operable hook. What made Steve's comment so memorable to me was how he used his hook to make his point, using his hook to count three fingers on his right hand as he spoke.

It may seem like a simple concept, but it is something that I had not learned in either engineering or business school. You cannot change the scope of a project, without also addressing its schedule and cost implications. Actually, you cannot change any of the three, without affecting one or more of the others. If you are in the shoes of a contractor, the two elements of time and cost are your main concerns. If you are the architect or engineer, you have an impact on time, cost, and design scope. The owner has to consider a fourth dimension—Financial Return.

It is understood that scope, time, and cost will have a substantial effect on a projects financial return. A project owner must achieve the right balance between these factors during the pre-authorization stage. Project modeling, and the application of sensitivity analysis and uncertainty analysis techniques, accomplishes this. Many large development projects become vulnerable to budget and cost overruns due to a lack of feasibility work. In conjunction with the optimism bias, there is a failure to understand the variables and their uncertainty as they affect the project outcomes.

For example, many resource development projects have been "optimized" for net present value (NPV) at least on paper. Owners increase the size and scope of the projects to accelerate the extraction of the resource and increase the NPV. This can work out well for the owners if the construction phase and production phase assumptions are all correct. However, the larger the project, the more exposure there is to uncertainties in the cost, schedule, and production models. Recently, more than one mining company has been brought down, or severely impacted, by very large project write-offs.

Again, here is an area where the agile development approaches might have some application to engineering and construction projects. This would involve incremental steps in the feasibility, design, and value creation stages to minimize risk, as well as provide early returns to the project stakeholders.

Sometimes a project can be expandable and developed in phases to de-risk the development. This is becoming a more common approach.

8 GET AND KEEP THE RIGHT PEOPLE ON THE BUS

"Get the right people on the bus, the wrong people off the bus, and the right people in the right seats."—Jim Collins

The importance of having the best people cannot be over-emphasized. McDevitt and Street Company, one of the best businesses I ever worked for, considered this principle so crucial it was embodied in the top line of their mission statement, which read as follows:

1. *To have the best people*
2. *To provide an environment for growth and self-fulfillment*
3. *Our ultimate goal is to please our clients*

The leadership at McDevitt and Street recognized that they were in the "people business," more than they were in the construction business.

Hire Slow, Fire Fast

Hire slow, fire fast does not mean to fire people carelessly. Hire slow means to take your time and find the right person for the right job. Do not hire the first person who walks through the door. You want to hire the best because you will be living with the decision for a long time to come. Take your time to find the best. Recruit constantly, and keep the names of people who want to work for you in your pocket. Then, when you have an unexpected hole to fill and need to hire fast, that list will help you be prepared! Just like a sports team, you need some bench strength. In business, you create bench strength by constantly recruiting, not by having people sitting on a bench. One of my early mentors shared with me that one of his secrets to success was to keep a list of names of people who want to come to work for you.

In the spirit of Herb Brooks, here are five must-ask questions to ensure that you are picking the right players for your project team:

1. Do they have the skills I need to make the project successful? Because I will be relying on them to do their jobs (so I can do mine), I always look for individuals who have demonstrated that they know what they are doing.

2. Do they have the ability to learn and stretch? I always look for people who are not afraid to try new things, and think "outside the box." I learned a long time ago that collaboration with people of different skills could be very productive.

3. Will they play and work well together? A superstar who is a jerk doesn't help the team. He or she might be highly skilled, or even the best at what they do, but if they do not get along with anyone, I won't add them to my team.

4. Are they willing to take constructive feedback? I don't call it criticism for a reason. Criticism doesn't help anyone, but feedback and honest critique can help a willing learner improve and increase their skills. That includes team leads and project managers. If a potential team member 'never does anything wrong,' they will more than likely have to be 'perfect' on someone else's team.

5. Can I count on them at crunch time? Every project seems to run into times when people need to put forth a little extra effort to make things happen. It seems that

> no matter how well you plan, there are always things that crop up to cause trouble. It's important that we can count on each other to pitch in with a little extra effort when this happens.

Fire fast means this: don't agonize over letting someone go. It does not mean if someone is not working out, that you fire them without consideration. Maybe the person is just in the wrong job. As a leader, you need to take responsibility for it and take steps to fix it. Do not immediately blame the employee without consideration. Turnover is costly to an organization, and maybe the person who made a mistake is more valuable to you now that they learned a lesson.

Of course, if a problem with character, commitment, attitude, or ethics exists, then that person needs to go. However, some companies drag out the decision to fire for months or years. Holding on to people who are not going to work out does them an injustice. Let them go, and move on somewhere else where they can succeed.

There are also times when a 'zero tolerance' policy might justify a summary termination, or at least a suspension pending investigation. I know of more than one contractor who has a zero tolerance for people who work at heights without the proper fall protection in place, or found breaking some other kind of safety rule. It is common practice for many contractors to require drug testing for anyone involved in an incident or accident on a site. Random drug tests have also become common. If you find someone who has illicit drugs in their system, as I have on more than one occasion, it is grounds for immediate termination in some companies and jurisdictions. However, in Canada and perhaps other jurisdictions, employers are required to provide drug abuse counseling to such employees.

The problem of sexual harassment is something that needs to be addressed immediately, and in my opinion, it cannot be tolerated—zero tolerance.

These and other areas of employee relations are fraught with legal ramifications, so my comments are merely to suggest that the catch phrase "Hire Slow, Fire Fast" may indeed have some real world applications. In reality, there a myriad of factors which affect the hiring and termination process, including union agreements, local, state and federal law, and company policies.

Don't Try to Fit Square Pegs into Round Holes

A construction company requires a variety of people to fill the numerous roles and positions, including project estimators, project managers, and accountants. Each of these jobs are best suited to different personality traits. Some people would completely stress out if they stepped out from behind a desk, and others would go nuts sitting at one. I started my post college career as a construction estimator in an office in Minneapolis, and I hated it. After a year of sitting in an office looking at four walls, I was ready to quit. I was single, wanted to see the world, and had a job offer in hand to go to Brazil, to work for Fiat on power lines for the Itaipu Dam. Brazil was a place with a great future, and I wanted to be part of it. I went into the office one Monday and gave notice to my boss. A week later, the Vice President of Engineering offered me a transfer to Alabama for a field engineer's job building some underground mine shafts. My boss knew what he was doing. I loved my new job in the company! From an outside perspective, it did not make sense. Why would anyone give up a nice office job to work down a mineshaft covered in coal dust?

There are numerous types of tests available to help place people correctly. Myers Briggs, DISC, California Inventory, and others, to name a few. Use them, and don't try to fit square pegs into round holes.

Remove the Uncommitted—No Whining!

Before getting into this topic, I should say that it is the leader's ultimate responsibility to create an environment that is empowering and supportive of the personal growth, productivity, and fulfillment of the team members. If not, you will have an environment where 'one bad apple can spoil the bunch.' The first line of defense against the whiner is to inoculate the environment against his or her influence. You can do this by following the set of principles in this book.

A leader cannot indulge in whining and hope to be effective. Because one bad apple can spoil the bunch, you cannot tolerate whining by any members of your team. I am not talking about legitimate concerns made by an employee. I am talking about pure crybaby complaining.

A bellyacher on your team will drag down the other members. Eighty percent of human resource problems come from 20% of your people. It does not matter to the whiner whether they get is negative or positive attention. If they get negative attention, it gives them more reason to whine.

You need to establish a team culture that is not going to pay any attention to whiners. Effective teams police themselves to keep out or shut up the complainers. I cannot tell you what to do with a 'bad apple,' because each case is going to be different. You do need to recognize that one bad apple really can spoil the bunch! So do what is right to protect the team from that influence.

Sometimes you will encounter someone on your team who simply is not sufficiently committed to the project goals and mission. You should remove this kind of person as well. You cannot tolerate apathy or indifference.

Life Lessons

Take a moment and write down all of the characteristics of the ideal person you might hire to do a job. Then take a look at yourself. Are you that person? Would you hire yourself?

Now write down what you look for in an ideal friend. Are you that person? Have you surrounded yourself with positive people? How careful are you about selecting your friends? It is important to think about putting the right people on the bus when it comes to selecting friends. Social researchers, Harvard sociologist Dr. Nicholas A. Christakis and University of California, San Diego, political scientist James Fowler recently teamed up to examine how social networks influence alcohol consumption and other behaviors, to see how social behaviors can propagate within a society.

Based on a statistical analysis of social connections and alcohol consumption patterns, they found that drinking habits, like so many other things, are contagious. "If a close connection (friend, relative, coworker) drank heavily—defined as an average of one drink per day for women and two drinks per day for men—participants were 50% more likely to drink heavily themselves; if someone connected by two degrees of separation (a friend of a friend) drank heavily, participants were 36% more likely to do so.

The social impact of drinking continued to three degrees of separation—that is, if your friend's mom's cousin drinks heavily, you're about 15% more likely to do so too—"but disappeared after four degrees of separation," the study authors found. (11) This point of this study was not to isolate and measure drinking habits, per se. However, ones drinking pattern is an easily identifiable social characteristic with which to measure the phenomenon of 'social contagion'—the tendency of behavioral patterns to 'rub off' between people. The pattern is also associated with the social spread of obesity, smoking, and happiness.

Joel Osteen, preacher, television evangelist and author uses the aeronautical forces on an airplane as a metaphor to describe different personality types to consider when choosing friends and associates. Aeronautical engineers have to deal with the forces of weight, thrust, lift, and drag. These four forces combine together to get the airplane from point A to point B. If there is too much weight, or too much drag and not enough thrust and lift, the plane will fall out of the sky. You need to surround yourself with people who will give you lift and thrust to keep yourself moving toward the highest destiny that you can achieve. Avoid people who are a 'drag' on you.

If you have people in your life that are always dumping their problems on you—asking for you to bail them out of the latest problem, or talking about how bad things are—you need to ask yourself if you are just enabling this person by being there. Choose your friends wisely. Select your friends and associates as you would choose team members for a challenging work assignment or an Olympic contest. Remember, we tend to adopt the behaviors, values, and habits of those around us. Choose 'A' players for friends.

9 BUILD A SUPER-TEAM

"Teamwork is the ability to work together toward a common vision. The ability to direct individual accomplishments toward organizational objectives. It is the fuel that allows common people to attain uncommon results." —Andrew Carnegie

Simply assembling a group of people together in a room does not automatically turn them into a team. First, they need a common purpose, or, 'word map' (as more fully described in Chapter 12). That is only the beginning step in building a team. In his 1965 article, "Developmental Sequence in Small Groups," psychologist Bruce Tuckman described the five stages that most teams pass through on their way to high performance—working as a super-team. He called the five stages "Forming, Storming, Norming, Performing, and Adjourning." The stages of team development apply in varying degrees, depending on whether the members have worked together before or if all members are completely new to each other, and any mix of people from those two groups.

You might think that a fifty year-old study is dated and its theories no longer useful; I can vouch for its validity. Every team I've been associated with in my career, up to and including today, has involved elements of Tuckman's five stages. Here is an outline of his theory, along with a description of your role as leader all the way along.

Forming

The leader plays a critically important and dominant role here: to assemble the team and guide the team in setting goals as described in the Chapter 16, and in creating a word map (as described in Chapter 12). The leader must also make people aware of what their individual responsibilities will be, and make sure that all the tasks necessary for achieving the goal are covered. In general, the ideal size for a work team is in the range of three people up to about twelve. This seems to be the best size to foster team cohesion, creativity, and performance, but there are many exceptions to this rule.

In their 2011 book, "*Tribal Leadership*," authors Dave Logan, John King, and Halee Fischer-Wright examine how people in large companies naturally tend to organize themselves into 'tribal' groups that range in size from twenty to one hundred fifty people. The findings of their research suggests that teams (or crews) within large programs and projects can be organized into groups of teams, or tribes, numbering between twenty and one hundred fifty people. For example, ten teams (crews) of ten people could be organized into an area of a project, with discreet scope boundaries. To put it simply, under this model, the building blocks of a large project would include front line teams with a supervisor, grouped with other teams, working under an area superintendent who would support teams, comprised of a total of between twenty and one hundred fifty people.

According to the observational research in "Tribal Leadership," tribes go through several stages:

- **Stage One:** The stage most professionals skip. These are tribes whose members are despairingly hostile—they may create scandals, steal from the company or even threaten violence.
- **Stage Two:** The dominant culture for 25% of workplace tribes. This stage includes members who are passively antagonistic, sarcastic, and resistant to new management initiatives.
- **Stage Three:** 49% of workplace tribes are in this stage, marked by knowledge hoarders who want to outwork

and outthink their competitors on an individual basis. They are lone warriors who not only want to win, but need to be the best and brightest.

- **Stage Four:** The transition from "I'm great" to "we're great" comes in this stage, wherein the tribe members are excited to work together for the benefit of the entire company.
- **Stage Five:** Less than 2% of workplace tribal culture is in this stage, wherein members who have made substantial innovations, seek to use their potential to make a global impact.

In my team coaching, I encourage people to "See the Greatness in Your Team Members" (as described in Chapter 17). In my personal experience, I feel that a tribe made up of a group of teams (crews), can evolve to Stage Four in about three to four months. This is my observation of construction project teams, coming together fresh from different backgrounds. It takes longer to implement culture change in established organizations, but I do not believe that it has to take up to seven years to implement a culture change in an existing organization, as many observers have suggested. There are processes, technologies, and methods available today that can create very rapid culture change.

In some cases of team formation, assigning tasks and responsibilities may require that you maintain flexibility, especially if there are people in the group you have not worked with before, and if you expect the task load to fluctuate significantly over time. This may seem too simple, but an easy way to quickly make and communicate assignments is with a task matrix. Using a spreadsheet, make a list of tasks and responsibilities in the left hand column on a spreadsheet. Assign names at the top of each column to the right of the task column. Then place a P, S or A in each cell representing who has primary responsibility (P), support role (S) or approval authority (A). It is useful to have full job descriptions for each person with a list of their responsibilities and tasks, but I find that this approach alone does not lend itself to the necessary speed and flexibility. Here is an example of a simple task matrix from a sample project:

Sample Project Task and Responsibility Matrix

(This will change as the team is established)

R=Review, P=Prime Responsibility, S=Support Role, A=Approval

TASK / RESPONSIBILITY	Div Mgr	Area Mgr	Proj Mgr	Proj Engr	Mine Clerk	Tech Serv	Engineer
Negotiate Owner Contract	P	S				S	
Maintain a people environment of growth and fulfillment.	S	S	S	S	S	S	S
Provide assistance and support to Project Manager as requested.	S	S		S	S	S	S
Assure compliance with all environmental, labor, health, and safety and other regulatory requirements.	S	S	S	S	S	S	S
Provide mentoring to other team members on executional excellence.		P					
Serve as a "backstop" on the project, being proactive in avoiding problems before they occur.		P					
Utilize the Tata project as a "model" for future projects utilizing best practices, while creating a library of Project Management process and procedures; form library on the I drive; best practices.		P					
Interview bidders and make recommendations for awards on critical path items with team input. Help set up the project for success.	A	P	S			S	
Stay aware of of project cost, quality, schedule, client and people issues.	R	R	P	S		R	S

Figure 9.1—Sample Task Matrix

If you are in middle management, make sure those above you understand your goals and how you are intending to go about achieving them. You will need their support at regular intervals and all along the way.

During this forming stage, team members usually feel positively about the new challenge and are polite and cordial towards their new colleagues. They are testing out their new roles, each other and, of course, you.

Storming

At this point it is a good idea to explain the Storming concept to your team. You may find your position as a leader challenged. Be proactive and explain that you were expecting it to happen. This can defuse the tension. It also lets the team know this is a temporary phase and things will get better. Share a copy of this book with them. Be aware that rivalries may occur, and try not to show favoritism in any way. Stay firm yet positive, and work on building trust between team members. Having a stable "platform" in place at this stage will help the team make it through this stage. A successful project director or project manager will shield the team from stray demands that might come from upper management. Conversely, the upper management posture toward the team can help or hinder the successful passing through the Storming stage. The following is a prime example.

I had an experience working for a privately held company that had a group of inside shareholders, none of which held more than 20%. The shareholders group was poorly aligned, and there was disagreement between them as to how the project was to be organized. In particular, my boss (who was a shareholder) wanted me to carry a message to my team that he was revising the project incentive formula in such a way that it would drastically reduce the anticipated bonus for the people on my team. The job profit was starting to look so juicy, it would mean that the managers on my project and I would be making more than my boss would.

As you might expect, I had several issues with this change to the incentive plan. First, as the project director and team leader, my people rightly expected me to be their advocate, not the one to bring them that kind of bad news. For my boss to ask me to carry the message regarding that kind of news was a team killer, right in the middle of the Storming stage. Second, changing the rules of the game under these circumstances did not pass the ‘smell test’ for me. The team worked hard to get the project into that kind of great financial position, and it was simply unfair to take that away. The de-motivating effect of this would be noticeable. Third, we were working in a small industry where people knew each other, and certainly the people within the company all knew each other. People talk, and these kinds of things affect company reputations. Cutting the incentive formula might have looked like a smart short-term plan for my boss and the other inside shareholders, but that kind of move can literally kill a company.

Because my attempt to advocate the interests of my team was falling on deaf ears, and I could not support the ‘haircut’ to the incentive plan that was being proposed, members of my team began discussing the incentive plan directly with by boss and others in the shareholder group—and I did not stand in the way. Eventually, I was fired from the company, I was told, for my lack of leadership abilities. The assessment was true. I had failed to achieve alignment between those above me and the members on my team. In hindsight, the problem was with the design of the company incentive plan to begin with. Incentive plan problems are common, but once you put one in place, they are difficult to change without negative consequences.

While team members now understand their responsibilities at this stage, they have been working together for a while and are feeling more secure in their position. Differences in personal work styles may begin to surface, and they are less likely to be accommodating towards their team members, given the slightest cause for friction. People might prove to be totally incompatible, and unwilling or unable to resolve their differences. Some of them might ride roughshod over others in a bid to get the attention and favor of the leader. Some might be working for the first time with someone with your style of management, and may have trouble getting used to it. If any of the grumbling or discontent reaches the ears of upper management, you will be rewarded for having their support in place.

As I have experienced, Storming is often the 'make or break' part of team development. Help everyone get through it as quickly and peacefully as possible. Get alignment above and below you on the chain of command. If you cannot, keep your resume fresh!

Norming

Gradually, the team works its way into the Norming stage. People begin to resolve their differences, appreciate colleagues' strengths and respect your authority as a leader. Information and help are shared more freely, and as trust builds, people begin to share feedback between each other. They may even begin to socialize outside work hours out of genuine liking for their team members. The goals and objectives of the project become shared goals with stronger individual and group commitment to the team goals.

Now you are well on the way to success and should carefully delegate more authority. Continue to be available for coaching and guidance whenever needed. You need to speak to people's higher aspirations and lead from the heart.

Performing

Now your super-team is firing on all four cylinders. All parts of the operation are running smoothly, and there is progress towards the goals you set with a minimum of friction. You can delegate even more of your work, and begin to think of what will come next when the project is successfully completed.

Adjourning

When a project is reaching completion, some members may have difficulty keeping their minds on the present tasks, perhaps thinking more about the next project that they will be working on. Some of the people who were hired just for this project may worry about where they might find their next job.

It is an extremely rewarding experience to work as part of a team on a successful project, and team members may have created personal bonds with people who became part of their lives. Realizing that it is ending can be difficult for people. Make sure everyone is informed of day-to-day progress so their last day at work doesn't come as a surprise.

Make sure you take time to recognize the team's accomplishment and celebrate its achievements. It can be something as simple as ordering in pizza, and having everyone get together to reminisce about their favorite parts of working together. That way they walk away with a good feeling, and should any of those team members work with you again, you are already off to a great start.

Nearing completion of a geothermal power plant project in Hawaii, I wanted to give something to the entire team that would be an expression of my gratitude for a job well done. While doing a project walk-around, I took a photo of everyone at his or her job. We had welders, riggers, ironworkers, pipe fitters, laborers, helpers and operators. My office assistant wanted to be involved, so she took all of the digital photos of everyone on the job and made them into a video show with music. Then we gathered up for a 'special meeting' in a training room. Everyone thought they were there to see a training film, and no one but my assistant and

I knew what was coming. The team sat patiently as we started the film, yet when they realized what it was, they started letting out whoops and yelling nicknames when every new face came up on the screen. When we gave everyone on the team a copy of the CD, I received many comments that no one had ever done anything like that for them before, and they could not wait to show it to their families and friends back home.

At the end of every project, there is an inevitable winding down of the size of the crews. This can be a difficult time for everyone. Early in my career, I noticed on some projects that the work seemed to slow down toward the end, especially if people knew that there was not another project to proceed with. On the Hawaii project, I did something that no one had experienced before. The day after giving everyone the music CD, I talked to everyone in a team meeting on the construction site where we fed everyone lunch. Here is what I said:

> *"We all know that it's getting close to the end of the project. As I said yesterday, I appreciate all of your hard work and dedication to this project. Now, this can be a difficult time after making new friends and coming to a close. On most projects you have been on, you probably did not know when would be your last day until a foreman or superintendent walked up and gave you a pink slip. Even though it has surely happened to you before, being laid off can bring back feelings we have had since we were kids. Kinda like standing in line on the playground while two appointed captains chose kids out of line to be on their kickball, soccer, or football team. Boy, you never wanted to be the last one picked. But in my case, I was a late bloomer and a small kid, so I was not very good at the contact sports and often was chosen last. So none of you want to be the first to get a pink slip, I know that for sure. We are going to do things a*

little different here. You have been working with your foremen on your look-ahead schedules, so you all know what tasks still need to be completed in your work areas. I trust you as men and women to do your best until the end. So, when you believe you are all finished with your work here, talk to your foreman about it. See if there is not some other task that needs completion, and if not, we will first look around the company for other opportunities. Then if there is not another project to place you on, we will give you a lay-off."

As the manager, I approved every lay-off on the project, but in this case, the process started on the front line. Everyone took responsibility for their own lay-off date. It did a lot for them, and it did a lot for the supervisors and me. Everyone on the project worked hard right to the end to give me a strong finish.

It takes time and practice to put together a well-functioning team, but the effort will produce results that are far greater than the sum of its parts. Think of it as a supercomputer, where multiple processors work on different parts of the program, with each processor using its own operating system and memory.

Figure 9.2—Parallel Computing

In massively parallel processing (MPP), up to two hundred processors can work on the same application. You'll rarely have that many members in one team, but substitute 'brain' for processor, 'objective' for program and 'skill set' for memory, and you'll get the idea.

In 1980, a U.S. team made up of college hockey players beat a previously undefeated Soviet team to win gold at the Olympics. This team of unknowns, coached by Herb Brooks, certainly did not start out as a dream team.

"I'm not looking for the best players," said Brooks. "I'm looking for the right ones." Coach Brooks was not looking for individual superstars as much as he was looking for a team that could play well and win together—which they did.

Brooks was famous for saying, "Legs feed the wolf." In other words, wolves eat if they are better able to chase down their prey—victory does not just drop in their lap. Successful teams share a willingness and commitment to work hard and give their very best, right to the end.

Self-Directed Teams

There is a growing body of thought about the virtues of self-led, or, self-directed teams, and I would like to share a few clarifying thoughts about that here. Sometimes it seems that certain words or catch phrases are introduced into the management lexicon to help convey an idea or concept in as few words possible or to help brand an idea into something that sounds new or different. I believe that the idea of self-led teams falls into that category, even though I agree that it is a good term, if its effect is to move leaders in the direction of giving greater autonomy to teams. However, the term by itself, without any elaboration, might lead one to believe that a utopian ideal is possible, whereby a group of people can be set aside to manage themselves in an egalitarian and leaderless way, and their performance outcomes will surpass what is possible under any other human form of organization. My observation and experience does not support this notion.

The mere formation of a group of this type within an organization would not be possible if it were not for a manager or leader outside of the group, making a decision to assemble a group of peers into a self-lead or self-directed team. A self-led team could exist, but someone had to lead them into that arrangement to begin with. My experience is that when a peer group assembles to work together, one or more people evolve into a leadership role within that group, whether by consensus, assignment, or assumption of leadership. This is human nature, and a good example of this is found in the novel-turned-movie, '*Lord of the Flies*,' written in 1954 by Nobel Prize winning author, William Golding. In this fictional novel, Golding writes about a group of boys who become marooned on a deserted island in the midst of an unspecified nuclear war. Themes of the novel include the human quest for power; the human tendency to be led; the formation of institutions, and the conflicting tendencies between groupthink and individuality. This group of boys did not remain leaderless for long, and two factions arose. When the pilot, Captain Benson, eventually dies, all hell breaks loose and violent leadership struggles ensue. With the absence of adult presence or supervision to control the situation, the dark side of human behavior bubbles to the surface.

There are valuable elements associated with creating self-led teams. For example, many very successful organizations rely on the evolution of best practices and innovations evolving out of the ranks of the self-led rather than having all directions coming from the upper chain of command, or 'experts' from headquarters. When cross-pollination of ideas within and across teams is encouraged, creativity thrives.

In real practice, even proponents of self-led teams acknowledge that they start with a leader, who gradually loosens controls and direction, just as in Tuckman's five developmental stages of small groups, as described above. I believe that there is an appropriate context for the self-led paradigm. In Chapter 11, I discuss the importance of broad and deep involvement. I also discuss the servant-leader paradigm in Chapter 39. Chapter 34 discusses the importance of choosing the right management style—directing versus delegating—depending on the skills and experience of the person or team. Not all people, organizations, and types of work lend themselves to introduction of self-directed teams. An assembly line of people putting on bottle caps (a fictional example, I know), is quite different from a Boeing 747 assembly operation.

I often hear some leaders discuss the importance of getting employees to 'buy-in' to management's ideas and initiatives. However, after conducting worker involvement exercises across a number of environments, I have been impressed with a stark realization. Where I have seen the most outsized organizational performance is in environments where the table is turned, and where 'buy-in' goes two ways. In some cases, it is appropriate for management to buy-in and support the needs, ideas, and initiatives that arise from the structured involvement of employees from every rank. This, to me, is the essence of the meaning found in the terms 'self-led' and 'self-directed.'

Life Lessons

Just as a leader carries the responsibility for building, managing, and leading a functioning team, the leader must have a mind that is capable of managing his thoughts, actions, what he says and does. To develop your skills as a team builder, volunteer to assume leadership roles in activities outside of work, in your community, church, school or family. Work hard to develop a mastery over your own mind and body, trying to always do your best, and set an example for those who you would lead.

Steve Jobs is considered by some to have been one of the greatest business leaders in the last one hundred years. His leadership principles have influenced a couple of generations of leaders in the business world, and the innovations that he generated have made an indelible mark on our way of life. One of the things he often talked about was the importance of building a strong team comprised of highly talented people. There is a tendency for some managers to hire people who are slightly less talented than they are themselves. It goes like this: B players hire C players and C players hire D players. In Silicon Valley, this is known as the 'BOZO explosion.' To avoid the 'BOZO explosion,' hire A players because true A players hire A+ players to work for them. If you want to have a truly exceptional team, hire people who you think are better than you are! It is difficult for someone with low self-esteem or lack of confidence to hire people that are better than they are. To build a foundation for a successful team, you must start with a foundation of high self-esteem and confidence within yourself.

PART III
PLANNING

10 PLAN YOUR WORK AND WORK YOUR PLAN

"Reduce your plan to writing. The moment you complete this, you will have definitely given concrete form to the intangible desire." —Napoleon Hill

Planning is critical to the success of any program, project, or initiative. The early planning of a project involves the balancing of scope, schedule, budget, and return on investment. There are a host of planning and scheduling tools available, as well as numerous courses on how to schedule a project and use the software programs to your greatest advantage.

Many factors contribute to schedule success or failure, and I will start out this topic by reviewing some of the more interesting projects in which I have been involved.

Megaproject Success: Underground Mine

Anaconda Mining Company developed the Carr Fork Copper Mine in the late 1970's, and it was at the leading edge of the widespread use of computerized scheduling methods. The project involved many segments, including four mine shafts that were four thousand feet deep, miles of underground tunnels (called drifts), underground rail haulage, a crushing station, ore hoisting facilities through a production shaft, surface conveyors, a secondary crushing plant, a beneficiation plant, rail load-out facilities, and all the other components to build a modern, underground copper mine. CPM scheduling was used to help guide the project through a complex set of development activities, to sequence the work using 'late start' methodologies, and to minimize the capital financing cost of the project. Every late day on the schedule was worth $350,000 in net present value to Anaconda Mining Company, and everyone on the project knew this number. As activities progressed either on schedule or off, the schedule and work priorities were adjusted to maintain the shortest path to project completion and commencement of commercial copper concentrate production. This project was world class, featured on the front cover of the Engineering and Mining Journal.

During the last two months prior to actual production from the mine and concentrator, there was a flurry of activity on many fronts. At one time we could count no less than five 'critical paths' on the project. The staff and miners were working overtime to make the goal. People were working long hours, and stretched thin. It occurred to me at the time that the appearance of multiple critical areas near the end of the project resulted from the expert use of the CPM method of scheduling; as paths became critical, they were successively "compressed" until another path became critical. To minimize the financing cost of the project, no major activity commenced earlier than necessary. This technique is possible and useful when the decision drivers are within the owner entity and the benefit of 'late start' scheduling has financial benefits. However, in situations where the contractor is the decision driver, it can be risky to delay activities to their 'late starts,' particularly where there are penalties for late completion. On the other hand, when the time value of money is a major factor in achieving a desired ROI on a project, the owner should allocate the financing cost against the project in order to incentivize the project staff to minimize those costs.

This project was well led, and all decisions regarding the project were made at the project level by the mine/project manager running the project. One of the other success factors of the project was that there was an engineering staff on site to handle some of the design of key underground and surface infrastructure, while the design of the mill and major processing plant was done off site.

Successful Fast Track: Multi-Segmented Urban Project

The James Center in downtown Richmond, Virginia, was a large private development project constructed by McDevitt and Street Company for Henry Faison Associates of Charlotte. In 2014 dollars, it was a $500 million project, with a peak workforce of five hundred workers. Although McDevitt and Street was a highly capable general contractor, we hired a third party scheduling consultant to visit the site every two weeks, hold a scheduling conference with all the key subcontractors and contractor team, and provide a complete update to the schedule. This served several purposes. First, it assured that a schedule was updated on a regular basis. It also provided third party objectivity, and it gave both the client and contractor management a comfort level that there was an additional level of expertise and oversight brought to the complex project. Sometimes, in the midst of a highly charged and complex project, it can be difficult to see things objectively when you are in the middle of what looks like organized chaos.

Timely project completion was pivotal to a cascade of many corporate and commercial moves and lease agreements. It was important to maintain a sense of urgency to assure that the project was completed on time. Nine months before the scheduled completion date, the owner scheduled a black tie gala—a grand opening celebration that included an elegant meal, live classical music, and a circus at the center of the retail gallery inside the complex. The circus was complete with elephants, a spherical motorcycle cage, tight ropes, trapeze, and other circus acts to entertain guests who paid $250 per ticket to benefit the local arts community. This event was a creative use of goal setting for the entire set of trade contractors, suppliers and tradesmen who were involved in the project. Although there were a few punch list items remaining at the time of the grand opening event, none were visible to any of the guests. The project was completed on time. The final project cost, with changes, came within 3% of the original GMP (Guaranteed Maximum Price) budget for the project. It was a commercial success for all parties involved, adding something of value to the Richmond skyline and downtown business community.

Successful Power Plant Shut Downs for Environmental Upgrades

Power plants, just like oil refineries and other process facilities, require occasional shut downs for maintenance (called turn-arounds in the case of refineries). These facilities are usually operated on a continuous process basis versus a batch process. Planning for these projects require a long time horizon. Power plant shut downs must be coordinated with their associated North American Electric Reliability Council (NERC) Regions well in advance, to assure that electrical reliability on the grid is maintained. The engineering, procurement and planning must be done well in advance to assure success. The Huntington and Hunter power plants near Price, Utah, each required a 60-day shutdown to complete the change out of electrostatic precipitators to replace them with pulse jet filter fabric baghouses, the new technology for removing particulates from coal fired power plant emissions. The execution plan developed by Pacificorp was one of the keys to success of these projects. They hired an engineering firm to evaluate the engineering needs and prepare the EPC scope documents for competitive EPC contractor teams. These scope documents included P&ID drawings, general arrangements and general specifications, equipment specifications and electrical single lines. These documents were issued for bid and an EPC contractor was selected. In the process of awarding the EPC contract, the contractor and its design team members had an opportunity to review the contract's design concepts with the owner and its specifying engineer. There was some give and take during the negotiations, and the design issues were resolved in the award process. Once the contract was awarded, the contractor and its engineering team moved ahead with full authority within the parameters set. To prepare for the actual 60-day shutdowns, a significant amount of pre-assembly work was done on the site to minimize the amount of work to be done during the shutdown.

Timely Public School District Modernizations

A major school district with numerous buildings needed to upgrade and renovate its facilities to meet current standards. As with most schools, the district operated its program for nine months out of the year, and the summer breaks provided the only time that key renovations could occur.

Meeting this tight schedule condition required an extreme level of discipline and rigidity in the sequence of pre-construction activities including design, reviews, contracting, procurement and mobilization. Every step in the design process for each phase of each building project was painstakingly detailed in a CPM schedule, including the exact dates and number of days allowed for the owner review of schematic designs, design development, and the 99% drawings. The construction manager also reviewed each phase of the designs for constructability, schedule, and cost confirmation. Everything had to meet a pre-determined budget. Weekly team meetings kept the process on track. When and if any team member failed to meet a date in the pre-construction schedule, the miss was met with a great deal of attention and the accountable party was expected to have a good explanation for the miss. In practice, there were no acceptable reasons to miss a date because everyone was involved in creating the schedule. The contact between the owner, architect, and construction manager had clarity and teeth with respect to schedule performance. There was a lot at stake. If the work could not commence on the day after classes were dismissed for the summer, it would have an impact on an entire community, in addition to the reputations of an elected school board and all of the administrators of the district.

By having weekly team meetings and a cycle of accountability, the pre-construction schedules were met.

A Compressed Schedule for a Geothermal Power Plant in Hawaii

The island of Hawaii is an ideal place for building a geothermal power plant. The Mauna Loa volcano is active, and the geothermal gradient is high. I had the privilege of serving as the on-site project manager for a geothermal project there. Upon mobilizing to the site, the owner compressed the schedule by three months, when we already had a tight deadline to meet. As a result, we had to change the entire project plan by adding workers, supervisors, equipment, supplies, and tools. We had to schedule more overtime work, and that had an impact on productivity. By using earned value concepts to keep track of progress on the mechanical piping installations, we were able to predict in the middle of the project that we would not finish on time, even with the enlarged crew because of the overtime and weather (rain) impact on productivity. We were able to recover by hiring additional welders and fitters, as well as additional welding rigs and JLG Lifts. This was a classic case of why it is often essential to monitor project progress by using multiple measures and metrics.

As a result of our re-planning, execution and team motivation, the project finished ahead of time, and the turbines were turning in time for the owner to achieve its deadline to produce electric power.

Cost Planning

So far, I have written about examples of schedule leadership and construction phase performance in this chapter. Some of the keys to controlling cost lie in the project planning and design phase, where the project scope is defined. This is illustrated in Figure 10.1, the Cost Influence Curve. Once the design is complete and major construction starts, the remaining cost variables are associated with the cost of time dependent job costs and project overheads. The contractors who succeed are the ones who can control their schedules and complete projects on aggressive timetables.

The owner and designers are largely in control of what a project ultimately costs. In Chapter 4, 'Look before You Leap,' I address the issues of planning, scope definition, and feasibility. The details of cost control and tracking are well covered in the PMBOK and numerous sources, so what is needed here is a discussion about some of the leadership issues surrounding the planning and execution of cost management.

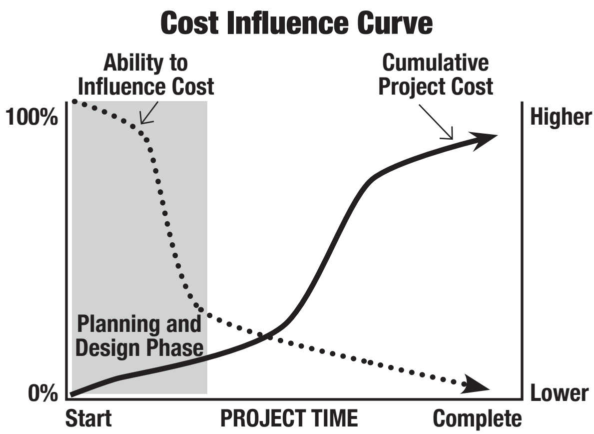


Figure 10.1— Cost Influence Curve

The cost control function serves a number of different purposes and plays different roles for various members of the project process. Owners, engineers and consultants, contractors, sub-contractors, all might have different objectives and needs from the cost control function on a project. Some of these functions include the following:

1. Create records of actual project costs by element for use in historical records and for use in benchmarking for future cost estimates.
2. Provide 'check estimates'—cost forecasts—at various times during the project feasibility, design, and pre-authorization stages to allow decision makers the information needed to move the project to the next stage gate in the process.
3. Provide a system for enabling the forecast of final project cost at completion.
4. Provide a system for modeling "what if" and alternative scenarios to develop strategies for minimizing the cost at completion.
5. Provide a system for tracking costs committed to contractors and vendors, and validate new periodic invoices for those contracts and purchases.
6. Provide a system for measuring field construction productivity and providing feedback to the supervisors and construction crews.
7. Provide a means of verifying the quality and accuracy of the original cost estimate to enhance the quality and accountability within the cost estimating function.
8. Create a record keeping system for tracking changes in the project scope.

9. Serve as record keeping of project cost as it relates to terms and conditions of the contract between owner and contractor.
10. Provide data for the preparation of contractor invoices to the owner.

Larger and more complex projects have a greater number of stakeholders and participants in the cost control function, and it is essential to develop a plan and 'blueprint' of how the cost control function will address all of the above objectives and needs of those various stakeholders. Sometimes these objectives are in conflict with each other, and it is essential that someone in the organization be empowered to arbitrate and decide how those conflicts will be resolved. There are too many various kinds of situations and environments to be able to suggest any hard rules about this.

Some Best Practices

Projects can involve a couple hundred activities for a small commercial project, to many thousands of activities for megaprojects.

Get everyone involved in the planning process. It's a lot of work, but it pays off during the execution. Develop the overall schedule with the end in mind, a process called 'pull planning.'

For short term scheduling of work in the field, the best practice is for supervisors to develop two—or three-week look ahead schedules in collaboration with their front line workers in their respective work areas, identifying the people, materials, tools, and equipment they need. This information is passed up the line for support action as needed. Task planning and look ahead scheduling are cornerstones to successful field operations. Planning is part of the job of succeeding, not just a sideline.

Get good at planning, and you'll fly with the eagles. Below find a very simple look ahead plan sample. For a more detailed understanding of a look ahead and weekly work planning, there are a great number of published papers and articles on the web about this topic.

SAMPLE LOOK AHEAD PLAN Date: Client:

Job # : Project:

Month :

Date :		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	ESTIMATED	
ACTIVITY	CREW SIZE	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	MANHOURS	COMMENTS
030 conveyor belt			x	x	x					x													90	commisiom
032 conveyor belt				x	x					x													40	Complete
transfer #1																								complete
Transfer #2																								complete
Transfer # 3																								complete
Transfer # 3 concrete front wall																								complete
crusher concrete (10 piers)																								complete
crusher grouting																								complete
crusher steel			x	x	x																			complete
Truck crossing concrete																								complete
122 conveyor			x	x																			20	complete
Truck crossing under pass																								complete
under ground commisioning			x	x	x	x	x			x	x	x	x	x									200	unknown
demob from under ground					x	x						x	x										120	
install fire and dust pipeing			x	x	x	x	x	x		x													60	complete
install ground montiors			x		x																		50	complete
Demob			x	x	x	x	x			x	x	x	x	x			x	x	x	x	x		450	equipment and office trailers
misc. things as they come up						x	x																75	reinstall hopper on sec crusher
TOTAL MANPOWER REQ	0	0	15	15	15	15	15	0	0	7	7	7	7	7	0	0	5	5	5	5	5	0	1,030	
Tools Needed																							Materials ne	4th load out pickup and pumps
admin					55								55						55			##		6th load out taho and pickup
																								20 load out pickup and welders
																								22nd demob dry
																								25th demob office trailers
																								28th completely demobed
																								move furnishinf out of offices by the
																								22nd

Figure 10.2—Look Ahead Schedule

Life Lessons

During our early years in life, we all seem to progress along the same path and experience the same milestones along the way. Although most of us cannot remember it, the day we took our first unaided footsteps was a major advancement toward greater mobility and independence. The first day we left home for school was a milestone for us and our parent(s). At that time, we started to create long-term memories and started to look forward to moving from grade school to high school. Then we could not wait to turn 16 so we could get our driver's license. When the newness of that grew old, we looked forward to graduating from high school, having financial independence with a job, and our own place to live independently from our parents. Then the reality hit us. Some of us found out that life was not as easy as it looked, and we started looking for new answers. Sometimes we made mistakes and learned from them, and sometimes we made the same mistakes more than once. We found ourselves in the position of having to make adult decisions with a teenage mind.

Growing from adolescence to adulthood is not always easy, and some get off track. Here is where the separation between the 'men and the boys' really starts to happen. I can vividly remember witnessing this during my freshman year in college. The freshman chemistry class was known as the 'weed out' course at Michigan Technological University. A few students always packed their bags and went home after the first chemistry exam. Another group made it through their freshman year, but then the college parties and fun took precedence, which forced them out of the race during their sophomore year. College is not for everyone, and I am not passing judgment on those who chose a different path. In fact, some of the most successful people I know have never gone to college. College is not a marker for success or intelligence.

The point is this. If you are not following a life plan that you are passionate about, you will drift along like a hot air balloon on a calm day. You don't want to get to the end of your life and wonder what happened. Ask yourself what is important to you, and plan on spending a proportionate amount of time on your priorities. Start with family and loved ones then look at work and community. Do you plan your time to focus on your priorities, or does life just 'happen' to you? If so, it's time to make a life plan, set some goals, and work toward them.

11 INVOLVE EVERYONE

"Without involvement, there is no commitment. Mark it down, asterisk it, circle it, underline it. No involvement, no commitment."—Stephen Covey

For any mission to be successful, you need to involve everyone at the right time and in the right way. I have mentioned this indirectly in other chapters, as it's one of those principles that appears repeatedly in different guises. I'm recognizing its importance by giving it its own chapter.

So how do you do it? It depends on what stage of any given project that you are in. At the very beginning stage, when a corporation is planning a capital investment, it is crucial for everyone in the organization to understand exactly what their responsibilities are, so they can participate appropriately throughout the execution of the project. One of the identified weaknesses of the project management systems in use today is the lack of role clarity and involvement of the governing boards and upper management. This affects the clarity of delegation, which is so vital for project success. The roles and responsibilities of each of the following parties should be made clear to them prior to commencement of the project.

- The Board of Directors
- The Chairman of the Board
- The CEO
- The CFO
- The Executive of the User Group
- The Project Governing Board
- The Project Manager
- The Technical Managers

- The Construction Team
- Others as Needed

It is important to have executive level sponsorship and involvement in projects of significant size relative to the organization. As noted at a recent conference of the Society of Petroleum Engineers, Abdulrahman Al-Jarri, from Saudi Aramco, shared the "10 Pillars of Success" that drive his company's approach to large-scale developments (12):

- Integrated teams are critical to the success of a project.
- Human resources are involved in the early planning stages.
- Executive sponsorship of a project reflects the commitment of the company's leaders.
- Team continuity is achieved by keeping management personnel in place throughout the project which improves performance.
- Contracting strategy with contractors, vendors, and service providers helps to maintain the project on track.
- Common goals are developed with design, contractors, and manufacturers.
- Chief executive officers of the companies involved in the project meet regularly.
- An improvement culture is built from lessons learned in previous projects and their application to future projects.
- Benchmarking is used to evaluate and improve performance.
- The implementation of best practices ensures efficient and effective delivery of the project's goals

A large corporate project investment requires a set of decision licenses identified, and the sequential checks and balances built into the project process. The PRINCE2 project management structure is strong in this area and should be consulted during the establishment of the project flow and approval protocols. The PRINCE2 project management structure provides clear steps for continuously evaluating the business case of a project along the path of project development.

Here are some examples of employee involvement at various stages of project execution from my personal experience.

McDevitt and Street Company (eventually absorbed by Lend Lease, one of the top ten global general building contractors in the world, with 2007 revenues at $5.7 billion), involved all two thousand of its employees in its annual strategic planning process. Every September, everyone in the company's twenty-one divisions completed an internal survey, including a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis. The corporate planning director aggregated these surveys for each division and distributed it back to the employees in that division. This was not a time-consuming process. It required an hour here, an hour there, until the time of the division-planning weekend in January. Division staff employees met offsite in a resort setting for two and a half days. There were optional activities planned for the spouses during the meeting times. Both the region manager and Bob Street, the CEO, attended these meetings, and there was an agenda to cover the main issues, challenges, opportunities, and clients of the division.

At Adolfson and Peterson, every single employee in the company was invited to participate in an 'operational excellence' committee. These committees included human resources, safety, scheduling, quality, and sales and marketing. Because the company had multiple locations, there were committees at each division office. Each committee determined its own direction. The human resource committee I chaired met weekly for a short update, and had a monthly lunch meeting off site. The committees were given relatively free reign to recommend and implement various initiatives. There was some peer review, oversight and coordination between committees on a periodic basis.

At URS Corporation, a fifty thousand employee engineering company, the company asks a random 12% of its employees to complete a "Great Place to Work" survey every month. The line managers are given the survey results to review and create action steps to address any concerns that appear in the surveys.

The success of these companies shows the power of involvement. Every employee at every level saw and felt the power of participation, and they were able to see the benefits of applying the principle at their level of the organization. Even if you are working at a company where participation is not yet the norm, you can still use the principle of participation in your sphere of leadership influence, as in the following examples.

At Al Johnson Construction Company, my first employer out of college, every project had a monthly safety breakfast and meeting, which lasted all morning on the second Saturday of the month. Fieldwork was suspended on that day, giving the workers an extra day off.

In another example, I used involvement to help turn around a troubled situation at the construction of a geothermal power plant in Hawaii. One week after the start of the project, the owner shortened the contract schedule by two months. To complete the project by the new deadline, we had to double the original manpower and equipment. Doing this on a remote island in the middle of the Pacific was a challenge for everyone on the team, because the skilled welders, fitters and ironworkers we needed had to be immediately recruited from the mainland. It was a scramble, and I quickly saw that the task was above the capabilities of my superintendent responsible for field activities.

A couple of near-miss accidents had occurred, and we started to run out of critical field parts and supplies. There were a couple of incidents of insubordination—conflict between foremen and their crews—and the hands were becoming extremely frustrated. Tools and equipment were breaking down, and productivity was beginning to take a big hit. It was easy to see that people were not productive. I knew that I had to act decisively, and fast.

I have learned that safety was a driving force in every aspect of operational performance. So, when I faced these performance challenges in Hawaii, I started by addressing the safety issues and utilizing the power of involvement. On a Saturday morning, I announced to the entire crew that the following week was going to be dedicated as 'safety week,' and I outlined to them some of the structured activities we would have over the course of the week, culminating with a dinner banquet on Saturday night.

On Monday morning, I again met with the entire team and asked for their help. I told them that one of the biggest challenges I always faced was how to bring a group of people from different backgrounds and experience levels together to create a cohesive safety culture on a project. This project brought together an extremely diverse mix—Navajos, Hispanics, Native Hawaiians, Pacific Islanders, and Caucasian of both sexes. I shared with them the values I held, including my belief that the one doing a job knows best how to do the job. Acknowledging that, I asked them to take on this challenge with me: create a project safety culture as quickly as possible. I called it the 'safety challenge.'

I spoke to the team from my heart. I opened up a direct dialogue with them about 'why safety?' In an open discussion, the group came up with the following reasons why safety was important:

- Loved ones count on us to come home in the same condition that we left.

- Americans place a high value on life and limb. We hear stories from American battlefields where soldiers have risked their lives to rescue a fallen comrade.
- Working in the trades, we rely on our fingers, arms, legs, minds, and bodies to earn a living, and do the work that we love to do.
- It is the law, and our actions are governed by OSHA, MSHA and other regulatory entities.
- There are people serving time in prison for failure to do all that they can do to create a safe work environment.
- Our clients demand safety of us, and if we do not maintain it, we will be excluded from working at many locations, thus affecting our ability to provide continued employment opportunities.
- The financial cost of accidents is severe, and we want to maintain our company in good financial health.

Then, by handing out a couple decks of cards, I broke the entire workforce down into groups of four, and asked each group to collectively answer a survey with the following questions:

1. What can we do to bring people together from various backgrounds, experience levels, and attitudes, to create a highly committed common safety culture on the job?
2. What are the things that we need to start doing as individuals, and as a group, to make this a safer project?
3. What are the things we need to stop doing as individuals and as a group to make this a safer project?
4. What are you missing that would make your job easier?

The results of this survey were remarkable, so remarkable that I have listed some of them here. Look them over and see what the power of involvement can produce.

(The following responses remain un-edited for the sake of authenticity.)

First question: What can we do to bring people together from various backgrounds, experience levels and attitudes to create a highly committed common safety culture on the job?

- Respect others background and where they are from. Respect one another in and out of the job. Learn from one another because we learn new things every day. Treat people how you would like to be treated. Always give a helpful hand when needed. Respect their culture, religion, and sex. We all come from different backgrounds, but we all are here for the same reason: to finish this job safely!
- It's important to obtain a very clear understanding of safety procedures on the jobsite and be able to comprehend the job that is being performed. It's also critical for those with a diverse ethnic background to have translator, if they can't speak English well, among the different crews they are working with so that they can have English language translated to have a better understanding of safety protocol and job descriptions. It's also a great asset to the company and employees when highly competent individuals are hired to perform a job as these types of people are very aware, alert, and enforce safety for everyone. Enthusiasm, teach new employees with diligence, be eager to work and learn new tasks each day.
- Be willing to have an open mind, willing to change, like to work with others, willing to be a brother's keeper. Share one differences and cultures. Be willing to share safety information with others.

- Keep an open mind to learn new things regarding work and safety regardless of background, ethnicity, and experience level. Seasoned hands can learn new things every day as well as green helpers. Everyone can and must learn and share different things to keep the industry alive. Keep open communications. Language barriers can be a challenge. Be sure everyone involved in a particular task is clear on what is happening. There are usually enough bilingual people to help translate if necessary.
- Communicate the job that's coming up. Discuss amongst yourselves each person's part and how they're going to perform it safely. Offer help to one another without having to be asked. Remember all of us are important to a task weather person or boss. Be willing to listen. Don't take criticism personally. Make sure you understand what the other guy is saying.
- Communication, be open minded, respect. Love. Aloha. Have a safety program so people that are not knowledgeable about safety can learn safety.
- The whole crew needs to communicate and plan their job. Make sure everyone understands and works together on the plan. Get to know each other. Journeymen should be willing to teach the younger guys and help them become better craftsmen.
- Safety dinners are good and bring people together to visit outside of the work place. Respect of others and property on job site and good communication between all in the workplace.
- Ask questions about traditions and work ethics. Treaty co-workers like family, treat people with respect. Don't make racial comments that might offend others. Keep an open mind and open yourself to constructive criticism,

take time to get to know each other. Don't spread rumors about others.

- Effective communication, learn about safety, follow instructions and safe practices, plan job tasks and look for hazards prior to beginning work. List and respect others ideas and suggestions, ask for help if you don't know.
- Have a better communication. Have two to three people from various background to walk down the job making sure all the co-workers are working safety and properly one a week. Report back at Mondays' safety meeting.

Second question: What are the things that we need to START doing as individuals and as a group to make this a safer project?

- Good communications, plan out tasks the group will be doing so everyone can be on the same page. (Get everyone's impute) Speak out if you're in doubt, anyone can stop a job if he/she thinks it's not safe. Use the right tools, materials, PPE (personal protective equipment) for the job. Chain of Command. Respect barricades and other workers within the area. JSA is there to do all that; we need everyone's help to fill it out. Even with the operators and others working within the area. Take every job seriously even if you've done it a hundred times. Get your rest so you can be 100% every day. Good housekeeping. If you have a personal problem leave it at the gate cause we need your focus. Treat everyone as your family cause we spend more time together than back home. Have a positive attitude, brother's keeper. Check tool, material before using.
- To avoid extreme fatigue and to get plenty of rest because this really plays a huge role in staying focused at work. Take the job extremely serious, remain professional,

take pride in our work, work as a strong team and communicate about everything. Teach new employees hands on what needs to be done with their jobs and make sure they learn the right way to do something at the beginning. Take our time when performing a job. Eliminate hazards when you see them, laziness should not be tolerated.

- Work this project like it's your own project; also treat coworkers with dignity and respect. Treat co-workers with a professional manner. Challenge yourself to improve quality safety work. Treat co-workers like you want to be treated. Take pride in your work and company you are working for. Follow safety JSA rules for every task. Start helping co-workers with less experience for less accidents.
- An unsafe act may seem like it's not a big deal, but a serious injury can always result. Think about yourself and your family. Lost work from an injury can translate to lost wages and permanently compromised health. Do not take shortcuts. Shortcuts have the potential to be extremely dangerous. Take the extra time to clean our area, rig properly, etc. The extra time spend preparing could prevent serious injury to yourself and others.
- Inspect equipment and work area, pre-task your work. Have a good attitude fill out your JSA properly. Inspect before you start work. Teach the apprentices the safe and right way. Wear PPE at all times. Eliminate all tripping hazards before, during and after work.
- Discuss your JSA's and have a plan of action. Get with your boss or safety person if you have questions. Don't take short cuts, which may lead to injury. If you can't do the task safely with what you have, don't try it. We have

no reasons to be rushed even if someone is pushing you. If you need help, ask. If you see someone needing help, stop them until they have the help they need.

- Be open for suggestions; be willing to let no unsafe act go unnoticed. Attempt to know everybody on a personal level; you are your brother's keeper. Safety incentives, be proactive not reactive. Start good housekeeping. Use correct tool for the job. Supervisors know your people and their limitations and their strengths.
- Watch out for other crewmembers. If someone is doing something unsafe, let them know and assist them in correcting it, if necessary. Be open-minded to their crewmembers' suggestions. Treat people with respect, as if they were family members. Always wear gloves when handling material.
- Better communication more awareness use of more plant safety rules, less shortcuts better planning of task, more equipment checks and inspections. Remove equipment from service if not in proper working order.
- Be more aware of our surroundings, think before acting, use proper tools for the job at hand. Follow all rules, don't take short cuts, eye contact with drivers, when working above use a safety harness, when working with forklifts always have 2 spotters and use tag lines. Inspect all tools, think of loved ones before performing an unsafe act. Leave bad attitudes at home. Come to work with a clear head, start getting enough rest before returning to work.
- Ask for help! Have all the materials we need to do a job safely. (Jack stands rigging, proper chokers, etc.) Respect and follow red tape areas, plan tasks prior to beginning work, discuss possible hazards and eliminate them when possible (trip hazards, etc.) Look out for each other and

help. Share equipment and rigging. Get everything you need to do your assigned task safely. Wear earplugs. Rely on more knowledgeable person to help plan tasks safely if you don't know how. Communicate with others in the area about your work that may cause them a safety concern.

- Be humble and accept other peoples' comments, and criticism. Communications with everyone on the crew before work starts. Think it through and try to anticipate hazards.
- Stop unsafe acts and watch out for other people. Use the proper tools. Train green hands on proper uses of small power tools.

Third Question: What are the things we need to STOP doing as individuals and as a group to make this a safer project?

- No horse playing, clean up as you go. Do not interrupt people/workers when they are doing their job. Don't get in a rush, or use shortcut. We need to work together between crews. Be your brothers' keeper; use the right materials for the job. Use the forklift and care to use (don't manhandle it). No horse playing, take every job seriously. Any job can be done safely. Take JSA (Job Safety Assessment) seriously.
- Stop being irresponsible regarding housekeeping and safety. Stop depending on someone else to do a job we are capable of doing as well. Stop leaving tools on job site and in pipes. Stop running over cords, and we need to take good care of equipment and tools that are loaned to us.
- Stop doing a poor clean up, stop doing short cuts. Stop loosing shit. Stop horse playing, stop using bad language, stop leaving your work—stay in your area and ask for more work. Stop following unsafe actions.

- Be sure to use the proper tools for a particular job using underrated lifting and hoisting equipment can cause serious injury. As for help from someone who has experience in the task at hand. Stop seeing the project with blinders on. Be aware of not only the task in front of you but everything that is happening. Just as driving a car, you can only keep yourself safe by knowing what is going on around you as well as in front of you. Do not turn a blind eye to unsafe acts. If you see an unsafe act, approach and advise a better way.
- Rushing your work. Being complacent about safety. Horse playing. Coming to work not rested.
- Stop rushing, we're on time. Stop being complacent, every day is a new one. Leave your personal problems at your house; we need you thinking about the job. Stop using the wrong tool, cut back on horseplay, save it for after work. Stop worrying that the job will come to an end. Be happy we're here now, stop rushing across location, we're on bad footing.
- Stop being reactive stop getting hot-headed and be willing to listen. Stop thinking that you can take chances, thinking it won't happen to me.
- Do not be going in red barricades without asking the person responsible for putting it up if it is okay. Stop leaving tools lying around, scattered on the ground. Stop horse playing.
- Be more considerate of others and their task at hand. Watch for and respect all barricades; do not remove barricades that you don't put up. Use of barricades tags, designate flagmen. Stop running over cords and leads.
- Stay thinking someone else will clean up after you. Stop leaving up useless barricades because it can be confusing.

- Don't put production before safety. Always use harness for work above 6 feet. Use your PPE. Follow the safety practices; not ignoring them (earplugs, gloves, hardness). Hanging pipe without supports. Stop putting productivity before safety. PUSHING PEOPLE CAUSES ACCIDENTS!
- No horse playing around. Stop thinking you're invincible. Stop using tools for project aren't properly used.
- Stop and think about what you're doing, don't take short cuts. Talk about what you are doing. Be aware of your surroundings. Slow down and think before acting out at work.

Fourth Question: What are you missing?

- Plywood, grinding disc, jack stands, 4 leg jack stands, Tiger disc. We need to exercise in the morning to loosen our muscles up. Everyone's leadership. Raincoats.
- Tools to work with and equipment to make the job safer and more productive. Eye washing station. Hand washing station. Very Necessary! Dust masks. Raincoats.
- Jack stands, team effort, improve our communication skills, improve working with one another. Raincoats, more guidance towards safety.
- The job as a whole is missing some important tools needed for the job that affect safety and productivity. Large bore pipe on 3 legged jack stands is dangerous. We only have so much rigging that can be utilized between everyone. The riggers are short on proper rigging.
- Never being too safe.
- Some minor tools to make things easier, which is safer. Plywood and jack stand. Raincoats for some of the people who get cold would be nice.

- Tools, rigging, steel choker, jack stands, grinders. Someone to listen—a suggestion box. Beer keg. The reality of a safe program.
- 4 legged jacks stands, group cooperation. Supervisor cooperation.
- "RIGGING" certain tools, 4 legged jack stands, wire chokers, beam clamps chain falls, endless chokers. Inspection of tools and rigging. As a group, it was agreed that most of our rigging come alongs would not pass inspection if inspected. More coordination. Bottle racks. Better housekeeping. Instead of just being safe and have a good day. Have topic for group safety meetings.
- Proper tools for certain tasks. Chairs—not enough seats for everyone. Raincoats. Communication with co-worker at times. Stretch and flex before work.
- Jack stands, rigging supplies, JLG, rain gear, tools. All the materials we need to complete a task. More people. Training for all about safe handling, rigging, and moving equipment.
- Miss family (extended) back home! Tools and general.
- Proper tools, proper rigging, bottle carts, four legged jack stands, wood for jack stands.

Whenever a leader involves people, it is paramount that there is follow up from management. In this instance, we created full-sized posters of the responses to the questions above and hung them in places where the crew could see them every day. What happened after the survey was more than I had ever expected. The project staff and I made a special 'to do' list based the survey responses and took care of all the issues, one by one. We purchased some blank requisition books and handed them out to the tool coordinator and to each supervisor. I empowered every single person to order what they needed by filling out a requisition through their supervisor or the tool coordinator, and passing it up the line for ordering supplies and tools that they needed. This helped solve our supply and material problems.

I committed the line supervisors, project staff and myself to do whatever was necessary to help each person be successful on the job. We decided that the crew had grown large enough to warrant a safety director, and we hired one. We conducted a foreman delay survey to rid the project of frustrations and delays. (See Chapter 18 for information about foremen delay surveys).

On days following the safety survey, I had volunteers read parts of the survey results aloud at the morning safety meetings. You could see and feel job atmosphere change from frustration to engagement. We continued to do other activities every day during that safety week, and at the end of it, on Saturday night, we had a Hawaiian luau at Uncle Robert's, the best restaurant on the island, complete with dancers, live music, and local food. All the crewmembers duct-taped their playing cards inside their hard hats, so they could remember what group they were in, and so they could participate in the safety reward programs we organized.

We started doing crew level three-week look ahead schedules, getting everyone involved in scheduling their own work, setting their own goals and doing daily job safety analysis for that day's activities. The overall project priorities came from the top down, but the look ahead detail task plans came from the bottom up. On a weekly basis, sometimes more often, I spoke with the crews and provided feedback to the project with a report on safety, productivity, scheduling, and other topics as they arose. I also used these opportunities to share some coaching and motivational stories. Let me share with you one that I gave at the end of an extremely good week, when everything was starting to click:

"For the last couple of weeks, we have been talking about and working on many left-brain types of things like safety, planning, schedules, tools, supplies, equipment, and productivity. But today I want to start to talk about some of the right brain stuff. They say that the right brain is more involved in creativity, innovation and spirituality. Today, I want to talk to you about the subject of gratitude.

I come from a large family with nine children. When my father died I was asked to give a eulogy at his funeral, which was a difficult thing to do. I decided to acknowledge my father for all that he had taught us throughout his life, and I would like to share that wisdom with you today. Here are just a few of the things that my father taught me.

- *Get a good education.*
- *Pray as though your life depended on God and work as though your life depended all on you.*
- *If you are knocked down, get yourself right back up.*
- *Make a difference in the world. Help someone in need.*
- *Never give up.*
- *Never say never.*
- *Whenever you have the opportunity, forgive and apologize.*
- *If you are blessed, never forget the poor.*
- *Do your best in everything you do.*
- *Love each other.*

With a family of nine children, that last one was important for all of us to get along. Now, your assignment for this weekend is to take some of your time and make a list like this for yourself. What lessons did you learn from a parent, *teacher or someone influential in your life? Write them down. If they are not alive today, think about that person, and try to get some feeling of gratitude in your heart. If they are alive, pick up the phone, call them and thank them for what they have taught you in your life. Literally, pick up the phone and make that call.*

This week was a great week. Things were hitting on all cylinders, and I will tell you this—it would be difficult for me to put into words how grateful I am for each of you and the work you have done to get this project moving. I asked for your help, and you have responded admirably. I am grateful to you.

Gratitude is a powerful force, when we hold it in our hearts and minds. I will promise you something: if you do what I ask this weekend, make your list, make that call, feel and express your gratitude—next week will be an even better week than the one we just had!"

At the end of this talk, one of the Hawaiian men surprised me with a comment. Let me paraphrase:

"Mike, I want to express my gratitude for something; I am grateful for you. You are different than other people who come here and do projects. Most of them sit in their offices and send our orders left and right. But you come out here and talk with us like we are real people. You walk around and see how we are doing on the job, and give us what we need. We Hawaiians don't always get that kind of respect, and I thank you for that. We are happy to work hard for you."

The sentiment was echoed by others on the crew, with a number of shouts and remarks. This comment surprised me, delighted me, but it also saddened me because it told me that there is a deep lack of good leadership out there.

A week after I gave this talk to the crew, one of the workers, TC, received a call from home on the mainland. His father had passed quickly and unexpectedly from a stroke. When TC came to the job office with a couple of his buddies to tell me about it, his head dropped onto my shoulder as he nearly collapsed in my arms.

During the course of this project, a top executive from our construction company made a site visit to Hawaii. He commented that he did not often see people so involved and happy with the work they were doing. Reports of this came back that he repeated this in the home office.

A month after the end of the project, a group of my colleagues and I were meeting with the client on that geothermal project in Hawaii. The VP of global construction thanked me for the work we did, and told us that he was extremely happy with our performance. Then he looked at me and said:

"I have been doing this for a long time, and I cannot remember when I have seen such a committed group of people. Thank you for a great job."

I don't mention this to blow my own horn, but to illustrate the amazing power of employee involvement, combined with the other principles in this book. If you take this book, read it, and apply the lessons, you will have a team that will do somersaults for you ten times over.

Mining Collective Intelligence

Another way to appreciate the value of employee involvement is to think of it as "Mining Collective Intelligence." Per Wikipedia:

> *"**Collective intelligence** is shared or group intelligence that emerges from the collaboration, collective efforts, and*

competition of many individuals and appears in consensus decision making. The term usually appears in sociobiology, political science…Collective IQ is a measure of collective intelligence, although it is often used interchangeably with the term collective intelligence.”

Utilizing and understanding the concepts of involvement, collective intelligence and participation is most vital in the practice of leadership. Let me say that in another way. Leadership is not all about telling people what to do. That is a failed model. Unless you are able to set aside that notion, and utilize your creativity to involve and tap the collective knowledge of the people you lead, you will never be the best leader you can be. And you will have difficulty completing projects on time and under budget.

Life Lessons

Many years ago, I read *Think and Grow Rich* by Napoleon Hill, and in it, he described and introduced the “Master Mind Principle.” This principle was introduced as the second of the seventeen principles, which lead to the master key with which you can open the door to your definite major purpose in life. The Master Mind Principle is at work when two or more people are working in harmony toward achievement of a definite major purpose. It is the principle by which you may use or borrow the talents, resources and connections of other people in your Master Mind Group toward achieving your goals. The concept of the Master Mind Principle has survived and thrived since it was introduced by Napoleon Hill in 1937. If you Google it, you can find out how to form a Master Mind Group and apply it in your life. According to Hill, many students of the Bible had recognized the principle in the life and work of Jesus Christ, and the assembly of the twelve apostles.

By applying the principle, Hill suggests that you can accomplish in one year more than you could in a lifetime working by yourself. I used the principle when I assembled Global Faith Partners, (See Chapter 37) resulting in all of the great things that were to follow. Like an invisible hand, the people, events, connections and circumstances all came together to move the original vision forward toward some worthwhile goals.

Paul Akers, author of '*2 Minute Lean*,' has created a company that helps people bring their ideas and inventions to market and pays them a royalty even though they don't have a patent. His company receives hundreds of ideas per year, and Paul uses a simple method to decide whether to go forward with manufacturing the product. He does not use a complicated focus group to decide what products to produce, and what he does is extremely simple. He sends an email out to a group of people who he has worked with, and asks them if they would buy the product. Based on what they tell him, he makes a 'go/no-go' decision on the product.

There is not much difference between work and life when you gain clarity on your purpose. Tapping into collective intelligence is something that we all can do to accomplish great and worthwhile things that we could not normally do by ourselves.

12 CREATE A WORD MAP

"The possession of anything begins in the mind."
—Bruce Lee

"Future based language (generative language) transforms how situations occur to people, (and drives performance)"—Steve Zaffron

When it comes to successful projects, our word maps make a very significant difference in the project outcomes and our ability to keep things on time and under budget. Word maps consist of project charters; project goals and objectives; mission statements; value statements and other key elements.

Project Charters

A project charter includes a description of the scope of the project, the business or public purpose objectives of the project, the participants in the project, a preliminary delineation of their roles and responsibilities, the stakeholders in the project, and the authority of the project manager and other project authorities during the various stages of the project.

The purpose of the project charter is to document (13):

- Reasons for undertaking the project
- Objectives and constraints of the project
- Directions concerning the solution
- Identities of the main stakeholders
- In-scope and out-of-scope items
- High-level risk management plan
- Communication plan
- Target project benefits
- High level budget and spending authority

Mission Statements

The best mission statements are the result of a collaboration and participation of an appropriate group from an organization.

To use generative language in creating the word maps for a project, one needs to phrase statements as though the desired future state *already exists*. Using 'we are' statements, instead of statements like 'we strive for' or 'we will' is essential to bring the desired outcomes into reality. When we write a mission statement that says: "we will be…," it defines a condition in which that what you want to be will always be in the future. Saying "we will be," and penning that perspective into a mission statement, is an acknowledgement that you are not that which you aspire to be. It is important to get this point. It is a premise in many teachings that the first step in becoming what we aspire to be is to focus ourselves on the actualization of being it. That requires generative language.

I am not suggesting you start requiring mass meetings of thousands of workers to get their input into the company mission statement. In your position as a leader, you can give your team the gift of collaborating on writing its own mission statement for whatever task is at hand, an amazingly empowering activity for them to participate in. It doesn't have to be lofty or earthshattering.

Be prepared for some interesting variations on the meaning and use of words from your team members to surface. Bear in mind that they probably come from completely different backgrounds and use different colloquialisms. (As an aside, let me mention that as a kid growing up in the Midwest, I had one word for snow—snow. If you'd have said 'crust' to me, I'd have thought of apple pie; "fluff," and I'd have thought marshmallow. Only when I learned to ski did I realize both words could be applied to snow, along with many others I'd never heard before.)

Be on the watch for something similar to happen when your team starts brainstorming.

Traditionally, mission statements describe how the company will get to where it wants to be, and vision statements outline where the company wants to be. Today, thanks to the work of Steve Zaffron, President of the Vanto Group, those vision and mission statements are being supplemented with a declarative affirmation statement of the collectively desired future state. These statements serve to affirm the future and bring it into the present. Here's the vision statement of Freeport-McMoran copper and gold, a leading international natural resources company headquartered in Phoenix, Arizona.

> *"With our significant proven and probable reserves of copper, gold and molybdenum, we are pursuing a dynamic portfolio of expansion and growth projects, which we believe positions us well in the current economic environment of strong commodity prices and demand."*

Notice how the statement literally creates the future reality *right now in the present*. That mission statement that your committed band of team members came up with by themselves, suddenly becomes so much stronger when put into the affirmative.

> *"We are a cohesive team made up of the best design and construction people available."*

Statement of Values

It is useful to declare a statement of values for a team. Here is a sample statement of values from a recent project.

- Safety is our number one value. Everyone on the project is responsible for their own safety and implementing the management principles identified in the safety challenge, written by the workers.

- Our number one purpose on this project is to please our customer. Our second highest purpose is to create an enriching and gratifying work experience for everyone on the team. If we focus on those two things, our shareholders will be rewarded as a byproduct.
- No one knows how to do a job better than the one doing the job. The job of a supervisor is not to tell people what to do or to punish them but to lead. Leading consists of helping people do a better job and, of learning by objective methods, which is in need of individual help.
- People are eager to do a good job and become distressed when they can't. Too often, misguided supervisors, faulty equipment and tools, shortages of critical supplies, and defective materials stand in the way. These barriers must be removed. It is management's responsibility to remove these barriers, and therefore management is ultimately responsible for a safe and productive project.
- A worker's life does not begin or end at the project gate. Every day on a construction project is filled with incident, and what happens on the job affects every aspect of our team members' lives. We talk openly about things like teamwork, trust, gratitude, forgiveness, and love.
- Our work plays a vital role in making a better world, and what we do makes a difference. Sustainable power for Hawaii is a laudable goal, and what we do to make this a more sustainable world, is of lasting importance.
- Fear has no place in this workplace. We foster involvement of everyone in decisions, which affect their lives on and off the job. We encourage people to speak up

without fear of recrimination. It is necessary for better safety, quality, and productivity that people feel secure.
- Quality has a moral element to it. No one should be bulldozed by a supervisor to overlook inferior work.

Life Lessons

As I round the sixty-year old-corner, more of my friends and associates are either retiring or talking about it. This has caused me to think more seriously about what I want to do for the rest of my life. In January 2014, I took a break in the action of my busy career so I could take time to review, evaluate, and think about where I am going, and to finish writing the book that is in your hands. I saw it as a chance to re-group and re-direct myself.

It is easy to get into the 'drift' of life and find yourself on autopilot, without thinking seriously about what you are doing or where you are going. The world is changing constantly, and one needs to change with it and plan, envision and take stock on a more frequent basis. If you do not do this, life will pass you by.

I recently I met Marian R. O'Leary at a Society of Mining Engineering (SME) dinner, and meeting her seems to represent the capstone of this 'writing retreat' I have been on. Marian lost two friends in an underground mine accident when some large slabs of rock fell on them forty years ago. Shortly after that unfortunate loss, Marian met someone who had a patent on an innovative tool for miners to use in chipping down loose rock slabs. Marian saw an opportunity to help make a difference in the lives of miners and save lives. She apparently found a purpose for her life (it would appear so, looking from the outside) and has spent the last forty years selling her 'Slabber' tool all over the world. I don't know how old Marian is, but she is pushing eighty years old, if not older. From the looks of it, she has not updated her business card in many years. It has no email or web address.

Nevertheless, even at her advanced age, her eyes twinkle when she talks about her 'Slabber,' and the people she has met around the world from Africa to Australia. Some might consider Marian to be 'old school' because she has not adopted using email nor does her company have a website. Marian has her good reasons for this. "What fun would it be to just get emails? I love talking to people when they call to place orders. I know everyone's name and all about their families."

Marian gives away Rock Tools Inc. wall calendars to promote her company. She admits that wall calendars are going out of date, given smart phones and MS Outlook, so she gives personal instructions on how to use her calendars: "Every day, write down something good that happened to you that day on the calendar." Last night, before I went to bed, I wrote, "Met Marian O'Leary" in bold letters on the square for May 16, 2014.

The lesson we can learn from people like Marian is simple. Have a purpose for your life. Write it down. Create your own 'word map.'

What is your mission? What is your purpose?

13 VISUALIZE THE END POINT

"Imagination is everything. It is the preview of life's coming attractions."—Albert Einstein

"I believe that visualization is the most powerful means of achieving personal goals." —Harvey Mackay

Creative visualization is a powerful practice that everyone on a team can employ to achieve superior results. My early learning experiences with visualization might mirror what you experienced in school. In fifth grade art class, we were taught how to draw images of the physical world using the vanishing point perspective method. My first project of this kind was a drawing of the Taj Majal in India, done in pencil. Prior to that, grade school art education was in two dimensions. Most of us had the childhood experience of coloring between the lines with crayons in coloring books. At the time, this was the extent of the visualization abilities of our young minds, and the limit of our dexterity and hand-eye coordination. This progressed along with the development of our cognitive abilities in high school drafting class, where we drew orthographic projections of three-dimensional objects: front view, side view, top view, and perspective.

In Chapter 24: Practice, Drill, Rehearse, we tell the story about Captain Jack Sands, who mentally rehearsed his golf game while spending time in a Vietnamese prison camp. Captain Sands used a type of mental rehearsal that is related to creative visualization. In Chapter 12: Create a Word Map, we talk about using language to create a reality *today* that did not previously exist. In this chapter, we explore the notion of creative visualization that involves the imagining of something that does not currently exist, but will exist in the future.

Spatial visualization is the kind of mental exercise used in drawing orthographic projections, seeing a physical object in our minds eye before the creation if its image on paper or the creation of its physical form. Architects and engineers use this faculty extensively in the work that they do. It is one of the key skills that was used by the Master Builders, in the time before architecture became a separate discipline from construction. In addition, it is a useful skill to those who do manage and perform the construction of structures from the drawings prepared by architects and engineers. If you are in the trades, you can attend plan-reading classes to develop this ability. It is helpful to be able to visualize what you are building.

The ability to see things in three dimensions is called spatial ability. It is one of the three dimensions of intellectual intelligence that are considered measurable, including quantitative ability, verbal ability and spatial ability. Regardless of your own ability in these three areas, it is important to know that people have varying degrees of these abilities, and although these abilities generally correlate with each other within an individual, there can be large variations. Someone who has highly developed verbal abilities may not have equivalent quantitative or spatial abilities, and visa-versa.

When practicing creative visualization it is helpful to know where your natural abilities are, and focus on your strengths. If spatial ability is not your strong suit, and even if it is, there are other effective ways to practice visualization. You might try to envision or imagine what it will be like when your task or project is completed. How will the team relations develop? What will people be saying about you and your dedication, hard work and commitment to the team effort? Imagine what it might be like to attend a ribbon cutting ceremony at the end of the project. Imagine what it will feel like to be part of a winning team that completes the project on time and under budget, free from accidents.

As the title of this section states, it is critical to visualize the end point—what will your participation in the project produce at the end? What will it look and feel like? The 'how' will evolve itself with use of the project management skills and team effort. Therefore, it is not so important to visualize the 'how.' The 'how' will reveal itself to you in progressive levels of detail, if you have created a strong enough vision of the end in your mind.

In a recent interview with John Assaraf, Bryan Tracy described four aspects of effective visualization: vividness, duration, intensity and frequency. The more clear, the longer, more intense, and more often you visualize, the more effective it will be.

Life Lessons

On a personal level, creative visualization is a very powerful practice. We can enhance our visualizations with positive self-talk and positive affirmations. Here are examples of personal affirmations that you could declare and repeat internally to change your internal dialogue:

- I am the essence of success. I'm unique, valuable, and hard-working!
- Ideas come to me effortlessly, enabling me to achieve whatever I want in life!
- I trust my inner guidance and God, and I make decisions with confidence!
- I am positive and prosperity-minded!
- I contribute to the world in a meaningful way, and I am paid back a million-fold!
- I have a successful career (or business) that improves lives, including mine!

- Today, I am optimistic. I remember that my thoughts create my reality. I think positively and surround myself with positive energy!

Dr. Shad Helmstetter first wrote and published '*What to Say When you Talk to Yourself'* in 1987. It stands out as one of the most durable 'how to' books for individuals who want to use the power of affirmations to help eliminate self-sabotaging thoughts and replace them with empowering, positive ones. Dr. Helmstetter teaches his readers how to write affirmations that are highly personalized and to record them for personal playback. Today, researchers are still discovering ways to optimize the effectiveness of affirmations, and people like John Assaraf are working with some of the top people in this field to commercialize this knowledge, and offer it to help people achieve their highest potential.

PART IV
COMMUNICATING

14 HAVE OPEN COMMUNICATIONS—NO SECRETS

"Communication is a skill that you can learn. It's like riding a bicycle or typing. If you're willing to work at it, you can rapidly improve the quality of every part of your life."—Brian Tracy

In several places in this book, I refer to my working experience in the 1980's while with a company called McDevitt and Street. I mention this company because the performance, leadership and culture of this firm was so far ahead of anything I experienced before or since. I cannot help but refer to the lessons I learned while working there. Here is another example.

Bob Street led a billion dollar per year construction company in the 1980s, with twenty-one divisions and two thousand employees. He owned 100% of the stock. His philosophy was that one third of net income before tax went to incentive compensation, one third went to pay taxes, and one third went to retained income to help grow the company and provide career growth for his employees. Incentive compensation was based 50% on how well the company did overall and 50% on individual performance. Every month, financial reports were posted in the mailrooms for everyone to see, and the executive committee meeting minutes were made available to every single employee.

Every Monday morning at 8:00 sharp, Bob gave a 'state of the company' address to the entire home office staff. He covered things like cash position, safety results, new business, financials, and often recognized someone for notable accomplishments. There were no secrets at McDevitt and Street. Bob Street's mantra was that the employees ran the company, so they should see the executive committee minutes!

If you ever wanted to see a company where every employee went to the mat and worked as hard as they could, McDevitt and Street was it! By having access to financial information and the innermost company meetings, every employee felt and acted like an owner! Revenues grew from $40 million to $850 million in ten years, and it was profitable every step of the way. The employee parking lot was always full of cars at 7:00 at night because people were motivated and driven. I never heard a complaint from anyone that they felt overworked or like slaves. In contrast, I have experienced many work cultures where people watch for the clock to strike 5:00 so they can leave work—not a minute later.

A key to any organizational effectiveness is to have open communications, both up, down, and across the lines of the organization. When the leader is open, it calls forth open communication from the ranks, so that there are no secrets. If you keep your team informed with open communication, they will do the same for you, and trust will build.

A recent LinkedIn discussion was based on the question: "What is the most important characteristic for a project manager

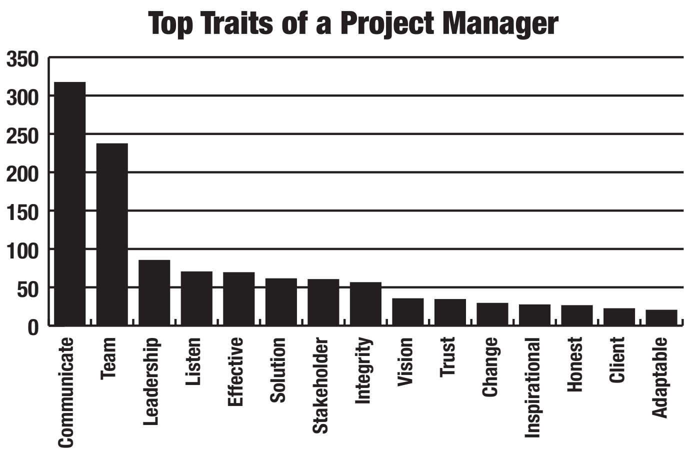


Figure 14.1—Top Traits of a Project Manager*
***Per LinkedIn discussion**

to have?" This question has received well over two thousand replies as of this writing. To get a sense of the opinions of the members of this LinkedIn group, I tabulated a key word count from the first eleven hundred replies. The Pareto diagram in Figure 14.1 contains a list of the top fifteen key words that appeared in those eleven hundred replies and the number of times the word was used.

These professional project managers view communication ability as one of the most important characteristics for a project manager to have. However, this survey did not suggest how or what should be communicated. It has been my observation that this is the missing link between good intentions and great leadership. Knowing the 'who, what, when, where, and why' of *effective* leadership communication is embedded throughout every page of the book that is in your hands.

Another aspect of communication to understand the person you are communicating with, especially when it is one on one. Now, I am a proponent of authentic leadership, but that does not mean simply saying everything that comes to your mind. And it does not rule out the need to take into consideration the personality type of the listener.

Dr. Tony Alessandra wrote a book titled, '*The Platinum Rule*.' In it, he describes the platinum rule as a corollary to the Golden Rule: treat others as you would have others treat you. Instead, Dr. Alessandra suggests that we can improve our communication by taking into consideration how the other person wants to be treated in communication. Based on the work of Carl Jung, this model identifies four personality types: The Relator, Socializer, Thinker, and Director.

In a February 2014 blog post by Stephanie Reyes at tribehr.com, she outlines the following strategies for communicating with the various types:

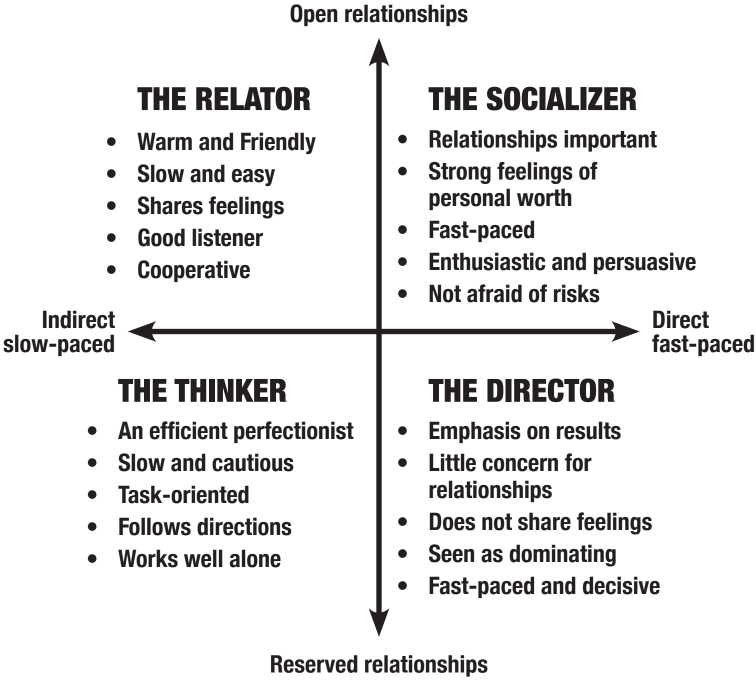


Figure 14.2—Personality Type Model

To connect most effectively with a Relator:

- Use less intense eye contact
- Speak in a moderate pace with a softer voice and moderate tone
- Seek their opinions and ideas: then listen
- Try not to counter their ideas with logical arguments
- Allow time for them to make a decision to reduce pressure
- Encourage them to express their concerns, without getting upset with them
- Aim for mutual agreement on work goals and completion dates

To connect most effectively with a Socializer:

- Make direct eye contact
- Speak in an energetic and fast paced manner
- Support your ideas with the opinions of people they respect
- Confirm any agreements made; follow up with a brief 'to do' list, so they remember what they agreed to do
- Allow some socializing time in meetings
- Talk about experiences, people, opinions, and facts
- Ask about their 'gut' feel
- Maintain balance between fun and achieving results

To connect most effectively with a Thinker:

- Be more formal in your speech and manner
- Don't speak in a loud or fast paced voice
- Present the pros and cons of an idea along with options
- Follow up in writing
- Be punctual
- Present information in an organized, planned, and comprehensive manner
- Accept that options requiring risk-taking options are generally not welcomed

To connect most effectively with a Director:

- Get to the point quickly in a clear and succinct manner
- Speak in a fast pace
- Be specific and don't over-explain or repeat yourself
- Make direct eye contact
- Minimize small talk
- Be organized and well prepared
- Focus on results to be achieved
- Be punctual and stick to guidelines

15 ACTIVELY LISTEN

"Most of the successful people I've known are the ones who do more listening than talking."—Bernard M. Baruch

There is more to listening than hearing what the other person is saying. I worked with one so-called leader who was so intent on proving he knew more than any other team member, he would focus on what he was going to say next while someone else was trying to make a point. He was so anxious about showing off what he thought was his superior intelligence and knowledge, his response to suggestions made by others always proved he had not *listened* to a word they said. The inevitable happened. His other team members became resentful, stopped trying to contribute and tuned out, leaving him to bombast his way through meetings in a glow of deluded self-satisfaction, blissfully unaware that he was destroying any chance of team spirit and cooperation. He could have been the poster boy for talking to a brick wall.

Active listening is so important it's considered part of the therapeutic process, where it's essential the counselor understand what the person seeking help is saying. In that case, the listener feeds back a restatement or paraphrase of what he or she has heard. That way, the speaker understands the counselor is paying undivided attention, any misunderstanding is cleared up immediately and both parties know they are on the same page. The technique is also useful in training and conflict resolution, where there is no room for assumption or interpretation.

You don't have to go this far in a regular business meeting unless a specific point is causing confusion. What you do have to do is show the other person you're listening to them, but you can do this nonverbally, by nodding or a neutral "Mmm" once in a while. Neither of those signifies agreement; both signify that you are listening and encourage the speaker to continue.

Listening Strategies

I have found the following approaches to be most effective for active listening.

1. Seek first to understand, then to be understood. Stephen Covey listed this fifth in his *Seven Habits of Highly Effective People*. Paraphrase the speakers' statements back to them to clarify that what you heard was what they intended to say. A good way to do this is by saying something like "What I'm hearing is…" or "Seems to me you are saying…" This way there's no room for misinterpretation.
2. Put aside distracting thoughts and pause the voice in your head. Give the speaker your undivided attention, and don't let yourself get sidetracked by the environment. Tune out other conversations within earshot, or better yet, move somewhere quiet.
3. Pay attention to body language, both yours and the person you're talking with. Make sure your posture is open and inviting: no folded arms or leaning back in your chair. If it's the other person looking closed off or defensive, acknowledge that you've noticed and try to find out what's caused the shutting-down to happen.
4. Good communication skills require a high level of self-awareness. We all have personal filters that we are unaware of, that cause us to make assumptions and judgments that have nothing to do with reality. Try to watch out when this bias creeps in. Should you find yourself reacting emotionally to what has been said, acknowledge it and ask for clarification. ''I find myself

taking what you just said personally. I don't think I understanding you correctly. I thought you just said XYZ. Did you mean that?"

5. Respond with respect. Allow the speaker to finish each point before asking questions. Interrupting merely causes frustration and contributes nothing to the dialog except a lot of wasted time. If there is a point of disagreement, be respectful when stating your case.

The strategies listed above will definitely improve the productivity of your team, as well as your ability to negotiate in the workplace. Best of all, you don't have to leave them behind at the end of the working day. They work equally well at home, at school, in church, or wherever your chosen activities take you. Try them out and see what an astonishing effect they'll have on your relationships with all the people in your life.

PART V
MOTIVATING

16 SET GOALS, PROVIDE FEEDBACK

"Feedback is the breakfast of champions."
—Ted Blanchard

Goal setting is the most basic leadership principle for success. It works. If you don't define what it is you want to achieve, your chances of accomplishing it are slim. In multiple fields and controlled studies, well-conceived, goal-setting processes have increased productivity by 25% on a regular basis. This is one of the most replicated outcomes in the science of behavioral management. When a goal is set but not achieved, it is not a fault of goal setting itself, but rather it is management's failure to implement it correctly to begin with. There are five fundamental steps involved, and I use this simple device to help me remember them.

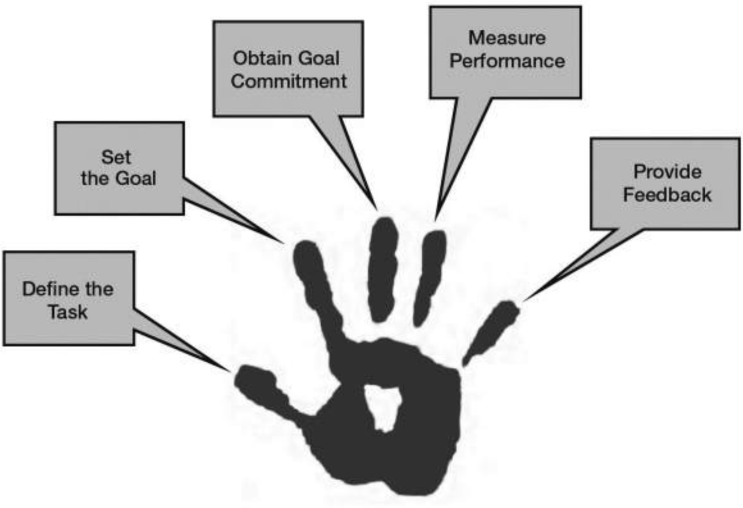


Figure 16.1 Five Goal Setting Steps

Step 1: Define the Task

What exactly do you intend to achieve? What are your performance challenges? What will each individual or team you are working with need to do to make things happen? In the construction project environment, it is relatively easy to identify the tasks involved. However, identifying intangible tasks to carry out in the context of broader organizational strategic change initiatives is more challenging. The Hoshin Kanri process, described in the appendix, is one method of identifying tasks, 'breakthrough projects,' and executing organizational goals in the context of larger and more overarching corporate strategies.

Step 2: Set the Goal

The goal must be specific; it can be the time necessary to accomplish a task, a productivity rate, the amount of work completed in a day, and organizational metric, or whatever else you choose to achieve. Make it challenging but attainable.

Remember the acronym SMART. SMART goals are Specific, Measurable, Attainable, Relevant and Time-bound. This acronym is more than management jargon. These goal attributes have been studied and proven in practice. Goals that are perceived as unattainable can have a negative impact on performance. Goals that are set about 25% above 'Do your best' performance are the most effective. When a concrete supervisor declares to his formwork crew that the concrete pour is scheduled for 2:00 tomorrow, he is using goal setting. In Lean Six Sigma, we use the term KPIs for Key Performance Indicators. These are usually measured in such a way that goals can be set around them.

In managing a team of people, it is important to identify a few very important goals to focus on. Too many goals creates confusion. It is also important to track 'leading indicators.' For example, a sales person has to make sales calls to generate sales. In one way, the actual sale is a trailing indicator, following the number of sales calls. To achieve weight loss, the number of calories consumed and exercise are leading indicators. You can watch your weight by stepping on the scale every day to get feedback on your progress. It also helps to count and control the calories you eat—a leading indicator. Industrial accidents are trailing indicators. The leading indicators for accidents include safety interactions, inspections, training hours and the mental states that are associated with accidents: complacency, frustration, rushing, and fatigue. It is vital to identify and track the leading indicators for every outcome you are trying to achieve, if you can.

Step 3: Obtain Goal Commitment

It may seem self-evident that making everyone aware of a goal, and getting their commitment to its attainment is necessary for successful goal setting. However, leaders often overlook these important parts of goal setting. In one case I observed, the top three leaders of the company convened to set goals for revenues and operating income. The COO kept a spreadsheet on the desktop of his computer, and every time a sale was made, he would add it to the running total of project sales. Not one person who had customer contact was even aware that a sales goal existed. This lack of transparency will not produce the kind of results that goal setting, properly executed, makes possible. Too often, goals are part of the company secrets. I see this in family owned businesses, where the owner does not want the employees to be aware of any of the financial details of the company.

Having grown up in a conservative Midwestern family, I learned that it was not polite to discuss money. It has been my observation that family businesses have difficulty with sharing financial information with its employees. However, a company's profit is the ultimate measure of how well the company is fulfilling its mission to society. All kinds of performance metrics can be measured in a company, but in my experience, when the shareholder(s) or managers share the company's profit details with the team, it helps create high loyalty and superior performance. This principle may not be appropriate in all circumstances, but if the shareholders of a company want to maintain or create a high performance and growing organization, having a degree of open financial information is something to consider.

If you can, have the people who will do the work participate in the goal setting, because self-determined goals are usually higher than those a supervisor would assign. In construction project work, the best practice for short-term (three—to six-week) work scheduling is for the foreman to meet with his crew on a weekly basis and co-create the look ahead plan. From the top-level goals of a company to the low-level goals of a part of a project, transparency and involvement are the principles that are most effective in gaining goal commitment.

Step 4: Measure Performance

The task of measuring performance against key metrics can take some work, but is crucial for realizing the benefits of goal setting, and it is getting easier with the latest developments in information technology.

Here is an example from my time at Dravo. We had some process jobs at Kennecott Utah Copper Company's smelter. I wanted to know how our productivity measured up against established standards. To achieve my goal of finding out, I did labor estimates on the jobs, using some national piping productivity standards. Then I followed the jobs into the field and kept a close track of labor and production. By comparing our actual productivity against the standard rates, I was able to calculate a ratio.

The fancy name for this is benchmarking. If you are dealing with a goal-setting program in any environment whatsoever, you can use benchmarking to see where you stand and track your progress. Using standard man-hour estimates, you can calculate man-hours earned versus man-hours spent and come up with an efficiency percentage. This is then graphed for each crew.

With look ahead planning, you want to compare actual progress with the planned progress on a weekly basis. This has multiple benefits. The accuracy of planning gets better over time. It helps facilitate work analysis to determine the challenges faced by the crews so that management can take action.

Step 5: Provide Feedback

Feedback, the more specific the better, is another essential element for goal setting to work. A pat on the back and "well done!" is okay, but specific feedback on a measurable, quantifiable goal is the way to maximize performance. Reward with some public and positive recognition, and provide graphical feedback everyone can understand. This kind of feedback can have measurable results. Start publicly displaying a graph of some operational metric that you want to improve, and you will see the numbers climb.

One of my early opportunities to test and prove this specific goal-setting concept was on the construction of the Duke Energy Center high-rise in Charlotte, North Carolina. When I set up the labor codes, I set up a labor account for each floor so that I could track how much labor it took to complete each operation per floor. Every week, I plotted the results graphically on the wall of the job trailer, so everyone could see the improvement. The foremen and crew became very interested in the numbers representing their own performance. As the work progressed, I encouraged and witnessed the crews collaborating to find better, smarter, safer, and faster ways to get the job done. I have used this method many times since, and I guarantee you will get at least 25-30% better results when you do the same.

Admittedly, some operational improvements can be attributed to the learning curve, which results from performing repetitive tasks. Much of our understanding of learning curve theory came from the manufacturing of military aircraft and tract homes. Learning curve theory says that as the number of units produced doubles, the number of hours required to produce each unit reduces by a fixed percentage. The percentage of improvement in productivity is affected by the relative amounts of handwork versus machine work used in the production. When the work is comprised of a greater degree of hand work, the learning curve is steeper—improvement is greater.

The performance results achieved from goal setting are some of the most replicated findings in the area of human performance and productivity. Following these five elementary steps in the goal setting process will thrust your team performance to world class levels.

Case Example—Safety at Rio Tinto

Rio Tinto got a wake-up call on September 18, 2008, when the Austrian government found the company responsible for the death of ten miners at the Lassing mine there. What has happened within Rio Tinto since then should turn the head of any manager or executive who has the attitude that 'accidents just happen.' Rio Tinto has turned that notion on its head.

In February 2007, I joined Kennecott Utah Copper, a unit of Rio Tinto, as engineering manager for the Keystone Project, a long-term vision to develop the deeper ore bodies at the Bingham mine in Utah. As I was considering a position with Rio Tinto, I came across their Sustainability Report that was posted on the internet, and noticed their report on safety statistics.

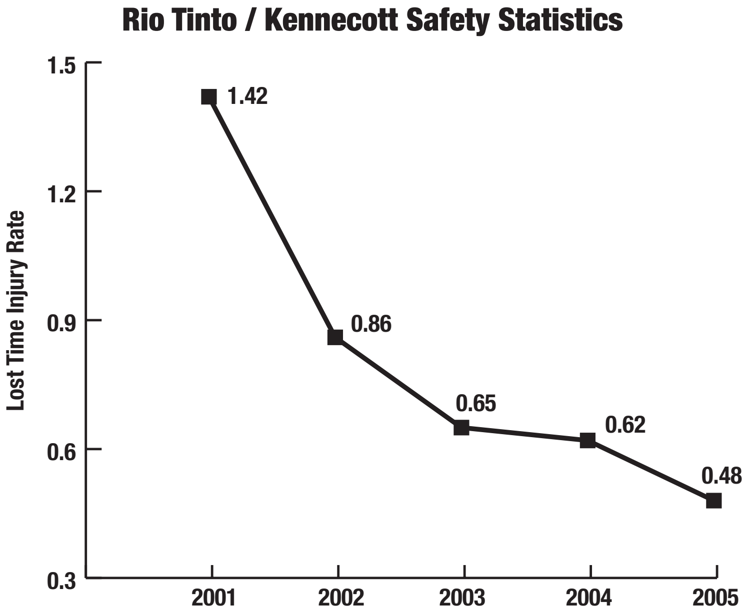


Figure 16.2— Safety Performance Feedback Example

Management at Rio Tinto had turned the tragedy at Lassing into an opportunity, and it used the concepts of goal setting, along with other cutting-edge tactics and strategies in the realm of safety management. Some of these strategies are mentioned later in the book, but the concepts of goal setting as described in this section are an integral part of Rio Tinto's approach to safety. Graphs, like the one you see in Figure 16.2, and other charts of safety data, are displayed around the organization so that everyone can see the progress being made. Again, feedback is critical to improving performance in any operational metric, and graphical feedback is the strongest way to communicate data, while praise and recognition are two great ways to reward deserving behaviors and results.

Life Lessons

For this section, I would like to start by sharing a couple of poems that have hung above my desk at various times in my life, beginning with one that my father hung in my bedroom as a boy.

It Couldn't be Done
By Edgar Guest

Somebody said that it couldn't be done,
But he with a chuckle replied
That "maybe it couldn't," but he would be one
Who wouldn't say so till he'd tried.

So he buckled right in with the trace of a grin
On his face. If he worried he hid it.
He started to sing as he tackled the thing
That couldn't be done, and he did it.

Somebody scoffed: "Oh, you'll never do that;
At least no one ever has done it;"
But he took off his coat and he took off his hat,
And the first thing we knew he'd begun it.

With a lift of his chin and a bit of a grin,
Without any doubting or quiddit,
He started to sing as he tackled the thing
That couldn't be done, and he did it.

There are thousands to tell you it cannot be done,
There are thousands to prophesy failure;
There are thousands to point out to you, one by one,
The dangers that wait to assail you.

But just buckle in with a bit of a grin,
Just take off your coat and go to it;
Just start to sing as you tackle the thing
That "cannot be done," and you'll do it.

Aim So High You Will Never be Bored
Author Unknown

The greatest waste of our natural resources is the number of people who never achieve their potential.

Get out of that slow lane.
Shift into that fast lane.

If you think you can't, you won't.
If you think you can, there's a good chance you will.
Even making the effort will make you feel like a new person.

Reputations are made by searching for things that can't be done and doing them.

Aim low: boring.
Aim high: soaring.

These inspirational words contain timeless truths that have been taught through the ages. Again, one of Steve Jobs' lessons was that the biggest challenges, beget the best work. This applies to the goals that you set for yourself, as well as goals at work. Reach high. Get out of your comfort zone.

Entire books have been written about setting personal goals, and I will recommend one to you in a minute. But here are a few things that I have learned about personal goals:

Start setting goals early in your life. If you have not done so, it is never too late. In a study of Harvard graduates, it was found that the 3% of graduating students who had written down clear and specific challenging goals for themselves were making as much as ten times as much money as those who had not.

When I graduated from college, I wanted to be a project manager and I wanted to be married with a couple of kids in ten years. That all happened, just on schedule. Sometimes I have had to change goals to fit the circumstances and the changing world. So be careful when you set your goals. Try to make them adaptable enough to fit any circumstance.

For a much more thorough guide on personal goal setting, read '*Goals*,' by Brian Tracy. I highly recommend this book.

17 SEE THE GREATNESS IN YOUR TEAM MEMBERS

"When we treat people merely as they are, they will remain as they are. When we treat them as if they were what they should be, they will become what they should be." —Thomas S. Monson, Pathways To Perfection: Discourses Of Thomas S. Monson

For more than fifty years, Robert Rosenthal has conducted research on the role of self-fulfilling prophecies in everyday life and in laboratory situations. Special interests include the effects of teachers' expectations on students' academic and physical performance, the effects of experimenters' expectations on the results of their research, and the effects of clinicians' expectations on their patients' mental and physical health.

Rosenthal and Jacobson tested children at Oak School with an IQ test—the Tests of General Ability (TOGA)—at the beginning of the school year. This test name was used because teachers were likely to be unfamiliar with it, and because it is primarily nonverbal and not dependent on skills learned in school (i.e. reading and writing). In order to create expectancy, the teachers were informed that the test was the "Harvard Test of Inflected Acquisition," which served as a measure of 'academic blooming.' Therefore, teachers were led to believe that certain students were entering a year of high achievement, and other students were not. In reality, the test had no such predictive validity.

Eighteen teachers at the school were informed of the students in their classes who had obtained scores in the top 20% of this test. These students were ready to realize their potential, according to their test scores. In reality, students were placed on these lists completely at random. At the end of the school year, all students were once again tested with the TOGA. In this way, the change in IQ could be estimated. Differences in the size of the changes for experimental and control group children could serve as an index of any expectancy effect.

Rosenthal and Jacobson's results demonstrated expectancy effects. There was a marked difference in IQ test score gains. Students who had been labeled as 'ready to bloom' showed greater gains than those who had not been labeled in this way. Rosenthal and Jacobson's results demonstrate a powerful self-fulfilling prophecy. Students believed to be on the verge of great academic success performed in accordance with these expectations; students not labeled this way did not. Later research has supported Rosenthal's original conclusion, that teacher expectations can have a substantial effect on students' scholastic performance.

It may surprise you to know that the way you look at your team and the people around you has a profound impact on their behavior. If you see the greatness in them, they will be great. If you see them as losers, they will be losers. In management practice, Douglas McGregor at the MIT Sloan School of Management created the Theory X and Theory Y suppositions of human motivation, to guide managers in the use of the Rosenthal Effect. In Theory X, management sees employees as lazy and incompetent, needing structure and direction imposed upon them by the use of fear-based threats. In Theory Y, employees are viewed as competent, motivated, trustworthy, creative, and interested in making a difference.

Theory X is ineffective in application, while Theory Y results in higher team and organizational performance. Unfortunately, many managers and educators do not hold high expectations for the people they teach or lead, so schools and workplaces are full of people who are not living up to their full potential. In Lean, this underutilization of human potential is referred to as the 8th waste.

To apply these concepts to your calling as a leader, you have to start inside your head. As Rosenthal found, the teachers' subconscious behavior toward the students was what influenced the performance of the students, not the teachers' conscious behavior. If you see people as lazy or incompetent to start with, it will be difficult for you to use conscious strategies to overcome this. However, if you have done the internal work and can see the magnificence in all people, then you have already accomplished the heavy lifting. The rest will fall into place.

This is a good place to mention the important fact that in successful teams, everyone is a leader. As mentioned in Chapter 10, the overriding characteristic of high performance Stage 4 partnerships is where the group sees itself through the perspective of "We are Great." Only 24% of work groups rise to this level of cohesion, and it is associated with top results. We are all leaders because we can all see the greatness in our team members. When we do that, there is a transformation from simply a group of people, to a high functioning tribe with the ability to change the world.

We often have difficulty seeing the greatness in other people, because people can disappoint us in a variety of ways. So it can sometimes require some conscious effort to do this. In my coaching, I directly teach my people about the Rosenthal effect, and the stages of team development. Let me paraphrase here what I have told people on my teams:

> *"Good morning team. Today I would like to share with you something that I believe will make a big difference in your experience of work on this project. For the last fifty years, social scientists have studied how our attitudes toward each other can affect the collective experience and performance on the job. They started in a school classroom, where they told the teacher that there was a group of smart students and a group*

of not so smart students in their class, identifying the students by name on a list that was given to the teacher. In actuality, this was part of an experiment—the students' abilities where not actually what the teacher thought they were, based on the list she was given. The students were actually randomly capable, just like any group. What happened after several months in the classroom was that the students began to perform in a way that was consistent with what the teacher was told. In other words, the students who the teacher thought were smart actually started to do better in school, while the students who the teacher thought were not so smart, started to do poorly in school. This says that the teachers subconscious behavior and treatment of the students, actually started to have an effect on their performance.

What does this have to do with us working out here? Well, it's easy. All of us who are in supervisory roles need to see our people as great, not stupid. And every one of you can make a big difference in your group by seeing your crew members as great. Just think about what a magnificent creation the human body is. The body contains an estimated sixty thousand miles of blood vessels, four hundred miles of which are in the brain. These vessels supply fuel to one hundred billion neurons in our brains, each connected to another ten thousand cells, making 1000 trillion connections in your brain. This human brain has the incredible capacity to hold 2.5 petabytes of information. If it worked like a digital video recorder, this would hold three million hours of TV shows, or, three hundred years of continuous TV recording (14). There are 37.2 trillion cells in the human body. Our nose can remember fifty thousand scents. Our naked eyes can see the Andromeda galaxy, two hundred twenty-five trillion kilometers away.

When we all see others as great, it actually happens—we all become great. Those among you who can best see the greatness in those around you, will become the greatest of all."

Life Lessons

I consider it a privilege to have a son with severe mental handicaps. David has shaped my attitudes on many things in life. Until he was twelve months old, he was not too unlike his healthy older brother and sister during their first year. He played, laughed, ate, and slept. I could see the gift of life and spirit that was within him, and I loved him dearly. I could also see that he had a soul, just like our other children. His behavior on the day after I learned of his handicap was no different than the day before. He expressed feelings of joy and sadness when he laughed and cried. He liked playing with cars. Regardless of his handicaps, I still experienced him as a child of God.

Do you fully comprehend how magnificent we human beings are? Do you appreciate the individual differences between people? Do you view everyone on your team or organization as a winner? How do you view your spouse, children, and family members? Do you view them in a positive light? When you can say yes to these questions, you are on the road to becoming all that you can be as a leader.

I am not saying that you need to throw away common sense and disregard the need to place the right person in the right job and match their skills with the demands of their position. Nor am I suggesting that you be a 'Pollyanna' when it comes to people. As noted in Chapter 38, there are people out there who do not share your ethics or principles, and some do not have your best interest in mind. Yet in most cases, you can look beyond the outer impressions you have of people and try to see their inner beauty. Look beyond skin color and gender. It may be difficult for you to see the greatness and divinity in your team members, associates, and family members. The only thing I can suggest is to pray for it. Contemplate the mystery of human life and how truly awesome it is. Pray for the wisdom and understanding to be grateful for every breath you take, and appreciate everyone who crosses your path in life.

18 PLANT MOTIVATORS AND WEED-OUT DE-MOTIVATORS

"It is hardly possible to build anything if frustration, bitterness and a mood of helplessness prevail."
—Lech Walesa

The leader of a corporation or project is the individual who must ultimately be willing take responsibility for results. Within the context of an organization or team made up of individuals, the collective performance of individuals, *as a team,* defines the results of the whole. While the best motivation is internal motivation as opposed to external motivation, the leader is ultimately the one responsible for creating the conditions where motivation can thrive.

In any job, circumstances can either motivate or do the opposite. It's up to you as a leader to be aware of which is which. According to the Pareto principle (the 80/20 rule), it is essential for the leader to know what factors most contribute to results, to help guide his or her focus.

Here is a list of motivating factors from a survey of twelve construction sites. If you work in construction, make sure that you have these things in place:

Motivators:

- Good relationships between all people involved
- Good orientation program
- Good safety program
- Pay
- Overtime pay
- Recognition
- Goals Defined

- Open house and project tour
- Well-planned project
- Suggestions solicited

De-motivators:

- Disrespectful treatment
- Lack of material and tool availability
- Having to redo work
- Crew discontinuity
- Project confusion
- Lack of recognition
- Ineffective utilization of skills
- Incompetent personnel
- Lack of cooperation among crafts
- Overcrowding
- Poor inspection programs
- Communication breakdowns
- Unsafe conditions
- Lack of participation in decision making

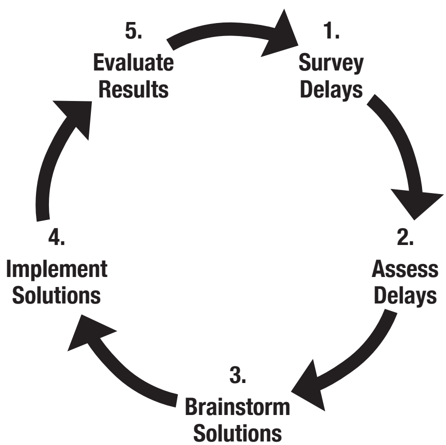


Figure 18.1—Foreman Delay Survey Cycle

In the construction industry, the Foreman Delay Survey is a way to identify and eliminate obstructive factors and de-motivators. These are the steps.

First, the foreman completes a daily survey of project delays for a week, to identify what is causing the holdups. Second, the delays are evaluated, solutions brainstormed, and improved methods of working are implemented.

Finally, the results of the new ways are analyzed and the cycle starts again, if necessary.

You might think that a good supervisor does not need to do this, but I have applied these principles to projects thought to be going smoothly, and have always found that the foreman delay survey makes a difference. Even the front line foremen are surprised when they quantify their delays.

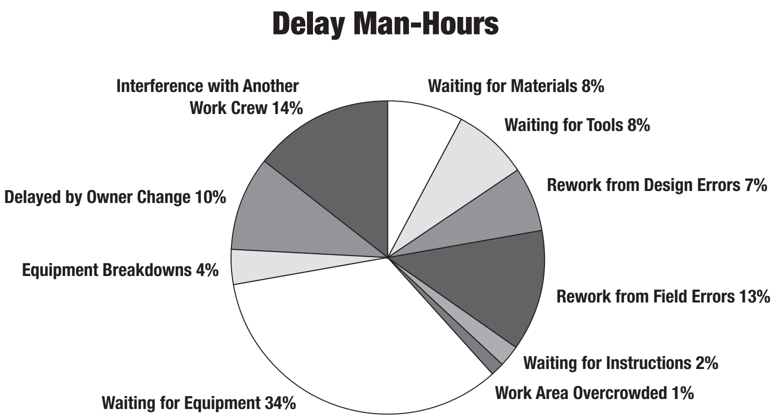


Figure 18.2 : Sample Forman Delay Survey Results

For example, on a recent project, I had a superintendent who, for some reason, did not want to hear about problems from the workers or the foremen. People were pulling me aside to tell me, the project manager, about problems they were having in the field. I noticed the superintendent's behavior whenever a problem was raised by someone under his command. He took it as a personal attack, instead of a call for help. This was an ideal situation for the foreman delay survey.

Figure 18.2 shows the results from that first week of the delay survey. The total delay time was 9% of the total available working hours. We know that these frustrating delays have a negative multiplier effect on a labor motivation. As people become more frustrated, they lose focus on safety and their jobs, leading to more frustration and more delays. We also know that frustration is one of the four mental states that lead to accidents. Most delays are management controlled, so management should use this technique as a listening tool to uncover problems. Once the problems are identified, the root causes can be identified and eliminated.

Having used this process on multiple projects, I have found that it takes about three weeks to achieve the organizational alignment necessary to eliminate most of the delays. The process should be used frequently, if not continuously, as a project moves through various stages.

History

Frederick Irving Herzberg was an American psychologist who became one of the most recognized and influential names in business management. He developed what he called the "Motivation-Hygiene Theory of Human Motivation," or, the "Dual Structure Theory." According to this theory, people are motivated by two sets of factors—Motivators and Hygienes (Demotivators).

Hygiene Factors	Motivator Factors
• Salaries, Wages & other Benefits • Company Policy & Administration • Good Inter-personal Relationships • Quality of Supervision • Job Security • Working Conditions • Work/Life Balance	• Sense of Personal Achievement • Status • Recognition • Challenging/Stimulating Work • Responsibility • Opportunity for Advancement • Promotion • Growth
When in place, these factors result in . . .	**When in place, these factors result in . . .**
• General Satisfaction • Prevention of Dissatisfaction	• High Motivation • High Satisfaction • Strong Commitment

Figure 18.3 : Herzbergs Motivation–Hygiene Theory of Motivation

Herzberg conducted workplace surveys to identify the factors that resulted in increased or decreased motivation. The survey responses identified the factors, how frequently they appeared in the workplace, and the strength of their impact on motivation or demotivation. Not surprisingly, the factors leading to motivation are not the same as those leading to demotivation, as noted in the above tables.

One way to apply the findings of the Motivation-Hygiene Theory in practice is through vertical job loading. Here is a summary table of the steps that Herzberg identified for the process of vertical loading.

Principle	Motivators Involved
1. Removing some controls while retaining accountability	Responsibility and personal achievement
2. Increasing the accountability of individuals for own work	Responsibility and recognition
3. Giving a person a complete natural unit of work (module, division, area...)	Responsibility, achievement, and recognition
4. Granting additional authority to employees in their activity; job freedom	Responsibility, achievement, and recognition
5. Making periodic reports directly available to the workers themselves rather than to supervisors	Internal recognition
6. Introducing new and more difficult tasks not previously handled	Growth and learning
7. Assigning individual specific or specialized tasks, enabling them to become experts	Responsibility, growth, and advancement

True Empowerment

Empowerment is a buzzword that is thrown around like a basketball without ever making it into the hoop! True empowerment means that you have to trust people to do the right thing, and then give them the freedom to succeed. When we saw how much time was being lost due to the lack of tools and supplies on the project referred to in figure 18.2, we empowered each employee by giving them the authority to write field requisitions for the stuff they needed to be successful. One Thursday morning, after compiling the results of the Foreman Delay Survey, I met with all of the crews on the project after the morning safety meeting and laid out the new procedure. While holding up a copy of the new material requisition book, I explained to everyone that they were now empowered to take their success into their own hands. As part of their look-ahead task planning, they were to identify the tools, materials and equipment that they would need to perform their assigned tasks and fill out a requisition for it. The results were remarkable! There was such pent up frustration over lack of supplies that the onrush of requests was like opening the floodgates. The requests kept me and the rest of the management team busy, but we quickly saw the success of our plan, as delays were virtually eliminated. Of course, before the material or tool was purchased, it had to get final review and approval from the superintendent or me, to avoid duplication and excess.

Life Lessons

While we are thinking about planting motivators and weeding our de-motivators in the workplace, it is a good idea to look around to make sure that we are not sabotaging ourselves by the very nature of our self-created environment. Many years ago, I participated in something called The est Standard Training, which was a two weekend learning experience designed to help make your life work better. More recently, I participated in the Advanced Forum offered by Landmark Education, a successor to est. I will never forget one of the homework assignments on the first day of the est program—go home and clean out your closets.

Today I have a personal coach who is my accountability partner, and one of the first things she gave me was a one hundred point checklist of things to make sure were in place in my surroundings and personal circumstances. Whether it is a messy closet or a long overdue visit to the dentist, or other unfinished business, there are things in your personal environment that can either empower you or drain your mental energy. These are analogous to the Herzberg Motivators and Hygienes that exist in the workplace, and to be your best, they are things you need to take care of if they need attention. Start out the process by cleaning your closets. Then mentally look at every aspect of your life as a closet and do the same. Do what needs to be done, keep what is useful, and discard the rest.

19 BE GENEROUS WITH PRAISE AND RECOGNITION

"Employees who report receiving recognition and praise within the last seven days show increased productivity, get higher scores from customers, and have better safety records. They're just more engaged at work."—Tom Rath

You saw the importance praise and recognition play in motivation in Chapter 18: Plant Motivators, Weed-Out De-motivators. However, they play such a huge part in good leadership, I'm giving them a section to themselves.

I'm not talking about breezing through the work site once a day and spewing out generalities like "looks great" or "nice job" while you're wondering how quickly you can get back for your coffee break. People will see through that in a minute.

A leader should give praise and recognition out of true generosity and respect to be effective. Latham studied this aspect of mutual respect in his work on goal setting when he found that the 'credibility of the source' of feedback on goals was a factor on whether or not the goal performance feedback was effective in motivation. The 'credibility of the source' of feedback is enhanced by mutual respect and the generosity of the leader giving the feedback.

Authentic praise comes from the heart when a leader appreciates workers effort and dedication. People can recognize when expressions of gratitude lack authenticity and when praise is a tactic to gain something in return, such as high motivation, more productivity and lower cost. People can see through fakes and gimmicks. Paradoxically, when you expect nothing in return is exactly when you will get something back, because the people you are acknowledging will recognize your sincerity and understand that it is genuine. That kind of praise fosters trust and mutual respect and also creates loyalty and dedication.

When you find yourself in a leadership position, you must recognize that, whether or not you asked for it, there is a unique role for you to fulfill as a leader. To fill that role, you have to be willing to give of yourself without asking for anything in return. If you love the people you are leading (See Chapter 39), and you recognize that you have an important role in your leadership position, you know that your behavior can have an impact on the self-worth and esteem of the people on your team. Your generosity can only come from your inner abundance mentality—a belief that you have a bottomless well to give from.

Armed with a heart and mind full of selfless generosity, there are just a couple more things you need, to be able to give the most effective praise and recognition. You need the right setting, and something specific to give praise and recognition for. Here are some examples:

I had the privilege of working under the late Bob Street, a shining example of the principle I'm talking about here. At the 1988 McDevitt and Street Christmas party, Bob addressed the entire company. Here is a paraphrased version of that talk:

> *"Thank you for coming to celebrate Christmas with me and your fellow employees here tonight. I do not have time to thank each and every one of you personally for your hard work and commitment, so I have a few comments for all of you. There is great cause for celebration because of what you all have been doing and what you have achieved with our Company. Despite our already large size, you are growing our company at a 35% compounded annual growth rate, and maintaining one of the highest profit margins in the industry*

at the same time. You are doing it safely and maintaining excellent control of the work. Our client satisfaction is leading to an 80% repeat business level. Our strategy of hiring the right people is really paying off, and it shows in your results. You are winning so big that the entire construction industry is standing up and taking note of what you are doing. I also want to recognize the spouses of those of you who are married. Whether you know it or not, you are a direct part of the celebration here this evening."

Notice he said *our* company, not *my* or *this*. I think that little word was a major factor in the growth of McDevitt and Street from a small $40 million a year contractor to a national firm with twenty-one divisions and $850 million in revenues in only ten years.

The Research

If you are still not convinced of the benefit of praise and recognition, consider the research of the Gallup organization. They have surveyed over four million employees worldwide from ten thousand business units and thirty different industries. They found that employees who receive regular recognition and praise:

- Increase their individual productivity
- Increase engagement among their colleagues
- Are more likely to stay with their organization
- Receive higher loyalty and satisfaction scores from customers
- ***Have better safety records and fewer accidents on the job!***

In their 2007 best-selling management book, '*The Carrot Culture: How the Best Managers Use Recognition to Engage*

Their Employees, Retain Talent, and Drive Performance,' Adrian Gostick and Chester Elton agree that recognition is a vital part of organizational success. Here is a summary of what they preach:

A solid leadership foundation is essential including:

- Goal Setting
- Communication
- Trust
- Accountability

Recognition does not have to be complicated, nor does the accomplishment you are recognizing have to be worthy of front page news. While directing construction of a Geothermal power plant project in Hawaii recently, I had the opportunity to recognize one of my employees at a team safety meeting one morning. Here is a paraphrase of my comments:

> *"Every now and then, and probably not often enough, I like to recognize people for their outstanding contributions and accomplishments. Now, I realize that there is always a risk in singling out someone to give recognition, because there is always the chance that someone else has done something that is more worthy of praise. You might think in your mind: "Why is she being singled out, when I know that I have done something even more important." Despite that risk, we should not let that stop us from recognizing someone. And because of that risk, I want to tell you all how proud I am to be your project director. You can think of this recognition as something for each and every one of you, because of what you are accomplishing. I am sad to say that Tamara is leaving us tomorrow to get back to her family in the Navajo Nation.*

So before she leaves, I want to give her the "Service with a Smile" award. (By this time, everyone on the team is smiling too.) You all know as well as I do that she deserves this award for her positive attitude as the Tool and Supply Coordinator. But what you may not know is how Tamara has really been a partner with me in keeping this job flowing, by making sure that you have the tools and supplies to be successful in your work. She has truly made a mark on this project and on me. So, without any more talking—Tamara, this is a very small token of my appreciation to you for your outstanding work on the project. It is not much, but I hope that you will hang this photo of your smiling self, some place in your home, and remember us here from the Puna project. I am sure that everyone here agrees that it is an award that you deserve."

As you can see, recognizing Tamara did not require a big trophy—just a simple photo of herself at her workstation. Before

the day was out, people on the team had signed and noted Tamara's photo frame, like you would find in a high school graduation yearbook.

Praise and recognition is most effective when given for a specific outcome or accomplishment. When combined with a goal setting process, with specific feedback on performance, productivity improvements averaging 25-30% have been documented. Some companies are not willing to go through the trouble of measuring performance accurately, but this is penny wise and pound foolish. In my experience, the cost of good production control and measurement used to run between 0.5—1.0% of direct labor cost, but that was before we had automated crew time tracking systems in the marketplace. Today, we have systems that utilize tablets in the hands of foremen who enter the timesheet digitally, with the names of workers, the tasks performed and the quantities of work completed. This data automatically goes to the up-line manager for daily approval, then up to the cloud where all data is integrated with the company's system. When you weigh the cost of implementing such a system into a contractors operation, against the improvements in safety and productivity, it is a no-brainer.

This kind of capability gives opportunities for instant feedback to the working hands on their job production and performance.

The general circumstances for giving recognition include:

- Above and beyond performance
- Career recognition (Years of service, anniversaries)
- Celebration events (Project kick-offs, completions, holidays)
- Day to day recognition (pats on the back, team lunches, small gifts) Must be frequent, specific and timely)

Other findings:

- 65% of Americans were not recognized even once last year
- 75% of high performers who quit their jobs, do so because of lack of recognition

Gostick and Elton cite a study by Healthstream Research, which found that companies who *effectively* recognize their employees are three times more profitable than those who don't. The key word is *effectively*.

Impediments

In my experience, there are several impediments to creating a high performance culture with the use of praise, recognition and positive feedback. These are:

1. *Attitude.* Some managers actually fear that if they give too much praise, their people will stop trying hard enough to please the boss. Nothing could be further from the truth.
2. *Misplaced focus.* Some managers misplace their focus on 'watching cost' versus creating a high performance culture. This results in penny pinching when it comes to even the smallest recognition. When I first read the studies about the performance improvement with goal setting and praise; which suggested that performance could be raised by 25-30% consistently with goal setting, praise, and recognition, I was a skeptic. Nevertheless, after applying this stuff for thirty years, I am a believer. 'Watching cost' has the opposite of the desired effect. When you watch costs by pinching pennies on tools, supplies, equipment, safety luncheons, recognitions, and awards, your costs actually go up instead of down, while frustration rises

and de-motivators take effect. Instead, focus on people and creating a high performance team or organization, and the dollars will appear where you once looked for pennies in the bottom line. Even if it costs you an amount equal to 0.5-1.0% of direct labor cost to measure and provide feedback on performance, the small cost of doing production measurement is irrelevant when you consider the potential 25-30% increase in productivity. Not to mention the value of gaining accurate historical information for the future use.

3. *Inadequate managerial accounting and performance measurement systems.* To improve anything, you need to measure it. Many organizations have not established the necessary internal disciplines to measure performance and provide positive feedback. Some are unwilling to make the necessary investment in time and attention, I believe, because they are not aware of the benefits. With adoption of new automated timekeeping and data storage technologies, the cost to measure productivity on a daily basis has dropped considerably. Foremen can now load the labor activity codes and worker names into a handheld smart device, enter daily time and quantities on a daily basis directly into the devices screen, and send it directly to a smart device of his superior for approval and verification, before it proceeds to a cloud connected accounting system.
4. *Short sightedness.* Some leaders lack the dedication or foresight to make commitments in the short term, which will have both short term and long term benefits. It requires dedication to build a set of internal disciplines whose payback will be measured over years, not necessarily the next seven days. While I have been able

to design and implement customized project specific systems, this can be a difficult chore when the entire group and chain of command are not aligned.

A Role for Earned Value Accounting

In the 1970's the U.S. auto manufacturing industry trailed behind the Japanese in quality, innovation and productivity. William Edwards Deming is credited with the Japanese manufacturing miracle. From the 1950's onward, he consulted with top management in Japan to help improve performance, quality and productivity. It is ironic that an American brought production ideas to Japan, improved and modified them, and then used them to capture market share from the American auto manufacturers.

The productivity measurement techniques adopted by the Japanese utilized an 'efficiency' model, where all production could be measured and reported as a percent of a standard, stated as a percent efficiency. As performance improved in any process, the reported efficiency percent rose. A rising graph of efficiency indicated improving performance. Put simply: "up is better than down."

This concept has been adapted to the construction industry in a particular way, referred to as the "Earned Value" method. By utilizing earned value methods, the efficiency of an entire project composed of multiple activities and tasks can be stated as a percent. (Earned value management is an adaptation of variance accounting practices used in managerial accounting systems; it is adapted for project based systems versus process based applications.)

What follows is an example of how the concepts of earned value, goal setting, participation and feedback with praise and recognition can be applied to improve performance. On a recent project, I noticed that the efficiency on a piping installation had dropped to 60%. I met with crew and showed them the efficiency charts. I thanked them for their work and asked for their help. I assured them that I knew that they did not directly "hold all the cards" for their performance. Some of the problem was with management and organization. I asked them to work together with their foremen to come up with some ideas for improvement, and we would look at the results again in a week.

After I collected the production information, and seeing the improvement, I met with the crew again and showed them the results shown below. We discussed the changes that were made to improve the job flow better. I thanked them as a group and individually. I praised them for their innovation and commitment. I then followed up on a weekly basis with similar feedback and discussion.

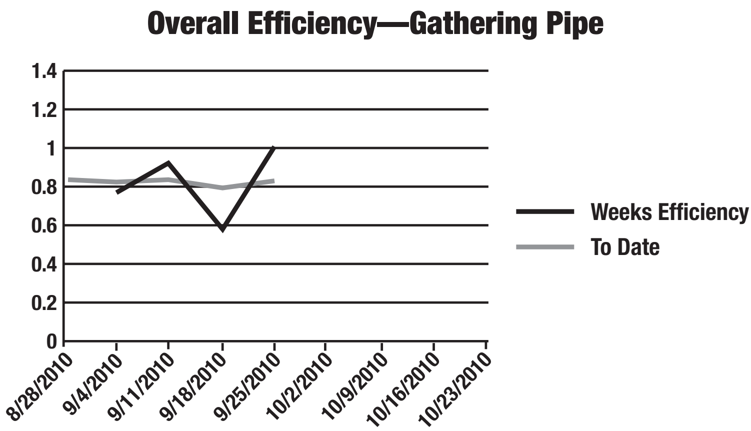


Figure 19.1— Efficiency Chart Based on Earned Value

Too often, managers view productivity measurement as simply a way to 'keep score' on a projects progress. However, when one understands the goal setting model illustrated in the above example, performance measurement can be a highly effective means of providing specific feedback to those who are performing the work.

We know that rushing, frustration, fatigue and complacency, are root causes of accidents *and* poor motivation. By planting the motivators of praise, recognition, involvement, goal setting, and feedback, and by weeding out the de-motivators, all measures of performance improve including safety performance.

Life Lessons

Every parent wants to teach his or her children what they should do and not do when they are young. Thankfully, a child will usually learn to avoid putting her hand into a fire after the first experience with that. We try to teach our children before they make mistakes. For example, we want them to grow up learning good table manners so they will blend in to social situations when they are adults. A child under the age of seven does not have the ability to filter what we do to them or tell them. When we correct them, what we say or do and how we say it, goes into their subconscious minds and it begins to affect their opinion of themselves, the world and their place in it. If we say, “bad boy” or “bad girl” when we correct them, this goes straight into their young forming brains and stays there. At that young age, children do not have the filters that would protect them from actually concluding—on a subconscious level—that they are bad people. Children make decisions about themselves based on things we say and do around and toward them at this young age. They do this without the benefit of a fully formed reasoning mind.

It is appropriate that we set limits for our children, and establish boundaries of acceptable behavior. In her New York Times best-selling book, “*Reviving Ophelia*,” Dr. Mary Pipher examines the challenges faced by adolescent girls coming of age. In a broad examination of our familial, social and peer environment, Pipher discusses parenting styles and their effect on the social adjustment of young girls. In particular, she examines the dimensions of strict versus yielding and loving versus cold. She concludes that an environment with clear boundaries, strict rules and lots of love reduces stress and leads to girls who are the most well-adjusted and have the highest self-esteem.

Clear boundaries and strict rules should not be confused with heavy reprimands and harsh punishment. These might be effective in eliminating an undesirable behavior, but they may leave anger and resentment in their wake. This applies in the workplace as well. The people you lead were all young children at one time in their lives. They are all the product of different parenting styles, good or bad. Be cognizant of that, and treat people accordingly. It is far better to use praise for recognizing the good behavior, than to use punishment or criticism to point out the undesirable behavior.

20 HAPPY EMPLOYEES MAKE CUSTOMERS HAPPY

"The magic formula that successful businesses have discovered is to treat customers like guests and employees like people."—Tom Peters

When you have created a dynamic culture where employees feel as though they are a valued part of the team, where they have a hand in the direction of the company, they work for and are motivated to embark on the journey of continuous improvement. Their positive vibes rub off on the customer, whether the customer is a third party, or an internal, company-customer user group. When that happens, it positively affects how the client feels about your company or team. You want people in your ranks to sing your team or company's praises, and they will if you value each of them as an individual and as a valuable part of the enterprise. You can judge the leadership of a company by the demeanor of its lowest level employees.

If you follow the principles in this book, you can create the kind of culture where the people under your leadership give off positive vibes. As a result, you'll have happy customers.

If you really want to please your clients, set up your internal system to reward your client champions who are able to create repeat customers. When your line-people are motivated to gain customers, you have really created a client-focused organization.

21 GET YOUR TEAM IN THE FLOW

"Enjoyment appears at the boundary between boredom and anxiety, when the challenges are just balanced with the person's capacity to act."
—Mihaly Csikszentmihalyi

Mihaly Csikszentmihalyi grew up in Europe during World War II and became aware that the adults in his life had varying degrees of capacity to deal with the stresses of war.

After immigrating to the U.S. at the age of twenty-two, he enrolled at the University of Chicago and began his ground-breaking research in the study of happiness and creativity. His original methodology was simple; he equipped his two hundred subjects with beepers and called them randomly during the day, asking what they were doing and how they felt.

From this beginning came his best-known work, the seminal "*Flow: The Psychology of Optimal Experience*." Csíkszentmihályi's theory is that people are happiest when they are completely absorbed by the task at hand, so involved that everything else falls away. He called this state "flow." Sometimes this state is called being "in the zone," or more colloquially, "in the groove."

Csikszentmihalyi gave his own description of flow in an interview with "*Wired*" magazine. He called it "being completely involved in an activity for its own sake. The ego falls away. Time flies. Every action, movement and thought follows inevitably from the previous one, like playing jazz. Your whole being is involved, and you're using your skills to the utmost." Imagine being at the head of a team whose members felt like that!

As a leader, it's up to you to create the conditions that will result in your team feeling that way—no easy task. Fortunately, Csíkszentmihályi listed nine elements he felt necessary for achieving the state of flow, the most important being a balance between the challenge of the task and the skill of the performer. Both skill and challenge level must be set high and matched. Also, there has to be clearly defined goals and your team members need to feel their opinions are valued and worthwhile.

The Flow Factors

1. Clear Goals
2. Concentrating and Focusing
3. A loss of feeling of self-consciousness
4. Distorted sense of time
5. Balance between ability level and challenge
6. A sense of personal control
7. The activity is intrinsically rewarding
8. People become absorbed in their activity

Applying the principles of this book will support the sense of flow that people experience. Let me share with you how I recently discussed the idea of flow with one of my project teams.

> *"I want to thank you all again for the hard work you are doing here in the middle of the Pacific Ocean, far away from your families and friends. I know that it is not always easy to be away for such an extended period of time, and it can get lonely. And I want to talk to you about an aspect of teamwork that you may not have considered before. A researcher by the name of Mihaly Csikszentmihalyi has been studying for over thirty years to discover what the source of happiness is in one's life. He started out his research by putting beepers on two hundred people and contacting them at random times during the day. When these subjects called in, they were asked two simple questions: 1. What are you doing right now? 2. How do you feel? His findings were*

very interesting. He found that contrary to popular belief, people who were engaged in leisure activities were not the happiest. But people who were actively doing something that was a little challenging for them were more happy than people doing some leisure play thing. He also found that when people were working in a small group, doing something challenging but doable, were the most happy of anyone. Think about the work you are doing here. I often wonder why we travel around away from our homes to do this work, and I now have the answer. Working on a construction crew, working together to do something challenging, is one of the most rewarding kinds of work that one can pursue. And when we have that crew feeling that we are always looking after each other's back, that we care for each other like family, it is the most rewarding of human experiences. It goes back to the days when we hunted together in tribes.

I realize what this means for my position in management. It is our job to make sure that you have all the tools, materials, information, supplies and equipment in your hands to be successful. And to really make this work, we need you to tell us what you need and when. It is a partnership."

Life Lessons

In 2001, days after the September 11 attacks on the World Trade Center, I made a critical decision that has had an unmistakable impact on my life. After watching the film of twin towers collapse multiple times, I realized how much time I was wasting in front of the television. I had read about how time in front of the TV can have negative health effects physically, mentally, and emotionally. So one day, I decided to cancel my cable subscription, and give it up completely. Thirteen years later, I don't regret my decision in any way.

The average American spends thirty-five or more hours per week watching television. Hours in front of the TV are a colossal waste of time and human potential. While I was engaged in serving as a professional energy auditor, I had the experience of visiting many different people in their homes and seeing how they lived. I was amazed to see the individuals and groups of people sitting in front of the TV at all hours of the day. There are so many things that can and need to be done that are more fulfilling than watching TV, and I am convinced that we would live in a dramatically different society than we do today if we did not have TV. Television does not produce a state of flow. In fact, study after study shows that watching television can cause conditions that mimic mental illness, weight gain, lethargy, insomnia, and a host of other social adaptation problems for children and adults.

In 2005, I had the privilege of visiting remote villages across southern Tanzania, Africa. My visit was during the planting season in the farm fields, where farmers still use hand hoes to till their soil as the ancient Egyptians did thousands of years ago. At every grade school I visited, there were dozens of hand hoes leaning against the school buildings, where the students had left them upon entering the school in the morning. After school, the kids grabbed their hand hoes, and went to their family plots to help with the tilling and crop planting activity. There were no TVs or Game Boys in these villages, and people lived happy lives.

Turn off the TV. Better yet, get the TV out of your home altogether. This will force you to find other creative activities that will create healthy mental flow states for yourself, benefiting the entire community. In "*The Evolving Self: A Psychology for the Third Millennium*," psychologist Mihaly Csikszentmihalyi suggests that becoming an active participant in the evolution of society and humanity itself, is a path to peace and personal fulfillment. You find this by joining hands and collaborating with other like-minded individuals in your work and community, to make a positive difference in the community that you live in and in the lives of others.

PART VI
MAINTAINING

22 THE MIKE VALLEZ TEAM ALIGNMENT PROCESS

"The most empowering condition of all is when the entire organization is aligned with its mission, and people's passions and purpose are in sync with each other."—Bill George, Peter Sims

Although I am fortunate to have been involved in some very successful projects—both as a team member, and in a management and leadership capacity—I have also had the opportunity to learn from being around projects that did not go so well. The following story is about a project that fell into the latter category.

While serving in a middle management role for a contractor where I was supporting multiple project managers—several project managers reported to me on projects across the country—my boss asked me to take a particular project under my wing that was in serious trouble. The project was about 60% complete, and the project team had a very poor grasp of where they were, from both a cost and schedule standpoint. After doing an internal audit of the job, I learned that the project was 10% over budget and three months behind schedule. The project team was oblivious to this.

When I first visited the project, I noticed that the CPM schedule that was hanging on the wall of the field office trailer had not been updated in over six months. The project manager had his cost forecast printed out on an 8-1/2" X 11" piece of paper with about ten lines on it. This was a cost plus a fee EPC project, and the cost controls were weak, to say the least.

There was a prevailing attitude within both the owner's site team and the contractor's side (who I worked for at the time), that because it was a cost plus contract, the cost controls were not that important, and the main thing was to capture costs for materials, subcontracts, labor, equipment and job overheads, as they were incurred in such a way that the owner could be invoiced for the costs. The contractor's cost accounting system did not capture committed costs when a purchase order or subcontract was executed. Nor did it have a workable labor tracking system. So there was no easy way to track where the costs were. (This was not a fault of the field project team, but a serious lack on the part of the company.) The main tabulation of committed costs resided in a three-column excel spreadsheet on the personal computer of a purchasing agent, who was located in a country other than where the project was being built, and where the project manager resided. This spreadsheet was not connected to any of the accounting flow processes. It was merely a list of commitment amounts made, the vendor's name, and the date.

The site-based project manager and construction superintendent were so mad at each other, that the project was like a war zone. I had been warned about it. On the morning of my first day visiting the project, the superintendent and I went for a ride in a job pickup truck, and I heard about all the bad things concerning the project manager. He looked at me across the front seat of the truck and said, "I cannot take it any longer." In the afternoon of that same day, I took a similar ride with the project manager who complained about the superintendent and told me, "I cannot take it any longer." During my briefing prior to going to the site, I had been told of at least two instances where these two guys had been talked to about teamwork and getting along, but I could tell that this relationship was beyond repair.

This project had fundamental problems with both the project management and field supervision. The overall schedule was not being tracked, and no one was doing short-term field schedules. Neither the owner's representative, nor the contractor's team, had any controls in place for changes. As the owners' operations group came up with change ideas, the changes were simply incorporated into the project, without any accountability or change control process. After all, so people felt, it was a cost plus job.

One of the first things I did that first day was to talk with the top site management group (I cannot refer to this group as a team). I convinced them to participate in a problem identification and solving process with me. The next day, we gathered the entire group of one hundred workers and staff on the project. Everyone except for the owner's personnel was there. I introduced myself, and described the improvement process we were about to engage them in. I asked the one hundred workers to break into small groups, and answer these simple questions:

1. What do we need to START doing?
2. What do we need to STOP doing?
3. What do you need?
4. What will be the result? How will the project be?—If we START and STOP what you suggest, and give you what you need.

After breaking down into small groups and taking about thirty minutes to write their answers, I collected the surveys, thanked them for their participation, and invited them back for a total project lunch and team meeting in two days.

The survey results were very revealing. Some of the words that occurred repeatedly were: Tools (16 times); Communication (14 times); Transportation (8 times); Safety (7 times); Planning (5 times); and Morale (4 times). Here is a Pareto Chart of these issues and a sampling of the things written in the surveys:

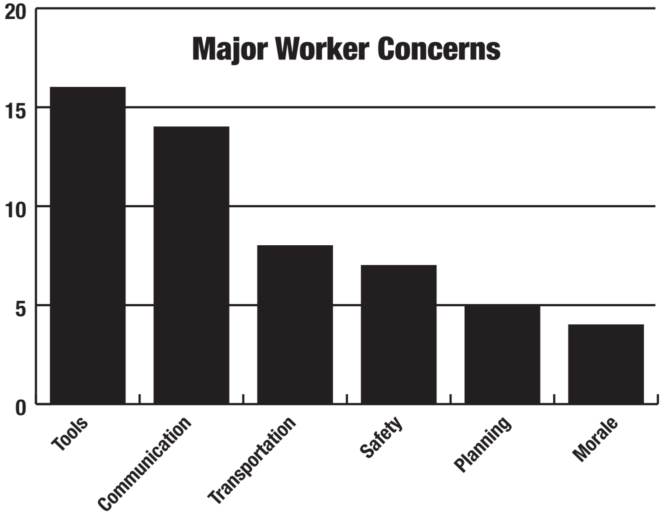


Figure 22.1—Major Worker Concerns

- "Struggle for power in upper management is terrible and the guys feel it."
- "Crews stop fighting among each other."
- "Better communication among chain of command."
- "Look out for one another more often. There is no group—everybody is for themselves."
- "Stop jumping the gun, think before you act. Plan out your job and what is going to happen that day."
- "As a group, make sure fellow workers are being safe and are not making any bad decisions"
- "Plan your work and work your plan. Stick with one game plan."
- "Work as a team instead of individuals."
- "Too many cliques and too much favoritism on the site. What's good for one is not good for another."
- "I need a lead man who is more concerned about my safety than getting the job done. I need a lead man who

cares as much about me going home at night, as getting here in the morning."

- "Better training for people who don't know what's going on, if they are doing something new."
- "I need size 16 work boots."

In question 4 of the survey, the workers expressed their thoughts about how the project would be after making the recommended changes:

- "Less frustration, lower task time, higher morale among workers."
- "I would have more confidence to do my job."
- "Less safety violations. More production. Happy workplace."
- "A happier, safer, more productive crew. Better product. Won't have to do things twice."
- "Less fatigue. Better work attitude. Safer work environment. More production."
- "More work getting done due to less concentration on things besides work. Better communication on tasking."
- "It will be easier to move forward, meet deadlines. And save man-hours = company saves money."
- "It will be a more efficient and safer work place. Less time consuming to each task and project. Happier employees."
- "Happier work environment. People who look for advancement will have something to work for. No uncertainty. Safe work environment."
- "Project will run smoother. Work will have better attitudes. We will work more as a team and be successful as a team."

It was obvious that this group had no clear leader in place, and the morale on the site had gone into the toilet. The fighting between the top two men, the lack of overall project control between the owner and contactor and the lack of a functioning job cost accounting system, had resulted in a seriously dysfunctional project. I had no choice but to temporarily fill the leadership void. The day after summarizing the results of the worker survey, I gathered the project manager, superintendent, and five of the other top supervisors to review the results. The room grew pretty quiet as they read the survey responses aloud. I insisted that the responses were read aloud, and each one of them had an opportunity to read the various survey responses. While reading the responses, they began to realize how screwed up things had gotten, if they did not already know it.

I barely knew these guys, and I needed to get them plugged in and effectively activated quickly. After reading the responses from the workers, I asked the project manager, superintendent, and key foreman to tell me what they thought would happen if nothing was done to change the situation. Here is what the top seven people on the project said would happen if no changes were made (written on a white board):

- "Someone is going to get hurt."
- "There might be some kind of violence on the site."
- "The schedule and cost will slip further."
- "Quality is going to suffer."
- "Some of the key people will quit just as we need them to finish the project."
- "The plant might not work properly for the owner when we go to start it up."

Then I asked them if these outcomes were acceptable to anyone in the room. There was a long silence. No one was willing to say that this was acceptable. Then I asked them to reread what the crews had said about their aspirations for the project, as expressed in their answers to question 4 in the survey. Here is a comparison of the two outcomes that we wrote on the white board:

OPTION A: **The Future if Nothing Changes**	**OPTION B:** **The Future if Changes are Made**
• "Someone is going to get hurt." • "There might be some kind of violence on the site." • "The schedule and cost will slip further." • "Quality is going to suffer." • "Some of the key people will quit just as we need them to finish the project." • "The plant might not work properly for the owner when we go to start it up."	• "Less frustration, lower task time, higher morale among workers." • "I would have more confidence to do my job." • "Less safety violations. More production. Happy workplace." • "A happier, safer, more productive crew. Better product. Won't have to do things twice." • "Less fatigue. Better work attitude. Safer work environment. More production." • "More work getting done due to less concentration on things besides work. Better communication on tasking." • "It will be easier to move forward, meet deadlines. And save man-hours = company saves money." • "It will be a more efficient and safer work place. Less time consuming to each task and project. Happier employees." • "Happier work environment. People who look for advancement will have something to work for. No uncertainty. Safe work environment." • "Project will run smoother. Work will have better attitudes. We will work more as a team and be successful as a team."

Figure 22.2—Envisioned Future States With or Without Changing

Then I asked them: what kind of job did they want to be going to work to every day? The one described in Option A or Option B? The answer was obvious. The workers had identified what they felt needed to START, STOP and their NEEDS. And they clearly described what the result could be if everyone just did it.

While the group was listing the bad things that would happen if no changes were made, one of the foremen was making notes on his copy of the survey results. When I asked the management group what needed to happen, this man read off his own analysis of the survey, which was the word count that is listed above. This led to the creation of a large chart on the white board that looked like this:

Challenge	Current State	Best Practice
Tools —16	The current state was described here for each of the items on the left.	The group identified what they thought was the best practice that could be used to fix the challenges, and turn around the "Current State."
Communication—14		
Transportation—8		
Safety—7		
Planning—5		
Morale—4		

Figure 22.3— Discussion of Best Practices

The management group basically confirmed most of what the crew had written in the surveys, and gave further elaboration about the current state of affairs with each of these challenges. They collectively filled in what the "Current State" was on each of these issues. I asked many questions and listened to their answers as one of them wrote notes on the board.

I then continued to ask questions to find out what the best practices were that they had seen in their working careers at various projects and companies. There were no spring chickens in the room. A couple of the men had forty years of experience under their belts. (I had reviewed their work histories from the HR department before coming to the site.) So, I was confident that they had the collective knowledge needed to solve their problems. We proceeded to write down a summary of the best practices in each of the six areas of concern on the project.

There it was—a list of the six biggest performance challenges, the current state of affairs, and an identification of the best practices in those challenge areas. The front line workers and the existing management and supervisory team on the project had developed all of this. That was the end of Day 2. At that point, I asked the group to go home and get a good night's sleep, and think about where we were and what the next steps should be. I postponed the big lunch meeting until Day 4 because I was not sure if we would be ready for everyone before noon the next day. I needed Day 3 to get these hard nuts to agree on a path forward, and make some mutual commitments.

> COMMENT: I could have listed my own ideas for the best practices here and, in some ways, I did coach them along by asking questions. But the benefits of asking their thoughts and ideas about best practices were three fold. First, it gave me an opportunity to see what kind of experience and training that this group had been exposed to during their careers. Second, it served as their opportunity to create the solution to their own problems. Third, it gave me an opportunity to identify areas where they might need some coaching and training to help them adopt the best practices that I was aware of in the industry, if they were not already aware.

The overnight break was timely, and I was pleasantly surprised at the level of involvement when we re-convened our meeting the next day. A couple of people who did not say much the day before, started to open up and express their ideas for improvement. We hit a brief roadblock when one of the foremen, a young but outspoken man I will call Bill, exclaimed that doing short-term schedules was a waste of time because the owner kept changing things so often. I had to push back on him. "So Bill, have you ever been in a military battle or played on a football team?" I asked. "Do you think that the military does not develop a plan of attack just because they don't know exactly how the battle will go? Or, does a football team not have a game plan, even though they don't know exactly how the game will go? Of course football teams and military units make plans, even though they may change. There is no excuse for not planning."

After a good amount of healthy discussion and debate, a list of ten written critical action items arose from the meeting. Then it was time for me to get specific commitments from the group about who was going to do what. I also had my part to play on a couple of the items, and I started out by making my commitments to the group about what I was going to do. The rest of the group followed suit, and we ended up with a simple but powerful plan in place to help the team move forward.

The next day, Day 4, we re-convened the entire group of one hundred front line workers with a hot lunch. As the men were completing their meals, each group found a volunteer to stand up and read their surveys aloud, so everyone in the room could hear what the other small groups wrote on the first day. You could hear a pin drop in that room. While everyone was listening to what was being read from the surveys, the feeling in the room started to change. Especially as they read the desired future, which they had written about. People were finally being listened to and heard—and in a public way. Then the project manager and superintendent rose and stated what their commitments were. I stood up and committed to do what I needed to do where and when needed, and stated that I would also join everyone in holding each other accountable for keeping their commitments. I was committed to make sure that the men got what they needed to be successful, and I promised that to them. That was my commitment and that of the top leadership team on the project. To close this process, I pulled out my copy of the survey results and read a few of the key points that were raised by certain groups. The survey responses of STOPS and STARTS were not merely 'bitch items' to management, but they were a call to fellow workers and the group to behave in a different manner to the past. I opened the floor for comments and asked everyone to make their own commitments to change. A number of individuals stood up and made some very constructive comments, making their own commitments to the group to work together for a better project.

> COMMENT: Many of these men had worked in their trade for over twenty or thirty years, and this was the first time that anyone had asked them for their opinion and ideas about how to do things and make a job work better. Unfortunately, it is a reaction that I get wherever I have an opportunity to engage with the front line people under my influence. When people are involved and engaged in helping shape the larger work environment of which they are a part, the change in attitudes and performance on the job is immediate and lasting. It still causes me personal frustration that the level of leadership is so underdeveloped in our workplaces today. Unfortunately, I have to say that it is a problem that extends right to the top of many organizations.

On the surface, this looks like a time consuming process to create a set of action steps to turn around a project. Yet on closer look, it required a relatively small amount of time on the part of the workers, supervisors and managers on the project. Here is a summary of the 'work interruption' time to turn this ship in a different direction:

Group	Time Required
Front line workers	Two one-hour sessions, plus a lunch
Front line foremen	Three one-hour sessions, two four-hour sessions
Four site management team people	Three one-hour sessions, two four-hour sessions, and one two-hour session
Facilitator	Four days, including personal work observations, and interactions

Figure 22.4—Staff and Worker Time Needed for Alignment Process

COMMENT: Construction project sites can be hectic and are often associated with extreme time pressures. It can be difficult to justify taking away from production time to engage in an alignment exercise such as this one. A boss has told me that I should take a more directive approach to my management style. The thought goes: "You should be able to walk a site and understand what the problems are and fix what is not working by telling them what to do." This has not been my own experience though, nor have I seen any middle managers who can do that. More often, I see middle managers who go to a jobsite on a weekly basis, and never see the real underlying challenges of the project. When they do, there can often be someone at the home office who does not back them up. Sometimes site managers know what is needed, but if it requires something above their authority and delegation level, their requests can get 'shot down' by the home office. But when supported by the evidence of a survey of worker needs, the needs of a project are more often heard.

Within a couple weeks, all of the immediate action items were completed, and all of the operational changes were implemented. I held people to their commitments while also keeping mine. There were no accidents or injuries; look ahead schedules were updated on a weekly basis; the tools were organized and additional tools and supplies were purchased as needed; I acquired another van for transportation; safety rules were being followed; people were looking out for each other; we got some size 16 work boots for "Big John;" and when the plant was completed, it operated in accordance with the owner's requirements.

In the end, we completed the project. Although our intervention was able to control any further erosion of the schedule and budget, it came too late to eliminate the cost and schedule overruns.

> FINAL COMMENT: This process, by example, was a lesson for everyone, including the front line supervisors. If they had not already known it, a big part of a foreman's job is to keep his people supplied with the tools, materials, equipment and information that they need.

23 TRAIN CONSTANTLY

"Job training empowers people to realize their dreams and improve their lives."—Sylvia Mathews Burwell

The excellent companies in every field of work are committed to employee training. As the power of the trade unions in the U.S. has declined over time, the labor pool of entry-level skilled workers has diminished accordingly. Employers could once expect that when they hired, say, an apprentice carpenter, he or she would have been in the union's apprenticeship program, was familiar with the tools, knew which one to use for what, and was ready to work side-by-side with the other seasoned carpenters already on the job. They in turn, having begun the same way themselves, were willing to guide the newcomer along and teach him the more intricate skills they had already mastered. It was a way for people to rise through the ranks, and in my career, I've met many of these extremely competent people. In the merit shop or non-union world, some employers are picking up the slack and implementing their own employee training programs.

The importance of employee training can't be emphasized enough. Not only does it benefit all new hires, it works to the advantage of the company as well. People who understand the functions of their job and know what's expected of them are much more likely to feel at ease and be productive. Learning the ins and outs of their new position will keep them stimulated, and they'll be much less likely to call in sick because they're bored.

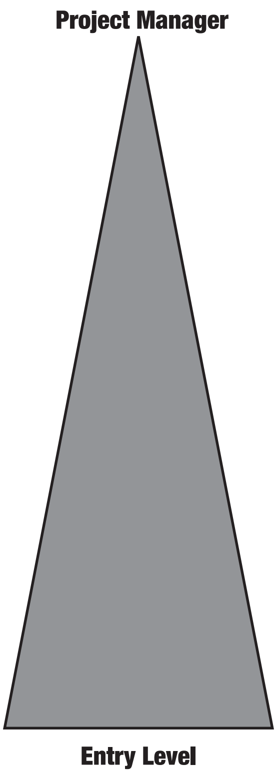
Newly hired employees are not the only ones to benefit from training. URS, the largest engineering firm in the United States, has their own internal project management training and certification process, and they even give four hours of internal training on defensive driving, mandatory every other year. They realize that in the work that they do, a good percentage of their accidents occur while people are driving while on the job. Keeping existing employees well trained with new technologies and systems, makes them more likely to stay on the job, thereby reducing turnover. Cross-training—teaching people skills needed for another position—benefits both employee and employer. As the kind of leader the principles in this book will help you to become, you'll already know the personality traits and skill sets of the people on your team. You can use selective training by hand picking which of your people will do best at learning whatever new skills you want them to have, or provide blanket mandatory training on subjects that are critical for everyone.

Here are some ideas to implement internal training within your organization. When I did a stint with Adolfson and Peterson Construction, it established an operational excellence program where they set up groups to work on various parts of the operation. I was the chair of the human resource group, and we discovered that people in the company were interested in training. There was also a scheduling excellence group working on ideas for enhancing the company's performance in that area, so the two committees collaborated and held a "Scheduling Olympics."

The idea was to get the divisions together and have competing teams present their project scheduling approaches. We filmed the event and put it on the company intranet, so that remote employees and future new hires could watch the presentations and take away the best practices. We had a blast. We played the theme from the Olympics, and when one of the teams came out to give their spiel, we played "Who Let the Dogs Out." Everyone broke up laughing and had a great time.

At McDevitt and Street Company, internal training took on a significant meaning in the organization that was growing at a compound annual rate of 35%. Every division had their own "Superintendent's Weekend", where everyone in the division participated in various learning sessions given by internal project teams. There were also separate companywide weekends, one for the professional estimators in the company and one for the business developers. These events were hosted internally, and there was a great deal of cross-pollination of ideas between professionals across the company. All of this internal training created a culture of continuous improvement. Because the company hired some of the best people in the industry, the best practices were all available within the company's ranks.

On the Job Training Ladder



Leadership Training
Advanced Planning and Scheduling
Earned Value Concepts
Project Reporting
Construction Accounting Concepts

Delay Surveys, Production Control
Crew Based Look Ahead Planning
Procedures Manual
Safety Manual
Advanced OSHA Rules and Regulations
Goal Setting
Labor Motivation and Productivity Concepts
Management Style
Supervision Basics

Job Specific JSA
Trade Mentoring
Basic Task Training (For Trades)
JSA Training
Basic OSHA Rules and Regulations

Figure 23.1—Progression of Training for a Project Manager

Give your people a chance to put their best foot forward, have some fun, get some recognition, and drive constant improvement within the company. Believe me, if you do not have the best industry practices in house yet, people will find them out for themselves with motivation like this.

Paul Akers, a disciple of Lean practices and owner of a specialty manufacturing company, considers the daily Lean meeting essential for training. Everyone in the company meets with his or her team for thirty minutes at the beginning of the workday. The agenda is simple. They discuss what went right over the last day, what went wrong, what can be done to fix what went wrong, and what can be done to improve efficiency and eliminate waste. It is that simple. In rotation, every employee gets the opportunity to present his or her ideas for improvement. The group gives them immediate feedback on their presentation. When the idea is implemented, a short video is made and shared with everyone, so that learning happens across and within functions.

Training and advancement is a strong motivation, and it improves operational results. Using a progressive approach like the training ladder in Figure 23.1, is one way to organize it for a line organization with an advancement ladder.

Tamar Lasurashvili, professional trainer, describes the benefits of internal training (15):

- Corporate Culture—'Speaking the same language' is one of the greatest benefits of internal training.
- Real Life Examples—External trainers are experienced and can provide examples, but someone within the company can teach principles that can be applied to actual work process, with real-life examples. Employees will be more likely to learn from the person already acquainted with their jobs and organization.

- Colleagues' Appreciation—Internal training provides an opportunity for self—expression. Preparing and conducting training is a learning opportunity and challenge. Successfully conducted training sessions can lead to greater respect from colleagues.
- Sense of Importance—Employee presenting the training feels valued and appreciated.
- Knowledge Sharing—Presentations include special business knowledge that will be spread thought the organization.
- Personal Development—Both internal trainers and employees benefit from the process. Trainers seek new information, discover field novelties, read related books and articles, and prepare presentations.
- Friendly Atmosphere—Internal trainings are conducted with familiar peers within the organization. Employees are more relaxed, listen attentively and ask questions. Experience shows that people are more open in a familiar environment.
- Organizational Development—The above benefits demonstrate how internal training can affect the organizational development process. Organizations that have the highest qualified employees are the strongest, and most able to achieve their goals and missions.
- New Opportunities—Internal training provides entry-level employees an opportunity to gain better understanding of their future job duties, when they move up the ladder, or cross over into other roles.
- Cost and Time Effectiveness—Many organizations do not have the resources of time and money to train all of its personnel. Bottom line cost and time pressures hinder the use of off-the-job trainings. Internal training

provides an option that fits into these pressures. In less time than an external training, someone can get new skills on the job that are exactly specific to the job and company processes. When employees experience a caring supervisor, it brings feeling of appreciation that leads to motivation.

- Talent Discovery and Development—Trainings create an opportunity for leaders to observe the presentation and communication skills of those who conduct the training, and the light atmosphere lets employees open up.

Life Lessons

The world is a rapidly changing place that calls for a personal commitment to life-long learning and personal development. I have had the opportunity to hire many talented people and have reviewed hundreds of resumes. I always take notice of those individuals who list their various courses and certifications that they have earned beyond their formal education. It is a sign to me that this individual has an interest in their work life, career and self-improvement. This is what it takes to thrive in the rapidly changing work world today. Companies are thirsty to find people who come prepared to work, with the special skills needed for the job. Hiring authorities are also looking for those individuals who demonstrate their ability and willingness to learn.

24 PRACTICE, DRILL, REHEARSE

"The way anything is developed is through practice practice practice practice practice practice practice practice practice and more practice."—Joyce Meyer

Can you imagine the U.S. military going into battle without practice? For especially difficult tasks or operations, the construction industry needs to follow the military's suit, and practice or rehearse the procedure to ensure its flawless and successful execution. Some examples of actual practice are related to training and safety. Many of us have taken first aid training and can remember practicing artificial resuscitation on a specially designed dummy. On many construction sites and at most mines, we do regular evacuation drills to prepare everyone to escape a fire, a release of toxic gas, or other life-threatening situations. To prepare for making heavy lifts with a crane, we first draw up lift plans, and at times when the risk factors were uncommonly high, you would do a mock lift.

Sometimes an actual rehearsal is not possible because of the nature of the task, and in that case, we do a dry run or 'virtual practice.' Early in my career, I was placed in charge of a three-day mine shutdown, during which we had to equip the production shaft with hoist ropes and ore-conveying equipment. My first step was to meet with the mine superintendent one-on-one to discuss an overall approach. The two of us then met with the foremen to outline the overall objectives and results that we wanted to achieve.

Finally, we met with the men who were going to make this difficult project happen and developed a detailed game plan. We did a lot of white-boarding that we turned into detailed charts and diagrams of how we would proceed.

We continued to meet for two weeks before the actual shutdown, as the men assembled the necessary materials, tools and equipment from the checklists we had made and reviewed the communications plan. It was necessarily complex and required the involvement of the crew in the details. We could not perform an actual physical practice, but we treated our planning sessions as actual drills.

When the scheduled time for the shutdown finally arrived, the new equipment was installed without a hitch because we had practiced, drilled, and rehearsed.

You have to get out from behind your desk and get involved. Armchair leadership doesn't work. Keep your team or organization fit for duty by practicing, drilling, rehearsing, and by constantly revising 'what if' scenarios.

Life Lessons

Mental rehearsal of acting out your plans, is a tactic that is well recognized in sports and in life. Here are some examples.

A friend of mine lives in California and has taken up wind surfing. He took a lesson to help himself get started, and then spent an afternoon standing on the beach in a wind surfing position, with his eyes closed and mentally rehearsing himself surfing the waves. When he stepped onto the board, he was much better than he was at the end of the lesson.

While writing this book, I often found it difficult to come home from a day's work, and discipline myself to sit down at the computer to dedicate a couple hours to writing. So I started to add a simple mental rehearsal to my day. Toward the end of the work day, I would start to envision myself getting home, and after a few minutes of stretching, sitting down at my desk to write. This worked wonderfully. In fact, if you begin to rehearse some simple things like that, doing something on the very day that you rehearse it mentally, you can begin to rehearse and mentally prepare for achieving longer term goals and accomplishments.

One of the more remarkable stories about mental rehearsal is about Captain Jack Sands, a navy pilot who was shot down over Vietnam in the seventies (16). Captain Sands spent seven years confined in a prison camp without any physical activity. To help pass the time and preserve his sanity, he decided to practice playing golf mentally. He couldn't actually play golf in the 5' × 5' cage he was in, but that did not prevent him from mentally playing a course that he had created in his mind. Every day while in prison camp, he played golf in his mind while his body sat in his cell. He always played a perfect game, never hooking, slicing or missing a single shot or putt. Although Captain Sands was an average weekend golfer before his active military duty, barely breaking one hundred, when he eventually got onto a real grass-and-air golf course after his release, he shot an amazing score of seventy-four on his first day out. He had taken more than twenty strokes off his previous game seven years earlier without once laying a hand on a club. Captain Sands' golf game changed dramatically because he had programmed his brain to play it that way.

A common trait of high performing athletes and individuals is that they all do some kind of mental rehearsal—closing their eyes and practicing their winning game, or visualizing their success in their heads over and over again. Your reality is defined by your mind, not your external environment.

This is my third book. For my first two books, I merely envisioned publishing the books and selling them on Amazon. For this book, I have envisioned a completely different outcome and approach to get the book into your hands. Realize that if I had not done these mental rehearsals, you would not be reading this book.

25 TREAT PEOPLE WITH RESPECT

"The final test of a gentleman is his respect for those who can be of no possible service to him."—William Lyon Phelps

I will never forget the day my parents brought home our first pet, a week-old beagle named Sparky. To house-train Sparky, my mother taught me to hold his nose close to his mess when he made one, and then escort him out the back door while saying "bad dog." Many supervisors use the same tactic when an employee makes a mistake, berating them for their error and holding their nose in it! Sometimes the employee is fired immediately on the spot!

Responsible people are already hard enough on themselves when they screw up; they don't need to be constantly reminded of it or cut to pieces for it. Some of the most egregious breaches of good management are found in the employee evaluation process and are made by people with no professional training in human resources. Instead of working with employees on individual development plans to find ways to enhance their strengths and de-emphasize their weaknesses, these so-called managers have ready-made check boxes with a list of infractions or shortcomings in the job. Personnel reviews should not be the time for fault finding, but for constructive feedback and guidance. Think about this as a manager or leader: the way you treat your people might be how they are going to treat their kids when they get home from work.

There are some sound reasons for this recommendation. Let me explain.

Human beings are not well equipped to give or receive corrective feedback. I have been around the mining and construction industries and have seen my fair share of yelling and screaming on the part of supervisors. We refer to this as the 'old school' way. Even high-level executives who use a smooth delivery, can come across as demeaning and condescending. Regardless of the style, harsh reprimands, punishment, constant corrections, and negative feedback are destructive. There is often the need for corrective feedback, given in a coaching manner, to help someone improve job performance. But pure negative feedback in the form of a punishment or reprimands from a superior, let alone yelling and screaming, most often creates a 'fight or flight' response in the receiver, regardless of the skills of the giver of negative feedback.

Walter Bradford Cannon, M.D., a physiologist, first popularized his ideas about fight or flight in 1932. It rests on the understanding of our cave man, hunter-gatherer roots as early humans. When early man was faced with certain stresses, his body was equipped to respond and prepare to either fight or run away (flight). The physiological responses of fight or flight in the body are frightening:

- Acceleration of heart and lung action
- Paling or flushing, or alternating between both
- Inhibition of stomach and upper-intestinal action to the point where digestion slows down or stops
- General effect on the sphincters of the body
- Constriction of blood vessels in many parts of the body
- Liberation of nutrients (particularly fat and glucose) for muscular action
- Dilation of blood vessels for muscles
- Inhibition of the lacrimal gland (responsible for tear production) and salivation
- Dilation of pupils (mydriasis)
- Relaxation of the bladder
- Inhibition of erection

- Auditory exclusion (loss of hearing)
- Tunnel vision (loss of peripheral vision)
- Acceleration of instantaneous reflexes
- Shaking

How safe or effective do you think someone is when they are in this condition after being yelled at or demeaned by a supervisor?

I would say that fewer than 10% of the people I have met in supervision or management have the skills to deliver negative feedback without causing more harm than good. With these odds, I feel comfortable recommending that it be eliminated from the workplace. Instead, management leaders should take responsibility when things go wrong. Perhaps something happened because management did not provide sufficient training. Maybe the wrong person was placed into the wrong job. Whatever the case, when management lays blame on staff for mistakes when they occur, it closes off the mutually beneficial two way communication within the organization.

There are rare exceptions though. In 1976, Al Johnson Construction Company assigned me to a multiple mine shaft sinking project in Alabama at Walter Resources Coal Mine Five and Seven near Tuscaloosa. There I encountered a situation where negative feedback was absolutely necessary. As the shaft engineer, one of my responsibilities on this project was to be available on twenty-four-hour call, to come to the job and assure that the shaft forms were properly aligned before concrete was placed. After a few weeks of this, I got pretty good at it, and I basically ended up becoming the concrete forming foreman on all the pours. Because of the multiple crews on rotation and multiple shafts, I was involved in nine times as many pours as each of the foremen, so it made sense.

One night, I was aligning the forms, at the shaft bottom, working under a small flow of water that was leaking into the shaft from a water vein. The water splashed on my miner hat and over my waterproof slickers—jacket and work trousers. All of a sudden, the water seemed to run warm and had the smell of urine. Yes. One of the miners with the nickname “Nasty” was pulling a prank and urinating on me. I shined my cap light up to see Nasty on the deck above me with a grin on his face. My response was not a smile.

After I finished my job setting the forms, I got in the bucket and rang myself up to the deck where Nasty was. At the time, I was pretty ‘buff’ after four years of lifting weights in college. So I grabbed Nasty by the collar and held him against a post, making a threat that I am not proud of today. Then I got in the bucket, went to the top, and told the project manager that it was “either Nasty or me,” but I could not work in an environment where a worker could act with such hostility, without some kind of consequence.

This was a job being manned by the UMW union, and it was during an unusually difficult labor-management period in the coal mines. There were strict rules about employee reprimands in the labor contact. We used them. And when we contacted the union representative about it, they decided not to defend Nasty against our pink slip.

There are other times where zero tolerance policies are necessary. Some construction and industrial companies have zero tolerance policies for various infractions: working at heights without proper fall protection; possession of firearms or alcohol on the work site; and sexual harassment. I have seen a wide range of employee policies within different companies, depending on whether they are small or large, private or publicly owned, union or non-union. As a leader, you must understand the specific culture and circumstances you are working in.

I use these examples to show that yes, there are some times where reprimands or corrections are needed, but they are very rare. Unless a knowing infraction is serious, good people will apologize and clean up their mess after making an honest mistake without being asked, and make a commitment to avoid the same mistake in the future. Maybe it is the manager's fault for putting the wrong person in the wrong job in the first place?

Although it is a cliché, I think that following the Golden Rule is still a good idea:

"Do unto others as you would have others do unto you."

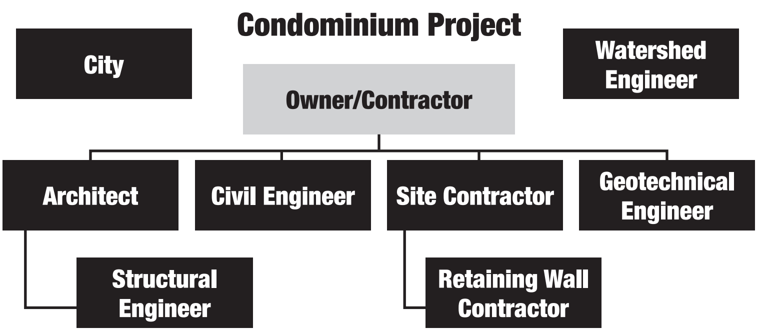
26 BREAK DOWN BARRIERS

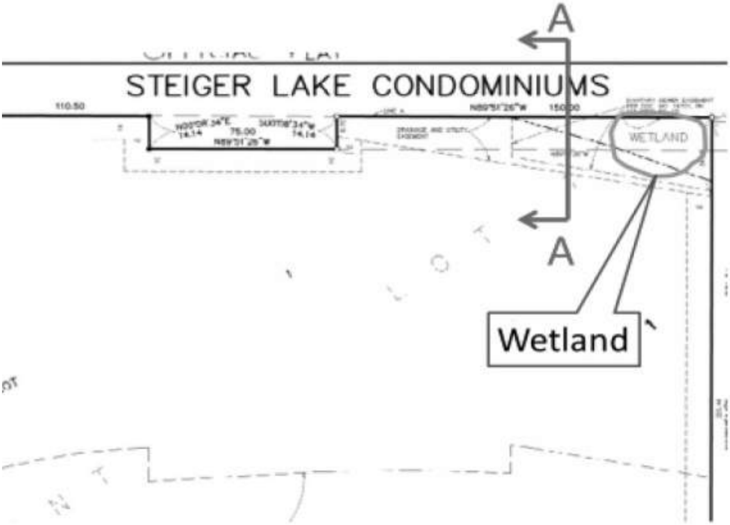
"We build too many walls, and not enough bridges."—Isaac Newton

Within larger organizations, one of the biggest obstacles to innovation and program execution is poor internal communication. A silo mentality—an unwillingness of units within the same company or project to share information—develops, so that departments guard knowledge and ideas rather than share them. People may be working hard, but in isolated groups. Internal politics can compound the problem with rivalry and turf wars. Sometimes the enemy is seen as an internal department rather than outside competitors.

It's up to the corporate or project leader to promote internal communication, by tearing down internal fences, weeding out in-company politics, and rewarding cooperation. This sometimes calls for drastic and innovative action.

Let me tell you about a case where I was involved in an engineering 'accident waiting to happen' as a result of compartmentalization. I was directly responsible for the design, development, and construction of a condominium project: on this chart, I was in the white box.





The lot for the project was flat, but it sloped off to the north into a wetland, as shown in the illustration.

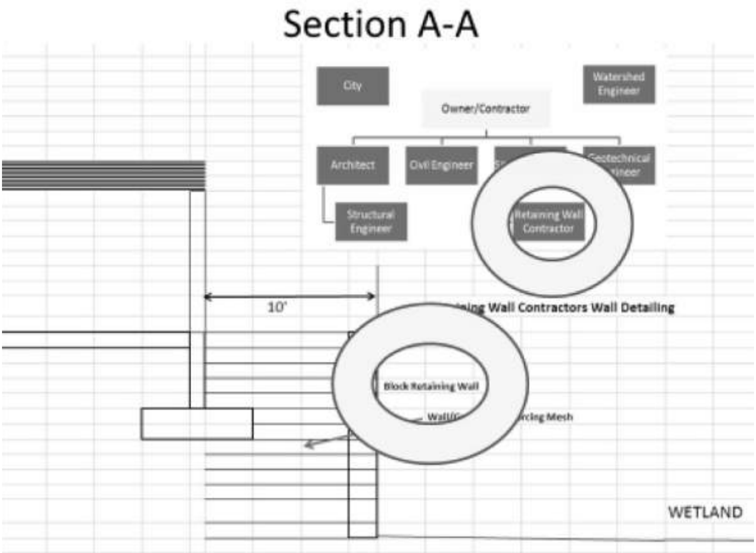
While my company was conducting due diligence prior to closing on the property, our land manager hired a geotechnical engineering firm to do a conventional survey, and give recommendations for foundation design and construction.

As usual, the structural engineer took the report from the geotechnical engineer, and designed the footings according to the recommendations in the report.

The design of the project was completed, but before we could get a building permit, the city required that we get a release from the watershed district's engineer because the lot encroached onto a wetland. The watershed engineer objected to the plan, as it did not offer the wetland protection that he felt was mandated.

From there the ball was passed on to the site contractor, who then contacted a retaining wall specialist to put in a proprietary ReCon wall system.

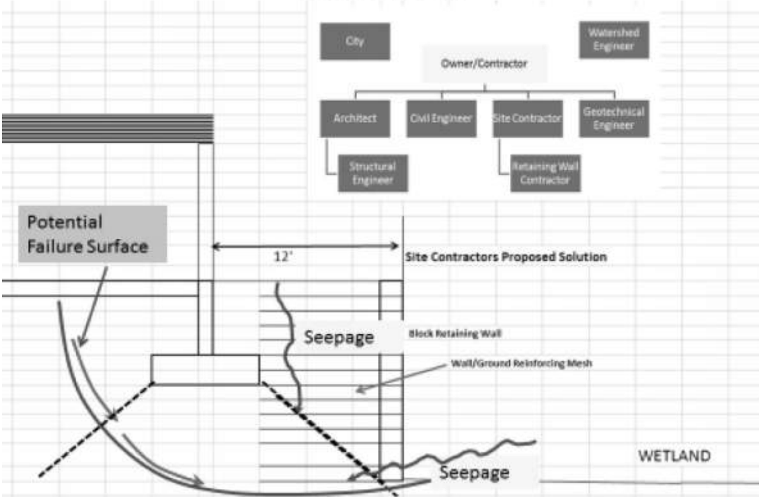
The retaining wall company submitted their plans for the wall through the site contractor. The design contained some earth-reinforcing mesh as shown here, and it was stamped by a registered engineer. However, note that the reinforcing mesh layers extended back to the face of the building foundation. When I pointed this out to the engineer for the retaining wall, he said that it was beyond his scope of work to worry about the foundation of the building. Technically, he was correct.



The site contractor's solution was to move the wall out another two feet, but this still did not address the foundation pressure influence that was impinging on the retaining wall system.

Compare the evolved design to the original intent of the foundation design, before the watershed engineer got involved and demanded the retaining wall. The earth pressure influence from the foundation now impinged on the reinforcing mesh for the retaining wall.

Section A-A



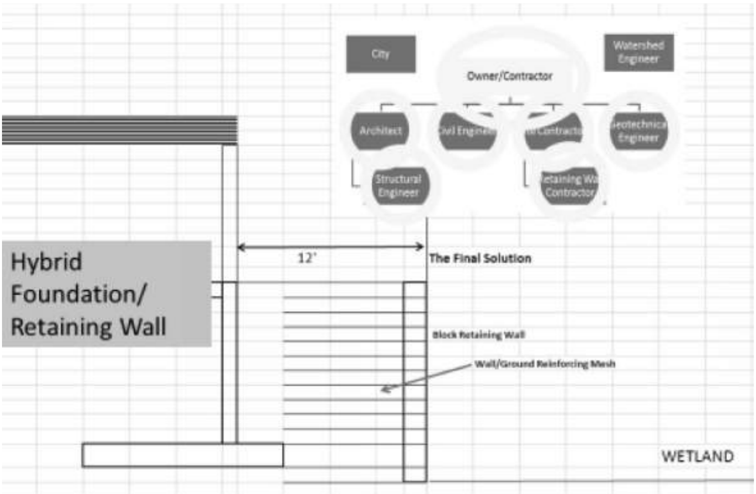
This scenario was an accident waiting to happen, as it set up the potential for a classic slope failure under the building footings, because it was a clay soil and could not absorb much water.

We no longer had a slope away from the building to carry the rainwater down into the wetland. The way the site was now sloped and graded, standing water in the wetland had a path to seep into the clay under the footing and retaining wall, causing further instability. Another cause for instability was the potential influx of water from the gutters and downspouts in heavy rain, which would contribute to saturation of the clay and a classic slope failure under the foundation. Have you ever seen a \$15 million building slide off a hill?

The Solution

Based on teamwork and design integration, the solution was to lower the depth of the foundation and design it as a hybrid foundation/retaining wall as shown. In other words, the foundation for the building was designed to hold back the earth under the building. The retaining wall was there merely to create a walk around and hold the earth between the building and the wall. The wall could have been removed and the building would still stand.

The Final Solution—Based on Teamwork



The science to evaluate this proprietary retaining wall system, and how it would interact with the foundation pressure cone of the building, did not exist. As a result, the solution required input from the geotechnical engineer, civil engineer, architect, structural engineer, site contractor, and the retaining wall contractor and his engineer.

What I thought would be a sequential linear process could not be done sequentially after all. I had to break down some of the traditional barriers here and get a team working on it. Here was a case where all involved could have done their job correctly and it still could have led to a failure!

Engineering failures like the ones we see and know about are good examples. However, there are many operational failures that do not leave the same kind of forensic evidence because the human communication and interface points are not visible.

I am convinced that many failures in organizations, projects, designs, programs, and initiatives occur because of compartmentalization and limitations to our field of vision. One of your jobs as a leader is to break down barriers. Get people out of their boxes and silos to work together in super-teams. Don't let poor communication lead to operational failures. As a leader, you need to keep your radar up for the details that can derail your organization, team, program, or project. Read the foundation design example I just gave you again.

Life Lessons

It's true, breaking down barriers between interdependent work groups is helpful in creating a high functioning workplace. It is also true that if you are experiencing discord in your personal life, it will affect your professional and work life. Repeatedly, studies have shown that people are more likely to bring stress from home into the workplace, than they are to bring stress from work to home. So regardless of the motivation, it pays to invest time and attention to your relationships in all three hundred sixty degrees around you.

When it comes to your personal family relationships, we all hold onto the ideal that love and harmony are to be sought. And it's true. Discordant relationships are like lumps of dirt under the rug, and if we have the ability to smooth out those lumps, all the better. However, sometimes it is also just as important to recognize when you need to set personal boundaries to protect yourself from unwanted emotional and mental harm. 'Peace at any price' is not a healthy approach to relationships either.

Some parents are blessed with low maintenance and self-sufficient children who grow into healthy independent adults. Others are not so lucky. If you face challenging relationships with your children, it helps to know that not all problems are caused by poor parenting. Much of behavior is genetic. Some would argue that all behavior is genetic. In any event, take solace that just like your parents, you did the best you could with what you had when rearing your children.

Life event	Life change units
Death of a spouse	100
Divorce	73
Marital separation	65
Imprisonment	63
Death of a close family member	63
Personal injury or illness	53
Marriage	50
Dismissal from work	47
Marital reconciliation	45
Retirement	45

Marriage and relationship strife and divorce is a large source of stress in American life. It is a well-recognized fact that about 40% of marriages in the U.S. end in divorce. In India, the official divorce rate is only 1.1%! (Spending time in India is on my bucket list, if for no other reason than to find out why their divorce rate is so low.) The top ten items on the Holmes and Rahe (17) stress scale are listed above.

Note that martial issues occupy five of the top ten items on the scale. I am not a marriage expert, and this is not a marriage advice chapter. But if your marriage is causing you stress, it is worth your time to address it in any and every way that you can. It is helpful to realize that marriages go through cyclical difficulties. While there are many good reasons for divorce, those who divorce often do so when things are down and are not able to see forward to the time when things will be on an upswing. Communication problems are a major cause of divorce. There may be other root causes of the poor communication, but other issues often manifest as barriers to good communication.

In this respect, life mirrors work, and work mirrors life. There are a myriad of strategies, tactics, processes, and procedures to break down barriers in life and at work. Take time to discover what is best for your situations, and do something about it.

For greater success in all areas of your life, break down barriers whilst keeping healthy boundaries.

PART VII
COACHING

27 TREAT QUALITY AS A VIRTUE

"Quality is more important than quantity. A home run is better than two doubles."—Steve Jobs

I first learned about quality assurance in my civil engineering courses at Michigan Technological University where we used standard industry tests to measure the strength and durability of concrete, steel, soil, and other construction materials. In our design courses, I came to understand how the properties of these materials influenced the design performance of engineered structures. As a result, the importance of maintaining quality assurance is a crucial part of my mental model, when I carry out my roles in the engineering and construction industry. These quality assurance procedures are well known and used throughout the engineering and construction fields. In the engineering and construction field, we refer to quality control (QC) and quality assurance (QA), and they are two different things. Per Wikipedia:

> *"Quality assurance, or QA for short, is the systematic monitoring and evaluation of the various aspects of a project, service or facility to maximize the probability that minimum standards of quality are being attained by the production process. QA cannot absolutely guarantee the production of quality products."*

"Quality control (QC) is a process by which entities review the quality of all factors involved in production. This approach places an emphasis on three aspects:

- Elements such as controls, job management, defined and well-managed processes, performance and integrity criteria, and identification of records.
- Competence, such as knowledge, skills, experience and qualifications.
- Soft elements, such as personnel integrity, confidence, organizational culture, motivation, team spirit and quality relationships.

The quality of the outputs is at risk if any of these three aspects is deficient in any way."

Therefore, quality assurance (QA) is often looked at as the statistics, measurements, testing and record keeping. Quality control requires more of the 'soft management skills,' and as a leader in any field, it's worth your while to look into this aspect of management. Quality control cannot be completely delegated to someone on the staff; it is a line leadership responsibility.

As a leader, it's up to you to instill quality as a core value and a virtue in your team and organization. I feel so strongly about this that I've made the following speech that follows part of my coaching whenever I begin work on a new project or with a new team. It's paraphrased from the works of 'quality guru' Philip B. Crosby, whose books include "*Quality Without Tears*," "*Quality is Free*," and others.

"Let me share with you this fable about a man I'll call John, who worked his whole life on the assembly line of a luggage manufacturer. His supervisor, pushed by HIS supervisor to speed up production, was constantly berating John and telling him to work more quickly to get more suitcases past his station. John complied, and as a result, he allowed many defective suitcases to pass on to the next station without

being fixed. All of this changed when one night he had a vivid dream. In his dream, he was walking through an airport and saw dozens of travelers struggling with shoddy and broken luggage. Again, in his dream, when he went to bed that night he died in his sleep. When he appeared at Heaven's gate, Saint Peter told him that before he could get into heaven he would have to go back and fix all the poorly made suitcases, which were waiting for him in purgatory.

"When John walked through the doors of that warehouse in purgatory, he saw stacks and stacks of defective suitcases that he had let go by him on the assembly line. He was going to be in purgatory a long time. The very next day, back at work in real life, John scrutinized every suitcase that came to his station and refused to let it move on until it was in perfect working order."

"Now that was just a fable," I continue. "But let me tell you my story. As I look back over my career in this industry, I can vividly recall the few times that I let poor work quality pass me by for various reasons. None of them could have any life or death implications, but the quality was not there. In fact, I could hop on a plane today and go to three completed projects in the United States and walk right up to the spots where I left poor quality behind. In one case, I was a young engineer responsible for inspections, and an older superintendent who outranked me, bulldozed over my decision and just like John, I gave in.

So, I want you to know today that there will be times where you alone will know about the quality of work you leave behind. And there will be times when someone with a higher rank than you will try to make you do shoddy work and rush. If this happens, I want you to contact me immediately at the phone number on my hardhat, or come and see me. If you *alone are in a position to decide to do a quality job, or rush through things, I want you to choose to do a quality job. Our client deserves it, and I do not want to see you in purgatory alongside me, fixing the things I did wrong."*

This speech usually elicits a few nervous chuckles from the new team members, but I know from their feedback that it makes its point about the importance of quality, both in their integrity, and the use of quality materials. As a leader, you need to instill and cultivate a culture of quality in your team or organization, and using Crosby's parable about John is a powerful way to emphasize the message.

28 TAP THE POWER OF BELIEF

"If you think you can or think you can't—either way you are right. It is the thinking that makes it so."
—Henry Ford

"Everything is possible for him who believes."
Mark 9:23

"In order to succeed, we must first believe that we can."
—Nikos Kazantzakis

We've all heard the stories of the mother who lifts up the car to free her trapped two-year-old, or the one who fights off the polar bear attacking her three children long enough for the hunters to get to the scene. There are just as many accounts of men performing extraordinary feats of strength, such as lifting a thirty-five hundred pound Cadillac Seville off the mechanic pinned underneath it. These stories are not urban legends, they are documented events.

This well-documented phenomenon has been given the name 'hysterical strength.' Depending on your point of view, you can call it paranormal, super-human or simply the result of a massive rush of adrenaline triggered by necessity or fear. I doubt that any of the people who have performed these incredible feats stopped to think about whether they could do it or not. All they knew was they had to do the impossible, and they went right ahead and did it.

Sports coaches, by the nature of their work, have to be leaders par excellence, and whether they're coaching a football team or a single tennis player, rely on instilling into their players the belief that they can win. Vince Lombardi did it with the Green Bay Packers. Herb Brooks did it with the U.S. hockey team in the

1980 Olympics, when against all odds, the U.S. beat the Russian team four to three and brought home the gold. It was one of the greatest sports victories in history, and to this day, the movie "*Miracle on Ice*" is considered one of the most inspiring sports movies of all time.

Years after the game and after Herb Brooks' death, his players recall what Herb did. As Jim Craig recently said in an interview:

> *"Even now I'm amazed at the vision he had, from the time he began putting the team together. And how he finally convinced us all that we didn't need to be in awe of (the Soviets), that not only could we play with them, we could beat them. And that's exactly what we did."*

In the course of my career, I've been involved in several construction projects where the power of belief came strongly into play.

From 1977 to 1980, I was engaged on the team to build the billion dollar Carr Fork underground copper mine in Utah, which involved extensive underground development and surface facilities. One of our major goals was to ship the first copper concentrate by September 29, 1979. Jack Anderson and Art Ditto worked tirelessly to make us believe that this date could be met, and everyone did what was required to make it happen. It was a textbook example of how CPM scheduling works. As the multi-year project proceeded, we successively 'crashed' the critical paths that arose, until during the final months of the project, there were multiple critical paths where everything had to be completed at once. I still have a photo of the copper concentrate coming off the conveyor and into the rail car next to a big sign dated September 29th.

I used the power of belief again in 1985 while I was managing the construction of the Duke Power Electric Center in Charlotte. The on-time completion of the $100 million construction project was crucial, as it was to receive and house $300 million in computers and other technology on October 15th, a date that was about six months away. The completion schedule was aggressive, and there were some doubters among the two-hundred-person construction crew. To counteract this, we threw a motivational lunch for everyone on the job. I presented the schedule and a list of six things that needed to happen on time for us to make the final date of October 15th. My superintendent gave an inspirational speech, calling on everyone to believe in the goal. He told everyone that it was going to involve a tremendous amount of hard work and committed team spirit, but that he was convinced it could be done. He asked everyone who believed that we could meet the deadline to stand up and be counted. Then he handed out hard-hat stickers that said, "WE BELIEVE IN OCTOBER 15th." The project was completed on schedule.

Just as the "WE BELIEVE IN OCTOBER 15th" stickers hard-wired the belief that we could meet the goal into the construction crew, Herb Brooks focused on hard wiring the minds of the U.S. hockey team to believe that they could beat the Russians. Here is the pre-game speech he gave in the locker room:

"Great moments are born from great opportunity.
And that's what you have here tonight, boys.
That's what you've earned here, tonight.
One game.
If we played 'em ten times, they might win nine.
But not this game. Not tonight.
Tonight, we skate with 'em.
Tonight, we stay with 'em, and we shut them down because

we can!
Tonight, we are the greatest hockey team in the world.
You were born to be hockey players—every one of ya.
And you were meant to be here tonight.
This is your time.
Their time is done. It's over.
I'm sick and tired of hearin' about what a great hockey team the Soviets have. Screw 'em!
This is your time!!"

Don't 'Choke'

If you participate in or watch sports, you have either experienced or observed the phenomenon of a player or team losing its edge in the middle or near the end of a sporting event that you or the team was strongly favored to win. This is commonly referred to as a 'choke' in sports. I have seen this happen in business as well, when a team, individual, or leader loses faith in the mission, or loses faith in the ability to achieve a set of established goals.

Another form of team 'choking' occurs when there is a team made up of members who all have tasks or goals that are interdependent, and one of the members falls behind. For illustration, consider a team with members A, B, C, D, and E. Suppose that at some point, A falls behind in his work, and the rest of the team knows that because A is behind, the deadline will never be met. So, the rest of the members, B, C, D, and E start to slack off because they know that there is no reason to work hard to meet a goal that they think cannot be met because A has fallen behind. But now, A decides to work all weekend and put in eighty hours one week to catch up. But B, C, D and E have engaged in a silent and unspoken deceleration of their work, thinking that A will never make it, and so even though A catches up, before you know it, B, C, D and E are behind.

There are various theories as to why 'choking' occurs in sports. They all relate to distraction, pressure, or anxiety, often stemming from a lack of confidence or concentration.

Good planning, preparation, quality feasibility and front end loading are ways to maintain confidence throughout the life of a team project. Tapping into the power of belief, maintaining commitment to the goals, and staying focused on the tasks at hand are three strategies to avoid 'choking,' in addition to the other principles in this book.

When leading or participating in a team, it is important to be aware of the attitudes toward the team goals and objectives within the team. When it is necessary, you will need to do whatever it takes to make sure that the goals are not perceived as unrealistic and that the commitment level remains high.

Life Lessons

Great coaches and great leaders understand the power of belief and help guide their teams to accomplish great things. Today, psychologists and biologists are beginning to understand how beliefs work. According to psychologist Rob Williams, beliefs are conclusions derived from information and/or experience. Your beliefs determine your biological and behavioral reality, and they can be both conscious and subconscious. Most of our beliefs about ourselves and the world were formed when we were toddlers, when we first experienced the "I can" or "I can't" messages from our parents and from our experiences with interacting with the world during our first seven years. Examples of "I can" messages include:

- I can accomplish anything I choose.
- I am a worthy and valuable person.
- I am intelligent and capable.

- I do my best, and my best is good enough.
- I easily attract money into my life and use it wisely.
- I deserve happiness and success in my life.
- I love myself, and I am loved by others.
- My beliefs control my genes, and I control my beliefs.

Conversely, the opposite of the above statements can be implanted in our minds as well. If these are our core beliefs, they are planted in our subconscious mind, so it requires some focused efforts to unseat any disempowering beliefs that reside there. Some people are more prone to believe that they can accomplish something difficult, while others may have to overcome some deep-seated negative notions. The hardhat sticker, WE BELIEVE IN OCTOBER 15TH, and how it was awarded, was effective. It was a constant visible reminder of the goal, posted on every hard hat on the project. It successfully imprinted the subconscious and conscious mind, producing the result. Traditionally, it was believed that changing core beliefs about oneself required a great deal of time. However, today, there are some new techniques being developed to dramatically shorten the time and effort required to implant new empowering beliefs. Beliefs are important because they create perceptions that affect your physical and mental health, finances, relationships, job performance, success, self-esteem, and other external manifestations of our actions.

Beliefs can have both desirable and undesirable effects. Researchers studied thirty thousand adults over an eight year period to determine the association between stress, beliefs and health (29). The results of the study have started to change the way health professionals are advising their patients about stress. The research involved asking the subjects two questions: 1) Have you been under an increase in stress in the last year? 2) Do you believe that stress has a negative impact on your health? The researchers looked at death rates during the subsequent year to associate the impact of stress, beliefs, and health. They found that those subjects who reported a high level of stress had a 43% increase in mortality, but ***only*** if they believed that stress had a negative impact on their health. The subjects who had high levels of stress but did not believe that stress had a negative impact on their health, had among the lowest mortality rates.

If you want to further explore the power of belief, there are a myriad of sources of information about this topic and how to apply and adopt empowering beliefs in your life. We are just beginning to better understand the quantum psychophysiology of beliefs. Let me point you to Dr. Bruce Lipton, a former Stanford medical school professor and research scientist, as well as the author of "*The Biology of Belief: Unleashing the Power of Consciousness, Matter, and Miracles*." His experiments, and those of other leading-edge scientists, have examined in the mechanisms by which cells receive and process information in a study of epigenetics. The implications of this research radically change our understanding of life and the way our beliefs can change our experience and our physiology. It's too deep a subject to get into here, but if you want to explore what Henry Ford, Nikos Kazantzakis and Saint Mark the Apostle had in mind, take a look at the work of Dr. Lipton, Rob Williams, Lynne McTaggart, Rupert Sheldrake, Peggy Phoenix Dubro, to name a few.

29 CREATE A SENSE OF URGENCY

> *"Life cannot wait until the sciences may have explained the universe scientifically. We cannot put off living until we are ready. The most salient characteristic of life is its coerciveness: it is always urgent, "here and now" without any possible postponement. Life is fired at us point blank."*
> *—Jose Ortegay Y Gasset*

Far too often, projects follow a predictable pattern. At the beginning, people are fairly laid back. They look at the project schedule and see ample time allotted for all of the tasks that need to be completed, so there is a sense of ease. Then, during the project, there are any number of unforeseen and unpredictable things that happen, and the time slips away. The end of the project is characterized as a harried, rushed, crisis mode of operation with people working overtime and expediting everything that happens.

It does not need to be this way. To change it, managers and team members need to expect the unexpected. We can plan for things we know, and sometimes we can plan for the things we don't know through the risk assessment process. It is difficult to plan for those things we don't know that we don't know. This syndrome seems to affect the less experienced managers and team members because they have not had to deal with too many surprises in their careers. So, it is clearly the leader's role to create an immediate sense of urgency on a project for it to get completed on time and under budget.

Here are some ideas and practices that I use to create a sense of urgency on a project team:

1. *Take Action.* It is easy to be caught up in 'analysis paralysis,' deciding between options or different courses of action. You have to complete the up-front discussion of options and priorities and 'just do it.' This does not mean that you should cast reason over the side of the ship. It does mean that when you find the team getting caught up in analyzing things that hold up the critical path of a project, you need to get things moving.
2. *Create a cycle of accountability.* You should try to avoid getting caught up in needless activities and meetings. At least on a weekly basis, you need to get your team together to review what each member completed during the last week and commit to what will be accomplished during the coming week. This can be different than the detailed scheduling and planning, but the project schedule should be in the backdrop of these weekly cycles.
3. *Focus people on short term goals and milestones.* Sometimes there may be some inconsistency in the CPM project schedule when it comes to performing administrative and planning activities. At all times, focus the team on the top five to ten things that must be completed by certain times, in order to keep things on track. Get involved early if you see that deadlines may not be met without some intervention. Get commitments from people, and monitor who on the team does or does not deliver on what they say they will do. Winners do what they say, and not everyone is a winner.
4. *Keep things flowing.* Very often, the work of one team member is dependent on the completion and delivery of work from another member. Don't assume that they are talking with each other between meetings. I probably use the conference call feature on my phone more than

most people do. Keep the wheels turning with regular communication between all team members. Use the 'ball in court' principle; keep track of who 'has the ball' on every aspect of the project. Often, you will be surprised how many people are not aware that the ball is in their court and that action is required by them to keep something moving.

5. *Be ready to step in.* This is a last resort when needed. You never want to get in a situation where your team members are 'delegating up' to you. But when someone is clearly over their head, or have another problem, you need to be ready to step in. I once had a man who was suffering from a health issue (alcohol) and did not want to admit that it was affecting his performance. This had to be addressed or the entire project was going to go down.
6. *Show the team how time is money.* Every project has a calculated Net Present Value (NPV), Return On Investment (ROI), or cost/benefit ratio that is highly dependent on timely completion of the project on the assumed schedule. Every day that a project is late equates to lost income or benefit to its stakeholders. Some construction contracts have a liquidated damage clause with a daily financial penalty to the contractor for late completion. From an owner's perspective, the financial cost for late completion can be quite different than the liquidated damage amount. At any rate, it is helpful to know these numbers and communicate them to the team members so they are aware of the impact of their performance, either positive or negative.
7. *Set the pace.* Show your own sense of urgency by the pace of your walk and how you handle yourself. Don't let things linger. Return communications quickly. Address situations immediately when they occur.

At its core, a sense of urgency is not a set of tactics, but an attitude and way of being. Some people have it naturally, and others don't. So to get things done on time, instill a sense of urgency within your project teams.

PART VIII
EXECUTING

30 THE BUCK STOPS HERE

"Leadership—leadership is about taking responsibility, not making excuses."—Mitt Romney

You don't get to be president of the United States without understanding the principles of leadership, but Harry Truman proved he was aware of the most important one.

The sign on his desk read: "The Buck Stops Here." The words have entered the American vernacular, and the sign itself became famous, ending up in his presidential library.

Statesman and retired four-star general Colin Powell says it best:

> *"Harry Truman was right. Whether you're a CEO or the temporary head of a project team, the buck stops here. You can encourage participative management and bottom-up employee involvement, but ultimately, the essence of leadership is the willingness to make the tough, unambiguous choices that will have an impact on the fate of the organization. I've seen too many non-leaders flinch from this responsibility."*

During my years in business, I've seen too many examples of people in positions of leadership shy away from this ultimate of responsibilities, or hide behind the cloak of a faulty group decision analysis, with disastrous results.

In one recent example, I witnessed a decision analysis process within a major corporation where the opinion of a twenty-three-year-old technician carried the same weight of an industry veteran with thirty years of subject matter expertise. The result of the decision thus made was far from optimal, yet the manager in charge of this decision process moved smoothly on to his next position on the corporate ladder.

This principle does not mean that one should shift the blame, or pass the buck, up the chain of command until someone in an upper position takes charge and does something. Highly effective organizations are populated with leaders throughout, and the culture encourages individual responsibility at all levels. No one passes by a quality problem or mess—only to leave it for someone else to take care of, or to pass the problem up the chain of command.

31 VALUE YOUR CLIENTS AND CUSTOMERS

"If it weren't for Our Customers, We Would Not Be Here"
Motivational Poster

Of all the things I have learned in my business career, I put the above quote at the top of the list. Those eight words sum up a philosophy that, if taken to heart, will help make your company great.

Regardless of the business you are in, it's crucial to make your customers' needs your very highest priority. Sometimes you need to look beyond the particular service you are offering to understand what those needs really are. Owners and clients are people, just like everyone else. Sure, they want a project that is completed on time, safely, and under budget with quality materials. They want it to serve the function that is intended. Those are givens. But your clients, as individuals, have other personal needs as well, such as affiliation needs and relationship needs. They have image and esteem needs within their organizations.

In engineering and construction, the best companies understand that they are in a service industry. The contractors, architects, and engineers who treat what they do as a service are rewarded with greater success in business.

In every organization, there are also internal client relationships. At any one time, the people working in one department may have another department as their internal client. If you are a client-driven company, the people who are most in contact with the client become the internal clients within the organization. If the needs of your client service people are met, then it makes sense that the clients' needs will be met. I am aware of more than one company that treats its employees as customers, particularly when it comes to providing a safe work environment.

By placing a high organizational value on client service, you are creating a motivating “battle cry” for your team to rally around. People want to make a difference in service and are drawn to corporate cultures where client loyalty is rewarded.

Often, the technical types who are best at producing the product or service are not those with the best people skills. Some companies recognize this, and structure their client service and project teams accordingly. They will match a technical person, often an introvert, with an extroverted “people person” to help deal with the client relationship. To deliver the best of what your client needs, surround yourself with people who have complementary skills and aptitudes.

People do business with people they like. Customers don’t always do business with a company, they do business with a person in a company. So, to become truly customer focused, a business needs to foster that person-to-person relationship in a myriad of ways. One way is to give employees an opportunity to advance their careers by fostering customer ‘champions,’ or by giving employees an opportunity to build a following of customers within the business. This may seem like it would not be possible in most situations, but it is one of the secrets of success of many companies in a range of businesses. One example is Nordstrom, operating in the retail department store business. Nordstrom sales associates are supported in creating customer relationships, and are compensated for repeat business from a customer.

I found another example within a national construction company that applied this principle across twenty-one operating divisions. Someone could join the company in a junior role, and by creating happy customers and finding new ones, that entry-level manager could build a business within the large organization. The managers were also compensated and rewarded for profitability, providing another motivation.

A company that provides a worthwhile service and makes its customers happy deserves to make a profit—no—it needs to make a profit for its owners, employees, and future customers, who will benefit from the quality services that a company offers. Profit is not the end goal, but it is a measure of how well it serves its customers and treats its employees. Profit is the ultimate measure of performance.

Lessons

In the area of client service, I have seen the good, great, bad and ugly. One contractor I worked with had the mentality that they owned the projects they built for clients. Now, it is a good thing to 'take ownership' of ones work, to treat a client's project like it was your own, for the purpose of maintaining high quality standards. But to literally have an attitude that the owner is simply the one who pays the invoices? This is not a good business model.

At the other end of the spectrum, one great company I worked for gave its project managers a liberal budget for 'Public Relations and Entertainment.' It was money that you were expected to spend entertaining current and prospective clients. Once that money was earmarked in your budget, you did not need to ask permission to spend it. As long as you submitted the proper expense reports in accordance with company and IRS guidelines, you were empowered to represent the company and build goodwill with your clients and prospects. This company had the highest growth rate, profitability and repeat business ratio, of any company I have ever seen.

32 ASSIGN DECISION RIGHTS—DELEGATE BUT DON'T ABDICATE

"Surround yourself with the best people you can find, delegate authority, and don't interfere as long as the policy you've decided upon is being carried out."— Ronald Reagan

Andrew Carnegie immigrated to the U.S with his parents at the age of thirteen in 1848. His was the quintessential rags to riches story: He began by working in a factory for $1.20 a week and ended up as one of the builders of America and the owner of U.S. Steel. A friend, hoping to make him aware of his own dedication to business, once told him that he always arrived at his office at seven in the morning. Far from being impressed, Carnegie, never one to mince words, gave this response:

"You must be a lazy man if it takes you ten hours to do a day's work. What I do is get good men and I never give them orders. My directions do not go beyond suggestions. Here in the morning I get reports from them. Within an hour I have disposed of everything, sent out all my suggestions, the day's work done, and I am ready to go out and enjoy myself."

Now I am not suggesting for a moment that if you know how to delegate effectively you'll be able to follow Carnegie's example. After years of trial and error I consider, the day has yet to come when I sit at the breakfast table suggesting to my team a few activities they might like to get done in the course of their day, and then taking off to play golf. In fact, I have found that the higher I have moved in the ranks, the more committed I become to the success of the people that I lead.

Carnegie obviously knew how to delegate, but there's a part of his response that proves he didn't abdicate: "Here in the morning

I get reports from them." It's my belief that therein lays the key to effective delegation—it begins before you start to delegate, by hiring the very best people you can. Everything else comes from this: having creative and self-motivated people on your team, who can carry out the responsibilities you delegate to them.

In the ideal work situation, they'll be able to do the job as well as you from Day One, but don't expect that to be the case right from the start. That's one of the reasons non-experienced managers will shy away from delegation; the people they're delegating to may need training to be able to perform the task, and it's very easy to fall into the trap of thinking you could do it so much faster yourself so there's no point in wasting time by showing someone else how. The—"if you want something done right, then do it yourself"—ego trap can come into play here as well. You think you can do the job better than anyone else, and that may well be true—once.

Do remember that you're a leader, and your job is to manage time, resources, and people. You can't possibly do everything yourself, nor should you want to. Delegate tasks according to the skills the employees that you've hand-picked. Make sure they know exactly what they have to do, and have the necessary tools to do it, let them do it any way they want so long as they get you the results you want, leave them to it and get on with whatever more important task—truly the one that only you can do—you've freed yourself up for. You need to walk the very fine line between giving people enough space to use their abilities to best effect while still monitoring their work and offering support when needed, to make sure the job gets done to your satisfaction.

There are various kinds of delegation, but they all share some of the same principles. Here are some basic principles of successful delegation:

- Articulate the desired outcomes.
- Identify constraints and boundaries.
- Where possible, include people in the delegation process.
- Match the amount of responsibility with the amount of authority.
- Delegate to the lowest possible organizational level.
- Provide adequate support, and be available to answer questions.
- Focus on results.
- Avoid 'upward delegation.'
- Don't let your subordinates hand you all of their problems to resolve. If you find that things are being handed up to you, then you are either not delegating correctly or are micro-managing your people.
- Build motivation and commitment.
- Establish and maintain control.

The art of defining 'decision rights' is one way to operationalize this concept of delegation. McDevitt and Street Company grew from a regional $40 million contactor to a national $850 billion dollar contractor in ten years, through the correct application of delegation. They had what Tom Peters called a "Loose–Tight" (18) culture. The company grew much of its talent from within, and each division manager ran what was essentially his or her own business. If a very large contract came along, say, over $10 million, the division manager had to get approval from his up line. Each project manager was allocated a budget for PR and entertainment to help build client relationships on the golf course, at resorts, or over dinner in restaurants. In contrast, a company I am familiar with does not even give the U.S. division manager the rights to hire and terminate salaried personnel within his division. Also the division managers contracting authority was limited to $500 thousand. Guess which company did better.

Paul Akers, author of "*The 2 Second Lean*," talks about how he has implemented Lean Manufacturing processes in his operation, and it is a form of delegation in action. Every morning, he leads a thirty—to forty-five-minute meeting with his team, during which they discuss how things are going, ideas to improve operations, and breakdowns and fixes which occurred over the last day. "In the process, the boss takes full responsibility for things that go wrong, and never tries to lay blame or point fingers. If a mistake happens, it is because management did not properly train someone, or they put the wrong person in the wrong job, or there was some other reason. But the key is to avoid laying blame, or the process of continuous improvement is impeded."

Akers has employed a culture where his people take responsibility for seeing and removing waste and engaging in continuous improvement. In essence, he has effectively used delegation within his operation with his people through utilization of the Lean concepts. Today, Paul's operation runs so smoothly, he can travel around the world giving speeches and talks about his experience with Lean Manufacturing, and empowering people to become self-led. He sees it as part of his calling.

On a construction project site, you can't be as hands-off as Carnegie was with his reports. Establishing and maintaining control is crucial, and in our industry, this takes the form of regular inspections and testing of materials and finished components. C.P Street, founder of McDevitt and Street, used to say: "You don't get what you EXpect, you get what you INspect." It's one of those lessons I learned very early on in my career and have never forgotten.

I'd like to end as I began with another quotation from a steel tycoon of the early twentieth century, as valid today as it was then:

"Analyze the career of the successful business manager and you will find that he has done two things: by elimination and selection he has fitted competent men to the places at which the work focuses; by system he has so shifted detail to the shoulders of subordinates as still to keep the essential facts under his own hand." —William A. Field of the Illinois Steel Company, 1919

33 FOCUS

"Lack of direction, not lack of time, is the problem. We all have twenty-four hour days." —Zig Ziglar

In his best-selling book, *Seven Habits of Highly Effective People*, Stephen Covey presents a model to understand the principle of Focus. It's worth paying attention to this proactive focus model. As you see, tasks can be split into four segments.

	Urgent	Not Urgent
Important	**I** **ACTIVITIES:** • Crises • Pressing problems • Deadline-driven projects	**II** **ACTIVITIES:** • Prevention • Relationship building • Recreation • New opportunities
Not Important	**III** **ACTIVITIES:** • Interruptions • Some phone calls • Some mail • Some meetings • Popular activities	**IV** **ACTIVITIES:** • Trivia • Some mail • Some phone calls • Timewasters • Pleasure activities

Figure 33.1—Urgent / Important Grid

Quadrant One, the important and urgent, includes putting out fires, managing crises, and daily emergencies. Some managers and leaders thrive on putting out fires and consider it a great skill. In my opinion, keeping fires from starting in the first place is a far greater skill.

In Quadrant Two are the not urgent but important things like planning, prevention, values clarification, relationship building, empowerment, and recreation.

Quadrant Three, the urgent but not important items, includes interruptions and some meetings, mundane items, and some reports.

Items in Quadrant Four, neither urgent nor important things, are a complete waste of time.

As leaders, we want to focus our teams on Quadrant Two.

The Pareto Principle, sometimes referred to as the 80/20 rule, suggests that 20% of our efforts contribute to 80% of our results. Your role is to identify where your team's efforts will have the most impact. Combine focus with a super-team and once again, you will get super performance.

A number of years ago, George Odiorne developed the concept of the 'Activity Trap.' The activity trap is a place where too many teams and companies find themselves. Over time, certain activities are institutionalized when someone decided that performing the activity was going to enhance results. Maybe an activity was tried, in combination with other activities, and the results were positive. Alternatively, someone in leadership mistakenly thought that doing this thing was important and mandated its completion.

I have personally seen this happen inside organizations, and things can really get clogged up. The principle of focus demands that we use the intelligence within our grasp to identify and do only those things, which promote results.

Odiorne identified "the six most efficacious factors in overcoming the activity trap, thereby revitalizing organizations." These are:

- Setting worthy goals at all levels
- Getting commitment from people

- Accepting responsibility for the results of one's own (and, as leaders, others') behaviors
- Supporting and assisting one's subordinates
- Imparting a sense of mastery and satisfactory self-image to those who have acted responsibly and met their commitments
- Relieving employees from goal pressures by making provision for what, in today's management lexicon, would be referred to as 'employee wellbeing' and 'work-life balance'

If we lose focus about what is important, it is easy to fall into the trap of spending our time on the 80% of things, which have little or no impact on results. By focusing your time and your team on the 20%, your effectiveness can skyrocket, and more work can be done by fewer people; not by rushing or working harder, but by working smarter.

Stephen Covey and George Odiorne have made some valuable contributions to the principle of focus. Use their wisdom.

34 CHOOSE THE RIGHT MANAGEMENT STYLE

"A true Leader does not point fingers
A true Leader does not assign blame
A true Leader does not celebrate the mistakes of others
A true Leader points you in the right direction
A true Leader assigns praise however meager the task
A true Leader celebrates the accomplishments of his team
I true Leader Leads." —Mark W. Boyer

There are many managers who take pride in having a certain style of management—authoritative, say, or paternalistic—and will stick to it whatever the circumstances. In my opinion, it's far more effective to be flexible and to adapt the way you lead to the current situation. Every project is different, every team is different, and to me it's a sign of poor leadership to stay fixed and rigid, in a world that's in a constant state of flux.

Unfortunately, far too many managers believe that it is their main job to tell people what to do. This is a severely flawed model.

There's no substitute for using your own good judgment and knowledge of your people as each new case presents itself, but I have found the management style continuum, as shown in Figure 22.1, to be a useful basic guide. On the left side of this continuum are the people with little experience in the job at hand; on the right, those with high experience. You will need to be directive with the people on the left, but will be able to delegate responsibility to those with a lot of experience. For those who fall in the middle range, a participative style will work best. Also, as noted in Chapter 9, a leader needs to be more directive at the beginning of a team's formation, and gradually move to a more delegative style once the team has matured to the 'performing stage.'

Whatever style is called for at any given time, it is important to establish and maintain authenticity when serving in a leadership role. In that sense, no one can tell you what management style to adopt to be yourself. Naturally, being yourself is an individual thing that only you can do. If you are interested in exploring this aspect of living, one of the better books I have read about developing personal authenticity is by Mike Robbins, titled: *Be Yourself, Everyone Else is Already Taken*.

Management Style Continuum

Figure 34-1— Management Style Continum

35 MAKE THE RIGHT DECISIONS, RIGHTLY

"It does not take much strength to do things, but it requires a great deal of strength to decide what to do."—Elbert Hubbard

Making good decisions is an essential part of good leadership. It is so important, that choosing a method to make a decision can require as much thought as the decision itself. The very way we *make* a decision impacts the result of the decision we make. Being autocratic, and making a decision that affects others without consulting them in any way, isn't likely to make them feel cooperative. Asking your team's opinion on every decision you have to make wastes their time and yours, and puts you in a very weak light. It's part of your job as a leader to weigh these two extremes, find a middle way, and make the appropriate call.

One of my mentors once said, "Decide democratically, implement dictatorially." While democratic decisions are not always called for, a good leader will see that decisions are implemented through shared team and individual commitments and mutual accountability. If there is not 100% consensus with a decision, the leader needs to let the team know that even though the final decision may not please everyone, all members are expected to go along with it unless facts and circumstances warrant a change.

Here are some basic questions to ask yourself about a situation that will help you develop an effective approach to decision making:

1. At what level in the organization should the decision be made?

2. Will implementation of the decision require the support of a team?
3. Does the decision have an impact on cost, time, performance, or ROI of the project?
4. Does the decision affect a human resource matter? (For example, should the team work overtime on Saturday or not?)
5. Will the decision make a group of 'winners' and 'losers' within the group?
6. How much technical knowledge or experience does the decision require? Do the team members have the expertise and experience to participate in making a valid decision?
7. Does implementation of the decision affect the areas of responsibility of more than one team member?
8. Does the decision require the input from more than one team member, technical specialist or department?
9. Does the decision have long- or short-term consequences?
10. How easily can the decision be reversed if it is wrong?
11. Does the decision require the approval of the customer or higher levels of management?
12. Am I willing to implement a decision that is derived from a consensus process? As the leader, am I willing to live with the result of participative decision-making?
13. Have the consequences of the decision been fully understood and analyzed? What are the probabilities of alternate outcomes that might result from the current decision?
14. How much time is available to make the decision?

An experienced leader can run through all of these questions in his or her head, and know the answer in a matter of seconds.

Then it's time to assemble the right people—if any—and start to tackle the question that needs answering. The Vroom-Yetton-Jago Decision Model uses questions similar to the ones posed above, and it provides a wealth of information about decision making that is beyond the scope of this book. This is just one example, a guide to help decide whether to use a collaborative or autocratic approach.

In general, a consultative or collaborative style is most appropriate when:

- You need information from others to solve a problem.
- The problem definition isn't clear.
- Team members' buy-in to the decision is important.
- You have enough time to manage a group decision.

An autocratic style is most efficient when:

- You have more expertise on the subject than others.
- You are confident about acting alone.
- The team will accept your decision.
- There is little time available.
- The decision does not affect or involve interoffice or inter-department personnel.

The underlying assumption of the Vroom-Yetton-Jago Decision Model is that no one leadership style or decision-making process fits all situations. There are tons of decision making tools and methods available to choose from. Whichever decision making method you choose, once the decision is made the team needs to close ranks, and it's up to you to make sure it implements the decision that was made. Remember, the buck stops with you, the leader. Management practitioners have developed an array of decision making tools, from simple to complex. For a good source of information on an array of methods, I refer to the Mind Tools site at: http://www.mindtools.com/pages/main/newMN_TED.htm

Life Lessons

Once upon a time, our lives were simpler than they are today. Before the industrial revolution, a worker took up farming, a trade or profession and usually stayed with that for life. Women's work was often in the home, and the trade that a young man learned was largely influenced by what his father did. Gender roles were more defined. As industrialization took hold, a worker could often count on getting a job, working for forty or more years and retiring with a gold watch. Today, someone can count on changing jobs ten to fifteen or more times and changing careers three times or more. Navigating this world requires a level of adaptability and personal decision making ability, that was not as necessary in the past.

One of my dad's lessons to me was about the Ben Franklin decision making process. He used that process when deciding to quit his job with a paycheck and join a partner in starting his own manufacturer's representative agency business. The simple version of the process described to me by my father involves drawing a vertical line down the middle of a piece of paper and writing the pros and cons on either side of the line. Here is Ben Franklin's letter to Joseph Priestly in which he describes the method in more detail:

To Joseph Priestley
London, September 19, 1772
Dear Sir,

In the Affair of so much Importance to you, wherein you ask my Advice, I cannot for want of sufficient Premises, advise you what to determine, but if you please I will tell you how.

When these difficult Cases occur, they are difficult chiefly because while we have them under Consideration all the Reasons pro and con are not present to the Mind at the same time; but sometimes one Set present themselves, and at other times another, the first being out of Sight. Hence the various Purposes or Inclinations that alternately prevail, and the Uncertainty that perplexes us.

To get over this, my Way is, to divide half a Sheet of Paper by a Line into two Columns, writing over the one Pro, and over the other Con. Then during three or four Days Consideration I put down under the different Heads short Hints of the different Motives that at different Times occur to me for or against the Measure. When I have thus got them all together in one View, I endeavour to estimate their respective Weights; and where I find two, one on each side, that seem equal, I strike them both out: If I find a Reason pro equal to some two Reasons con, I strike out the three. If I judge some two Reasons con equal to some three Reasons pro, I strike out the five; and thus proceeding I find at length where the ballance lies; and if after a Day or two of farther consideration nothing new that is of Importance occurs on either side, I come to a determination accordingly.

And tho' the Weight of Reasons cannot be taken with the Precision of Algebraic Quantities, yet when each is thus considered separately and comparatively, and the whole lies before me, I think I can judge better, and am less likely to take a rash Step; and in fact I have found great Advantage from this kind of Equation, in what may be called Moral or Prudential Algebra.

Wishing sincerely that you may determine for the best, I am ever, my dear Friend,

Yours most affectionately

B. Franklin

While attending a Rotary meeting in Richmond, Virginia, many years ago, I learned of another personal decision process from a radio host who gave up his radio job and became a Protestant minister. Facing a career crisis in mid-life, this man had decided to study and become a religious minister. The decision-making process he espoused had three steps to it.

1. Use a method like the Ben Franklin or other method to review your options and desires in the decision you are trying to make.
2. Consult with your loved ones and those around you who might be impacted by the decision.
3. Make the decision, and move forward with confidence that God will support you in your decision, if it is for the right reasons.

He successfully made the change from radio host to Protestant minister and now leads a richer, more rewarding life that is in alignment with his deepest values.

I used to think that my options in life became narrower as I grew older. There is some truth to that because the likelihood of my becoming an NFL football player today is less than zero. Nor am I likely to become an astrophysicist or brain surgeon. But although I am realistically past the advantages of youth, I am more wise, experienced and have many more personal assets in terms of capabilities, knowledge, and skills. If you are past your physical or youthful peak, never trap yourself into deciding that you're obsolete or too old to make a very meaningful contribution. That is not the kind of decision you want to make about yourself or your life. There are countless examples of people who led extraordinary lives until their last day.

PART IX
YOU AS A LEADER

36 PURSUE SELF-MASTERY AND TRANSFORMATION

"When we quit thinking primarily about ourselves and our own self-preservation, we undergo a truly heroic transformation of consciousness." —Joseph Campbell

Anyone who aspires to be an 'On Time and Under Budget' leader must do more than merely learn a set of project management processes, procedures and principles. There is an abundance of resources available for that, including PMBOK, PRINCE2, Lean, and for software, Agile Development, Scrum, and other methodologies and processes. To be an effective leader, I believe that you must pursue a path of continuous personal improvement, self-mastery and transformation. As discussed in Chapter 3, the Queensland University study found that most advanced methodologies in the world cannot be effective without good leaders to carry them out.

What is self-mastery? I would like to borrow the words of Paul Jerard, yoga teacher, to answer this question as clearly as possible.

> *"Self-mastery, alone, sounds like a selfish term; but if you cannot help yourself, you will have limited ability to help others. Self-mastery is the ability to make the most out of your physical, mental and spiritual health. In other words, to be the best that you can be. As a result of your efforts, you will be able to help everyone around you. In order for you to change the world around you, for the better, you have to change yourself for the better, along the way.*
>
> *Where do we start learning the secrets of self-mastery? If you accept things around you, without attempting to change them, you already have taken the first step. Once you accept*

people and situations for what they are, you won't waste time and energy with frustration. This causes inner frustration, emotional turmoil, worries, and depression. Once you change yourself, through positive self-mastery, the world around you will change for the better, without much effort on your part."

Often, transformation happens to an individual without his or her intention of experiencing it. *"It's a Wonderful Life"* isn't the only holiday movie I can watch time and time again and never tire of. In the preface, I mentioned Dickens' "*A Christmas Carol*," the story of a miserable grasping old stockbroker who had shut love out of his heart, since the death of his beloved sister during childbirth. He turns inward and concentrates only on making money, which he is too mean to spend; and when his like-minded business partner dies, he carries on alone, becoming even more isolated and shut off from humanity.

It's on a Christmas Eve, of course, hunched over his miserable supper of a bowl of thin porridge and huddled near the few meager coals burning in the fireplace, that he's visited by the ghost of Jacob Marley, his long-dead business partner. Marley, a haggard, moldering wraith, tells a terrified Scrooge that because of his, Marley's, self-serving and avaricious life, his spirit has been condemned to wander the earth for eternity, weighted down with a ball and chain. He offers Scrooge salvation from the same fate and tells him in the course of the night he will be visited by three more spirits, who will show him the error of his ways and give him the chance of redemption. Scrooge is understandably reluctant but has no choice: the spirits of Christmas Past, Present, and Future arrive in succession, and when Christmas Day dawns, Scrooge is ecstatic at finding himself in real-life present time, able to change his ways and spare himself the ghastly fate his partner brought upon himself.

Now, I have never shut love out of my heart or cut myself off from humanity—quite the opposite—and I am thankful to say I have never been visited by three fearsome spirits. However, in my own way, I have undergone some transformational experiences that have changed forever the way I look at the world, as you will see in the next chapter.

There are literally hundreds of books and audiobooks available to help you develop and mold yourself into the kind of person you want to become. You can participate in any number of weekend retreats and experiential seminars, if you are willing to commit the investment of time and money. You can hire a personal coach, visit a therapist, or join a men's, women's, or mixed discussion/faith group, bible study, or book club. Exercise, meditate or pray, and don't eat junk food.

You may well wonder what on earth this has to do with being an effective leader, and why I'm bringing up transformation in a book titled "*On Time and Under Budget*." Let me use one more study on leadership to explain. In his book, "*Good to Great: Why Some Companies Make the Leap (to Greatness) . . . and Others Don't*," Jim Collins set out to find why some seemingly average companies suddenly made a sustained leap in their stock market performance. Beginning with 1,435 companies, he examined their performance over forty years, and zeroed in on eleven that made the leap. Among his other findings, he discovered that none of them achieved success overnight, and that they had one common denominator: Self-effacing leaders, who had no interest in fame or celebrity, and who put the good of the company above their own needs. They had iron wills and were determined to succeed, and of the eleven, several had gone through a transformational life experience such as recovering from cancer, a brush with death in wartime, or a spiritual rebirth of some kind. As Collins puts it:

"Whether you prevail or fail depends more on what you do to yourself, than on what the world does to you."

There's no way of telling whether these leaders would have achieved such success without the transformational events. I can only speak for myself and the impact of several events in my life. What follows in the next chapter is my story. I share it in hopes that you, dear reader, will learn something from my doing so.

37 DEVELOP YOUR LICENSE TO LEAD

> *"Before you are a leader, success is all about growing yourself. When you become a leader, success is all about growing others." —Jack Welch*

Again, as discovered in the project effectiveness study by Queensland University, good leadership was most often cited as the lacking element on projects, despite all good intentions and attempts to utilize the concepts of modern project management.

I recently stumbled across an article that resonated with me strongly: "*Discovering Your Authentic Leadership*," by Bill George, Peter Sims, Andrew N. McLean, and Diana Mayer, published in the Harvard Business Review in 2007. The study's genesis was a 2003 book by George: "*Authentic Leadership: Rediscovering the Secrets to Creating Lasting Value*." The book's premise was that to overcome a growing public distrust of leaders in general, business leaders of the twenty-first century have to be authentic. The article defines this as meaning these new leaders have to "demonstrate a passion for their purpose, practice their values consistently, and lead with their hearts as well as their heads." They will "establish long-term, meaningful relationships and have the self-discipline to get results. They know who they are."

The book garnered a great deal of attention, with many readers expressing interest in how they could become this kind of leader. Accordingly, the article's authors set out to discover exactly what people would have to do to become and remain authentic leaders. They interviewed one hundred twenty-five carefully chosen leaders and asked how they had developed their leadership abilities. The interviewees "discussed openly and honestly how they realized their potential and candidly shared their life stories, personal struggles, failures and triumphs."

Very much simplified, the study showed that there was no one trait, characteristic, skill or style that had led to the success of the one hundred twenty-five leaders interviewed. Instead, their leadership had developed because of their life stories. "Consciously and subconsciously, they were constantly testing themselves through real-world experiences and reframing their life stories to understand who they were at their core. In doing so, they discovered the purpose of their leadership and learned that being authentic made them more effective."

It was that last sentence that leaped off the page to me. I felt as though I could have written it myself because I had just received outside confirmation that I had earned the distinction of being authentic in my leadership—practicing my values consistently and leading with my heart as well as my head—and I had done it exactly the way the study showed that leadership developed. It was a lesson I had learned on my own, and here was the *Harvard Business Review* endorsing it for me.

One of the interviewees in the study, Young & Rubicam Chairman and CEO Ann Fudge, put it this way: "All of us have the spark of leadership in us, whether it is in business, in government, or as a nonprofit volunteer. The challenge is to understand ourselves well enough to discover where we can use our leadership gifts to serve others." The responsibility of leadership is not to be taken lightly. Just as we must be trained and tested to earn a license to drive an automobile, one must pursue a journey of self-discovery, development, testing, and actualization to develop ones 'license to lead.' Although I will always be on a journey of growth and evolution, this is how it is happening for me.

I grew up in Minneapolis in what is now a rarity but was then a 'normal' family. I had a mother and a father and eight siblings, and while we were not rich, we had two cars, a color television, and enough bedrooms to house us all—two in a room. When I was seven, my grandmother died and left Dad a small inheritance, just enough for us to afford to build a small lake-side cabin where we could spend our summers.

My dad, along with a couple of his friends, did as much work on building the place as was practical, and hired out the rest of the construction to a contractor. One weekend dad took me out to the construction site and assigned me the easiest job he could think of for a seven-year-old—nailing down the plywood sub-floor on to the floor joists. He snapped red chalk lines for me to follow and before long, I had worked out my own system. Using a mark on the handle of the hammer to make sure I spaced the nails correctly, I crawled along on my knees, pounding a nail on the chalk line every six inches. (I later learned that the marked hammer handle was a form of a "Poka Yoke" device, a term used in Lean). I got pretty good at it, and after persistent practice and many attempts, I was able to pound a nail down with one strike of the hammer, after getting the nail started with a few taps.

I got many "attaboys" from my dad and his friends that summer. For months afterwards, both my mother and dad would tell new visitors to the cabin about all the hard work I had done nailing down the sub-flooring. From that year on, when not in school, I was rarely without a hammer in my hand, building a tree fort or a go cart or anything else I could think of if it could be made out of wood. After graduating from high school, I used my carpentry skills to earn money and worked for a couple homebuilders. One of the guys on the crew noticed my skills, and he took me aside on separate time to help him build a home that he was building for his family. The two of us built that home from the ground up.

Experiencing Compassion

In 1969, my uncle was working for U.S. Steel as a mining engineer, managing operations for a major iron ore mine in the remote region of Southeast Venezuela. He had a friend who needed help developing a ranch that was being hewn out of the jungle. The summer before, I had worked as a ranch-hand in Colorado, so at the age of sixteen, I left my comfortable sheltered life in Minneapolis, and went to Venezuela to spend three months working on a ranch in the middle of the jungle.

That summer, I learned what it was like to live in a mud hut without electricity and running water. Jose and Hector, the two young men with whom I lived and worked, were my age, and they had to work to eat and survive. Their most valuable physical possession was the machetes that they worked with. Their diet consisted of mostly black beans and rice. Our drinking supply originated as rain water that we caught in a fifty-five-gallon barrel sitting under the edge of the thatched roof. It was not clean. At the beginning of the summer, I was careful to boil the water before putting it in my canteen. This involved gathering kindling and building a fire, and as summer wore on, I got lazy and careless. I ended up drinking water from pools of rain water on the ground. Not surprisingly, I got sick. Jose and Hector, who could drink from the pools with impunity, were sympathetic and did everything they could to make me feel better. Although I lived with them for three months, I knew that my experience of deprivation was temporary, whereas for them it would be the same for the rest of their lives.

I've come to think of this experience as the beginning of my application for my 'license to lead,' although I was unaware of it at the time. All I was consciously aware of was a powerful feeling of compassion for Jose and Hector and their community, and a desire to help make their lives better.

When I returned to the U.S., I gave strong consideration to becoming a missionary priest. The concept of "Liberation Theology," a humanistic doctrine that attempts to interpret scripture through the plight of the poor, was young, and having seen firsthand the tremendous gap between the haves and have-nots in South America, it was something I identified with strongly. The Maryknoll Mission Society was filled with dedicated individuals focused on changing this situation, and improving the lives of the poorest on the planet. After serious consideration, I decided that the celibate life of a Maryknoll priest was not for me. I yearned for the family life, enrolled in college, and pursued my career in engineering and construction.

I cannot pass up the opportunity to share a thought here. There are still two billion people on the planet who live on less than \$2.00 per day, and a billion who live on less than \$1.25 per day. The eradication of extreme poverty on the planet is a very achievable goal. Economist Jeffrey Sachs has calculated that by making small scale local sustainable investments, it would take ten years and less than 1% of the income of the developing world to raise the poorest of the poor up from poverty (19). This equates to about 1/7th of the US military budget. One way to look at this is to consider that raising these two billion people out of poverty would create two billion new consumers, who would enter the mainstream of the world economy, thereby benefiting everyone.

Just think about it.

Lesson in Forgiveness

In 1985, ten years into my career, someone I considered a friend breached my trust in him and embezzled money from me. For the purpose of this book, I will call him Steve. He called me, all excited, about a real estate investment that guaranteed a double-digit return in an unrealistic time frame, and my greed got the better of me. I sent Steve what was then to me a large amount of money to invest in this too-good-to-be-true deal, which of course proved to be too good to be true; my so-called friend cashed and spent the check, and my money was gone. I tried my best to forgive him but couldn't, and walked around with anger and resentment in my heart for a long time.

A year later, I was living in Richmond, Virginia, and had a daily routine of sitting on the bank of the James River to meditate during a break from my morning run, and recite the Lord's Prayer. One day, just as I reached: "Forgive us our trespasses, as we forgive those who trespass against us," I felt a tug at my heart, urging me to forgive Steve. Two days later, I called Steve's home. His wife answered and told me that, just two days before, on the very day I felt the urge to call him, Steve had been in a terrible accident and was now in a hospital bed, paralyzed for life from the waist down. I was horrified. In my anger at his betrayal, I had wished a slew of horrendous things on that guy, and being in a car crash was the least of them. Talking with Steve later that day was a transformational experience for me and changed forever the way I feel about holding grudges and how I handle forgiveness. Although I am not prone to any kind of magical thinking, I do find it interesting that my phone call to forgive my old friend came at the time that it did.

Many years later, I found myself in the city where Steve lived, so I called his home to see how he was doing. His wife answered the phone, and informed me that Steve had passed away six months earlier from complications with his injuries and health problems. Over lunch, Steve's wife told me something that touched me deeply. She told me that Steve told her about my phone conversation with him in the hospital that day shortly after his accident. Steve had often used the example of my forgiveness of him, to teach his sons the importance of forgiveness. We never know when our small acts of kindness will have a ripple effect.

In retrospect, I have learned that forgiveness is the gateway to higher levels of personal growth, leading to attainment of one's full potential. A remarkable body of research performed by Frederic Luskin, Ph.D. and his colleagues, confirmed the tangible performance value in practicing forgiveness (20). When vice presidents and advisers at American Express were given a one-day forgiveness workshop, followed by four teleconference follow-ups over the following year, stress levels were reduced by 25%. They also generated an increase of 18% in gross sales. Those who didn't participate only improved their sales by 10%. Forgiveness is a learnable and teachable practice, and Luskin suggests the following nine steps:

1. Know exactly how you feel about what happened and be able to articulate what about the situation is not OK. Then, tell a couple of trusted people about your experience.
2. Make a commitment to yourself to feel better. Forgiveness is for you and no one else.
3. Forgiveness does not necessarily mean reconciling with the person who upset you or condoning the action. In forgiveness you seek the peace and understanding that come from blaming people less after they offend you and taking those offenses less personally.
4. Get the right perspective on what is happening. Recognize that your primary distress is coming from the hurt feelings, thoughts, and physical upset you are suffering now, not from what offended you or hurt you two minutes—or 10 years—ago.
5. At the moment you feel upset, practice stress management to soothe your body's fight or flight response.

6. Give up expecting things from other people, or your life, that they do not choose to give you. Recognize the "unenforceable rules" you have for your health or how you or other people must behave. Remind yourself that you can hope for health, love, friendship and prosperity and work hard to get them.
7. Put your energy into looking for another way to get your positive goals met than through the experience that has hurt you. Instead of mentally replaying your hurt seek out new ways to get what you want.
8. Remember that a life well lived is your best revenge. Instead of focusing on your wounded feelings, and thereby giving the person who caused you pain power over you, learn to look for the love, beauty and kindness around you.
9. Amend your grievance story to remind you of the heroic choice to forgive.

Lesson of Acceptance

In 1989, I found out that my one-year-old son, David, was permanently and severely mentally handicapped. I will never forget that day at the University of Virginia Hospital when my wife and I watched helplessly as David attempted and failed the I.Q. test with the little bell, mirror, toy blocks and piece of glass. We had been convinced any kids we had would excel in whatever they chose to do, be it academics or athletics. I was a take-charge guy managing a complex construction project with five hundred workers. I thought that my personal power and problem solving abilities were boundless.

One of my biggest concerns was what would happen to David when I was no longer in the world to care for him. Surely, I thought, there had to be some kind of treatment, medicine, vitamin, or enzyme that would cure him? We simply had to find the right doctor. We took David to Johns Hopkins Hospital, the University of Minnesota Medical Clinic, and the Mayo Clinic in Rochester. The prognosis was always the same: no change, no hope. I loved David dearly, and I still do. I had no problems accepting him, but what I couldn't accept was my powerlessness to do anything about his condition.

One day, almost as a last resort, I took David up to New York City on Amtrak. I will never forget walking through the bustling crowd in Grand Central Station with David on my back, then catching a taxi through Manhattan to meet the biomedical child development specialist. His prognosis was no different from the others: no hope.

Riding back with David on the train, I had a sudden experience of acceptance that I will never forget. I acknowledged to myself that there was nothing I or any doctor could ever do for David, except love him and care for him. In an instant, I felt the weight of the world lift from my shoulders, and I placed my concerns for David in God's hands.

My wife was anxiously waiting for our return, and upon hearing there would never be a change in David's condition she became distraught. We continued to care for David as we always had, but our marriage was already troubled and did not get better. Before too long, I sought help from a therapist. At the end of our second and final session, he told me the best medicine for me at the time would be to seek out someone less fortunate than me to go and help. My therapy sessions were over after two meetings.

Lesson on Giving Back

It was winter 1989 in Richmond, Virginia. During the cold months, the Richmond churches traded turns feeding the overflow crowds from the city's homeless shelter. The very next

Sunday after my visit to a therapist, the pastor at church asked for volunteers. That evening, in the church basement, I met the faces of the homeless of Richmond and knew that there was something I could do. The next day, I drove to the Richmond homeless shelter and introduced myself to the director of the facility. I told him that I was in charge of construction of the James Center Project in Richmond, and that since homelessness was about the lack of housing for poor people, I would like to lend my talents in some way. He introduced me to Sue Capers, the founder of the Virginia Coalition for the Homeless. Sue was putting together a nonprofit corporation and board to work on creating safe and livable spaces for the poorest of the poor, and I became a founding board member of SRO (single room occupancy) Housing of Richmond.

Our lives continued in the decade after the New York doctor's confirming prognosis for David, but life became a daily struggle. My role as father and provider was my primary focus. My wife and I grew further and further apart. Finally, as is the case with 80% of families with a child with severe challenges, our marriage could not take the strain, and we divorced in the year 2000. Relocation for the best job opportunities was not an option. Instead, I stayed put and purchased an old brick farmhouse that was a serious fixer-upper.

Lessons in Surrender, and "Letting Go"

That first year after the divorce was difficult. I spent a lot of time in reflection and prayer, asking God to show me something I could commit to and create meaning in my life. I had a well-paying job, but it did not give me the fulfillment and satisfaction I was seeking. One cold winter night, after a long session of prayer and meditation, I got up and went to my desk to pay some bills. Right on top of the pile was the natural gas bill for home heating fuel. It was five times higher than any heating bill I had ever had!

At that moment, I decided that I would do a complete energy retrofit of that old house, and share what I had learned with my family, friends and neighbors.

I started attending home shows and looking at alternative heating systems. I read numerous books about the new and looming energy crisis. I kept abreast of the thinking and research done by the Association for the Study of Peak Oil (ASPO), and hired a consultant to do an energy audit and teach me how to do it myself. I had been involved in building and managing many new build design-build building projects, but I had never done an energy retrofit on an old building.

I learned everything I could, did some high payback, energy efficiency projects on the house, kept my records on file, and started tracking the changes in energy use on the house. My vision was to do the retrofit work, make display boards and have open houses for people to come and learn about energy efficiency. From all the studies done by the ASPO, it appeared that there was going to be a serious energy crisis around the year 2012. Although books about the looming crisis did not start to appear until 2004, I was already busy working on it in my own small way. I never did fulfill my original vision of a model home retrofit, but I did write my first book in 2010, which was about sustainable living. Along the way, I did a stint as an independent energy auditor and analyst for customers of Excel Energy Company in the Twin Cities.

The year 2004 brought another opportunity for me to make a difference and commit to something that was meaningful to me. A couple of my friends asked me to join them on a volunteer trip to a poor mission church in Chimbote, Peru, to drill fresh water wells for the people there. Based on my 1969 experience of living in a mud hut without clean water, this resonated strongly with me, and I eventually went on two separate trips. Upon my return from a 2004 mission trip to Peru, I fell ill.

My doctors speculated that a virus had entered my heart and caused a condition called cardiomyopathy. It was serious enough to put me into the intensive care ward for two days, with a three day follow up in a regular hospital room. Because my original doctor had misdiagnosed my condition as pneumonia, the condition had progressed to a point where my life was threatened. My heart was pumping at only 30% of capacity, and I could barely walk from the car into the clinic to take a stress test one day. Before I was able to step onto the treadmill for the test, I was immediately hospitalized after the technician looked at my heart through the ultrasound.

Lying in intensive care, I was facing the possibility of dying or of living the rest of my life as an invalid. I realized I had no fear of death, and a peace unlike anything I had ever experienced engulfed me. As I had before, I asked God to show me something meaningful to do with the rest my life: but this time, I surrendered myself to Him as completely as I could find possible and promised that if I were to live, it would be entirely in His service. I gave over the notion of trying to self-direct my life and asked God to use me as needed. Again, I admitted to myself that I was powerless over my life, and completely at God's mercy.

Thanks to the miracle of modern medicine and, of course, my health insurance, I recovered and lived, but I could not stop thinking about a young man in Chimbote I'd seen die from AIDS because he could not afford the medication. I thought about the two billion people on the planet who lived on less than two dollars per day, the great majority of whom would not have survived if given my circumstances. I became overwhelmed with gratitude, and realized how fortunate I was to have been born at the time and place I had been. As never before, I realized I am one lucky guy, and I began to appreciate every day as the precious gift it is.

I walked out of that hospital a changed man. I felt like I had been given a second chance for a reason, and I opened my heart to God as completely as I could. I had asked Him to take me and use me for His purposes for the rest of my time here on Earth. Now, it was up to me to learn what that purpose was and stay awake at all times for God's guidance.

While in the hospital, I read an article about Anotherland Travel Company, which took people to Tanzania, Africa, visiting the villages and meeting the people. I contacted Nichole Smaglick, the founder, and asked if she could help me make contacts in Tanzania so I could help me make a difference there. We started meeting monthly, and reached out to the various mission groups in Minnesota. The meetings grew in size until we had about twelve people working to explore opportunities to expand international church to church relationships, known as 'sister churches.' One day, a Catholic priest from Tanzania, Father Augustine Mbiche, showed up at our meeting. When he returned to Tanzania, I received a phone call from his Bishop, Alfred Maluma. The Bishop formally invited me to come to his diocese to make connections for sister churches.

Within a month I was on the ground in Tanzania, where I traveled on the dirt roads over three thousand kilometers, enrolling church leaders in a coalition that we christened: "Global Faith Partners," with the mission of creating sister church ties in the U.S. and other countries. During the following year, I created a PowerPoint presentation of my African trip. I talked with many church ministers, pastors, and priests in the U.S., in attempts to generate interest in the sister church idea. Despite my assurances that the program was more about cultural connection and mutuality than money, I was surprised at the reluctance of church leaders back home to even consider the idea of a sister church partnership. They had their own priorities and feared that an African partnership would drain funds from those programs and needs. Undeterred after a year of attempts to forge some partnerships, I invited five priests to the U.S. to stay with host families I had recruited, to help make introductions within their church communities. I found five couples who were active in their churches, and who were interested in having a visitor stay with them for three weeks. Their only commitment was to introduce their African guest to their church councils and leaders, and share the vision of "Global Faith Partners." This host family concept worked, and there are now a number of self-perpetuating 'sister church' connections between people, churches, and organizations. The results of these efforts include a number of exchange trips, two new schools, medical mission trips, clean water wells, education scholarships, and other programs and projects.

When setting off on my goal to create sister church partnerships, I remembered the words of Steve Jobs:

> *"The bigger the dream you have, the better the team you'll need."*

Without first building a team in the group called "Global Faith Partners," none of this would have happened.

St. Monicas School, Matamba Tanzania

(10% of the children in this village have lost their parents to HIV/AIDS)

The Rewards of Leadership

In early 2010, I was preparing myself to leave Utah and head off to Hawaii to build a geothermal power plant on the Big Island. (There's an account of this difficult and challenging project in Chapter 11: "Involve Everyone.") Prior to my departure, I spent a Saturday afternoon jotting down notes on a pad of paper about what I had learned over my career thus far, about project execution and creating high levels of motivation and productivity. I consolidated and reduced this set of notes down to a set of principles and disciplines for me to keep in front of me while executing the Hawaii project.

As I related, the project was finished on time and under budget, in spite of the remote location and the client reducing the schedule allowance by two months. About one week before we completed and demobilized the project, I received a letter from the spouse of one of the team members I had hired. I knew that he and his family had experienced some challenges including a long period of unemployment and a grandchild who was struggling with childhood leukemia, but I was not prepared for the thanks and gratitude she expressed to me in the letter. Far too long to reproduce in full, this is how she began:

> *"First of all, we thank you for hiring Ken. It was a miracle we had been awaiting for 8 long months. To be amongst Godly men was just what God had intended. He has become a new man with enthusiasm, excitement, and a renewed spirit of self-worth. He beams with the spirit and had forged lifelong family relationships. To be part of a team that promotes people first and allows individuals to share their life and faith, as you have done is more than we could have ever asked for. My husband is a man of honor, integrity, and faith and I thank God he was placed here with you all."*

This unexpected gift of recognition from the spouse of someone on the project team touched me deeply. It was my reward for all the long hours, frustrations, and separation from my home and loved ones on the mainland. It recharged my batteries and was a very positive affirmation that the way I was leading my life and exercising my leadership was making a difference. It gave birth to this book and showed me that my commitment to make the world of work a joyful, safe, productive, and fulfilling one for those I worked for and with had become a reality.

Connecting the Dots

In a 2005 commencement address to Stanford, Steve Jobs talked about connecting the dots.

> *"You can't connect the dots looking forward; you can only connect them looking backwards. So you have to trust that the dots will somehow connect in your future. You have to trust in something—your gut, destiny, life, karma, whatever. Because believing that the dots will connect down the road will give you the confidence to follow your heart even when it leads you off the well-worn path; and that will make all the difference."*

When I was a young boy, I felt like a champion when I learned to pound nails with a single swing, see the results of a good job, and get the praise from my parents. I later chose the Civil Engineering profession where I could enjoy the fruits of a construction career. After seeing grown men and women at work on project sites, either empowered and fulfilled, or dejected and demotivated, I chose to discover how to create the former—work sites that were successful and also a place where people enjoyed a good, hard day's work. I have followed that quest ever since.

Having lived in a mud hut in Venezuela after my junior year in high school, I was eager to participate in a clean water mission trip to Peru with my friends where a cholera epidemic had taken countless lives.

Needless to say, I enjoy some incredible good feelings knowing that I was an instrument in creating the Global Faith Partners coalition, and the good work of my friends has led to two schools in Africa and more. Having been brought to my knees and within a wisp of death, I have learned to accept my limitations. I have also learned both humility and the power of surrender found in the words of scriptures, John 5:30:

"I can of mine own self do nothing"

Having received a letter from the wife of one of my workers in Hawaii, I am renewed with a passion and commitment to transform teams and work environments, and I want to show others how to do the same. My investment of time in this book is for that purpose.

My motive for doing volunteer work was not for boasting rights but out of surrender to God's will and my choice to live with passion and purpose under the power which that renders. Even though my accomplishments are meager, I share them with you to show what one individual can do. The African work that has been performed was based on a mere investment of my trip to Tanzania and round trip airfare for five Tanzanian priests. When I hear people say that they don't know what they can do, I realize that they are correct. Unless one is prepared to make the sacrifice of self, surrender to a higher purpose and an elevated vision of oneself, there IS very little that one can do by him or herself. But with imagination, commitment, passion, surrender, and the exercise of choice, one can do much more than one can conceive. There is an important lesson to learn. I did not start out Global Faith Partners by planning on building a school or providing clean water wells in Africa. I don't think that I would have or could have invented a way to do that by myself with my limited funds. The very path toward those results appeared in front of me, step by step. I certainly don't and can't take all the credit for the good work of Global Faith Partners. I was but one link in a chain. I am amazed at how this happened. If one looks around the world today, some of the greatest human needs on the planet are in Sub-Saharan Africa—for clean water and education. Economists know that investments in infrastructure and education are building blocks for the wealth and wellbeing of a people. I don't mean to suggest that creating sustainability for the extremely poor in Africa is the only way to be a contributing and meaningful member of human society. However, given my early adolescent summer experience of jungle living in a mud hut, it is consistent with how I was formed. I urge you to find your own best ways to give back.

All of these life lessons and experiences can fit into a working model that may be of use to you. Although I am not a trained psychologist, theologian, spiritual guide, or counselor, I did consult people with these backgrounds in writing this chapter to make sure that I did no harm. We see the words compassion, forgiveness, acceptance, and surrender in many places, and in reference to personal character development and growth. In my experience, it seems that there is a hierarchy of these memes, as shown in figure 37.1.

Figure 37.1—The Path to Surrender and "Letting Go"

It seems that compassion for others and oneself is required as a foundation of forgiveness. We must forgive others and ourselves to experience acceptance. Once we accept life on its own terms, we can build the strength to surrender. All of this occurs within a background of service and love. This is the topic of Chapter 39.

38 HAVE IMPECCABLE INTEGRITY

> *"Real integrity is doing the right thing, knowing that nobody's going to know whether you did it or not."*
> *—Oprah Winfrey*

If you look up the word 'integrity' in the dictionary, you'll find it has two meanings. The first definition alludes to having moral and ethical principles, and the second meaning is to be whole and complete. The disaster I'm about to describe uses the word in both of its meanings.

In July 1981, two crowded overhead walkways at the Kansas City Hyatt Regency collapsed without warning and crashed down to the atrium, killing one hundred fourteen people and injuring two hundred. In the forensic investigations of the collapse, the

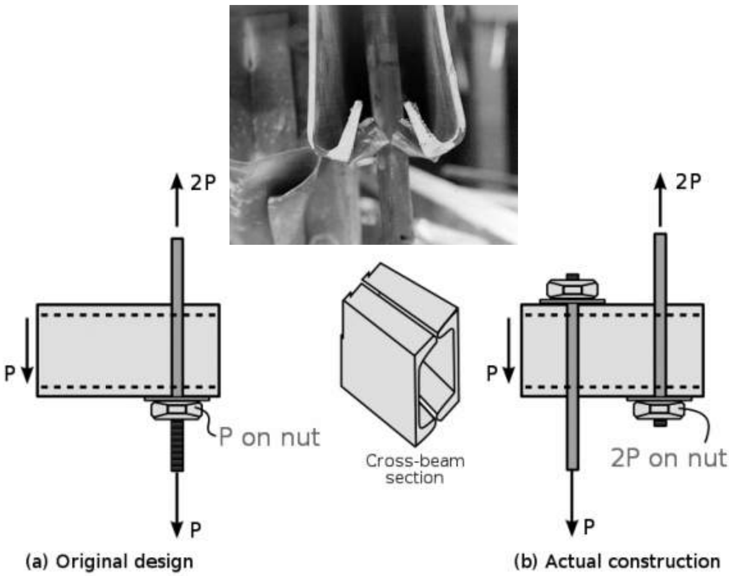


Figure 38.1 Connection Detail

technical cause of the failure was determined to be faulty detailing and construction of the hanging rods for the platforms.

The detail on the left here was the original design, but in the course of executing the design, the connection was built instead as shown on the right. This changed the loading on the walkway beams which failed under the stress, as shown in the photo. The detailer, architect, fabricator and technician, all testified that during construction they had contacted the project engineer regarding the weight-bearing capability of the hanging rods. He assured each of them in turn that the connection was sound, claiming to have performed calculations checking the detail, which had proved the walkways were completely safe.

The investigation revealed the engineer was lying. He had never carried out any calculations testing the strength of the design at all. The structural integrity of the walkways was faulty from the beginning, and as for the integrity of the engineer, it was non-existent.

The Kansas City collapse is an horrific example of what can happen when people, supposedly looking out for the welfare of the public, are completely lacking in the moral and ethical principles, without which there can be no integrity. As well as revealing the engineer's deliberate breach of the good faith and trust invested in him by the four people who questioned the design of the walkways, the investigation of the disaster also brought to light the problem of compartmentalization in the design and construction process.

Very few construction failures are given the kind of scrutiny the catastrophe in Kansas City was subjected to, but fortunately, very few result in so much devastation and loss of life. In "*Why Buildings Fall Down*," Matthys Levy and Mario Salvadore explore other well-known engineering failures and what caused them to happen.

Life Lessons

> *"You cannot dream yourself into a character; you must hammer and forge yourself one."—Henry David Thoreau.*

Integrity has two generally accepted meanings. One is related to ethics—being honest, fair, and of high moral character. The other describes the state of being whole or complete. The truly successful people I know have integrity in relation to both meanings of the word. I am fortunate that I cannot recall ever hearing either of my parents utter anything that was not true. When you live with someone for eighteen years, you learn about their level of integrity; and when those people are your parents, you come to expect certain things from the world. When I first entered the world outside of my family, I learned that integrity was not a universally adopted value in the adult world. It took me some time to adjust to this and learn to deal with the fact that people do not always do what they say they will do, nor do they always tell the truth.

In the real world, there exist moral absolutes in some areas, and there exist shades of gray in others. Moses gave us the Ten Commandments to follow. Many if not most religions have highly complex codes for its members. Interestingly, I was in the working world for ten years before I heard a leader speak about integrity. Bob Street, President of McDevitt and Street Company, made it simple to understand for anyone. "We never want to do anything in our business dealings that we would not be proud of if it appeared on the front cover of the newspaper." This precept kept it simple and easy to understand for anyone.

However, there are now circumstances that require better definition. Investigations by the U.S. Security and Exchange Commission in the 1970's found that over four hundred U.S. companies openly admitted to making illegal or questionable payments in excess of $300 million to foreign politicians, government officials and political parties. The abuses included things from bribery to 'facilitating payments,' that were made to ensure that government functionaries discharged certain ministerial or clerical duties. As a result, Congress passed Public Law 95-213, the Foreign Corrupt Practices Act of 1977. Corporations are now accountable for the actions of their employees, and as a result, some companies provide mandatory training to key people on the practice of business ethics as defined by this law.

Doing certain things just because everyone else is doing them does not make it right. The circumstances that existed before the Foreign Corrupt Practices Act is an example of how that gets out of hand. U.S. based and other global businesses were finding that they had to compete with each other on the basis of how large their bribes were instead of on the basis of the quality of their products or services. This was a detriment to the greater good.

Highway speed limits pose an interesting case regarding the ethical dilemma of following the crowd. Although it is a commonly held belief, 'going with the flow of traffic' is not a legitimate defense against a speeding ticket. This is a great example of how we often justify our actions by doing what everyone else is doing. If you exceed the speed limit, you are subject to receiving a ticket, regardless of what everyone else is doing. (By the way, I would be lying if I told you that I never got a speeding ticket.)

Unfortunately, I have witnessed several kickback schemes up close and personally. In one instance, a superintendent on one of my teams made an arrangement with the concrete supplier for a project that required about fifty thousand yards of concrete. For every yard purchased through this supplier, this superintendent received a kickback of two dollars per cubic yard. The concrete supplier was the low bidder, and they only charged their bid amount for the concrete. But my superintendent was influential with this supplier, and the kickback was a condition of the award.

In another case, one of my project managers on a commercial project had a practice of adding dollar amounts to subcontractor change orders, and in exchange, the subs were doing work on the manager's personal home addition without billing him for it. In yet another situation, the equipment superintendent for a regional contractor was renting out idle equipment from the contractor's yard, and pocketing the payments from those who rented the equipment. The professional reputations of all three of these crooks were ruined, and one of them did six months in jail after the contractor pressed criminal charges.

The point I am making here is that if you are in a responsible position over a project, you must be aware that there are people out there who do not share your ethical principles or level of integrity. Conduct Google search of the term 'kickback' with 'indicted' and you will see the headlines out there. Therefore, it is important to understand and follow the program of internal controls that have been implemented by the accountants in your firm. These internal controls are designed to provide checks and balances to minimize the chances of fraud or embezzlement. To be a leader, you must have personal integrity, and you must also keep your eyes and ears open to do what you can to protect yourself and your employer from loss.

39 BE IN SERVICE AND OF LOVE

"We can all be great, because we can all serve and we can all love."—Dr. Martin Luther King Jr.

Mahatma Gandhi, the Indian nationalist leader who led the fight for his country's independence from England, which was finally achieved in 1947, was also the architect of a form of mass, non-violent disobedience that influenced the world for years to come. His belief was that "the best way to find yourself is to lose yourself in the service of others."

In my case, being in service has sometimes meant traveling abroad, not something you can just pick up and do when you are struggling to make a living and bring up a family. Fortunately, we all have the opportunity to be in service every day, every hour, and every minute, wherever we are, at work and at home. Being in service at home comes naturally, if you think of it as treating your loved ones with the honor and respect they deserve and doing all you can to make their lives better.

Really, there's no difference between that attitude and the one you can take with you to work. Being in service at work has nothing to do with serving your boss as though you're in a master/slave relationship. If you hold in your heart that the work you are doing and the people you work with really matter, you are already living in service. If you work directly in customer service, then feeling this way brings new meaning to the old adage: "The customer is always right." If you are in a line position working in construction, mining, or manufacturing, there is always indirect contact with customers involved, and there are always in internal customer—some person or group who relies in your service. I know of more than one mining operation where management treats and thinks of its employees as customers. It makes perfect sense because a key job of management is to provide the front line workers with all of the tools and equipment that they need to be successful.

In a recent article, Lieutenant General Jeffrey W. Talley, Chief of the Army Reserves, put it this way: "It's always about service to others and teamwork. Everything you do, from keeping yourself physically fit and mentally sharp, to working as a team to get things done, is about service to others. After ten years, that became ingrained in me as a habit" (21). Even keeping himself fit is done with the frame of mind of being in service to the people under his command.

Jesus Christ was one of best examples of a 'servant leader' the world has ever known. He stooped to wash the feet of his disciples. He surrendered to His Father's will and sacrificed His life.

Chapter 18 "Plant Motivators and Weed-out De-motivators" highlights some strategies that leaders can use to make sure that the people within their teams have the things they need to be successful. If the leader has adopted an attitude of service toward those he or she leads, the strategies of Chapter 18 will be more effective and sustainable. As Bob Street used to preach, effective leaders 'dance on the stage' of those they lead.

A great example of this attitude is clearly demonstrated by the leaders of a skin care product company based in Arizona. Brothers Izhak Ben Shabat and Moty Ben Shabat's company, 'Seacret-Direct,' established its roots in Houston, Texas, where they started an ice cream vending business. Through a series of transitions, their company became among the first to utilize shopping mall kiosks, when they shifted from selling ice cream on the Houston streets, to skin care products that contained beneficial ingredients from the Dead Sea in Israel. During the busy holiday shopping season, the sales people who occupied the kiosks worked very long hours and seven days per week. To support the sales staff operating in a region, the area managers for Seacret helped support the sales people by taking care of mundane personal tasks for them: laundry, shopping, and other tasks that would allow the sales force to do their jobs. More recently, the Shabats have started selling their products through a direct selling MLM (multi-level marketing) approach. Their attitude of service recently manifested itself when they personally helped one of their sales recruits pack, load, and move his personal things to Phoenix. This is what it means to be in service.

Dr. Martin Luther King, a great humanitarian and activist and the leader of the African-American Civil Rights Movement, often spoke about the principle of service.

> *"We can all be great, because we can all serve and we can all love. You don't have to have a college degree to serve. You don't have to make your subject and your verb agree to serve. You don't have to know the second theory of thermodynamics in physics to serve. You only need a heart full of grace. A soul generated by love."*

Love—it's a word that doesn't usually crop up in books about business or in the workplace or the boardroom, but the corporate success story 'Southwest Airlines' is one of the exceptions to the rule. It's the world's largest low-cost carrier and unlike most of its competitors, maintains its profitability while being heavily *un*-unionized. (Unionized, and in a non-adversarial way)

Love has been a value at Southwest from the beginning. The tag line in their first TV advertisement was "Someone up there loves you." (Today it's "If it matters to you, it matters to us.") Its stock symbol is LUV, and its internal culture is imbued with habits and practices that convey a caring and loving place to work. In their best-selling book, *"Leading With LUV, A Different Way to*

Create Real Success," Ken Blanchard and Coleen Barrett show why leading with love is not 'soft' management, why 'servant leadership' is love in action, and how to make it work.

Vince Lombardi, one of the most successful coaches in football history, had no problem using the word love in conversation and in his speeches. (23)

> *"Mental toughness is Spartanism with its qualities of sacrifice, self-denial, dedication. It is fearlessness, and it is love."*

and

> *"Teamwork is what the Green Bay Packers were all about. They didn't do it for individual glory. They did it because they loved one another."*

The Green Bay Packers were on the verge of losing their franchise in the 1960's when Lombardi transformed them into a dominating force in the National Football League, spurring them on to win five NFL titles and the first two Super Bowl crowns. Off the field, Lombardi became known for his coaching philosophy and motivational skills, demanding dedication and obedience from his team and promising championships in return.

When the sense of love fills the atmosphere around a team, the results are unmistakable. Lombardi proved it for all the world to see. Being in service is closely linked to being in love with the world.

40 GIVE BACK

> *"At the end of life we will not be judged by how many diplomas we have received, how much money we have made, how many great things we have done. We will be judged by "I was hungry, and you gave me something to eat, I was naked and you clothed me. I was homeless, and you took me in." —Mother Teresa*

To be an effective leader, you need to pay attention to your physical, mental, and spiritual wellness. Scientific evidence now exists showing that the acts of giving and generosity have direct mental and emotional benefits to the giver (22). In replicated studies, researchers found that the act of giving stimulated the mesolimbic reward system (the 'feel good' center) in the brain of the givers, even more than receiving did. This ancient wisdom is reflected in the Bible, in Acts 20:35: "In everything I did, I showed you that by this kind of hard work we must help the weak," and remembering the words the Lord Jesus himself said: "It is more blessed to give than to receive." (It's amazing to me that modern technology, as in brainwave scans, confirms the ancient wisdom of long ago.)

One of the iconic stories about giving and receiving is found in "*The Gift of the Maji*." In this well-known story, James Dillingham and his wife, Della, are faced with the dilemma of finding worthy gifts for each other at Christmas. Living within very modest means, they each sacrifice their own prized possessions to find a gift for the other. Della cuts and sells her beautiful long hair so that she can afford to buy James a gold chain for James' gold watch he inherited from his grandfather. James sells his watch so he can give Della some beautiful combs for her shiny long hair. Upon exchanging their gifts, they realize that they have each bought something for the other that was now useless. But they now realize just how much they love each other, as shown by the sacrifices each made for the other.

"The Gift of the Magi" ends with the narrator comparing the Dillinghams' mutually sacrificial gifts of love with those of the Magi in the Bible:

> *The Magi, as you know, were wise men—wonderfully wise men—who brought gifts to the new-born King of the Jews in the manger. They invented the art of giving Christmas presents. Being wise, their gifts were no doubt wise ones, possibly bearing the privilege of exchange in case of duplication. And here I have lamely related to you the uneventful chronicle of two foolish children in a flat who most unwisely sacrificed for each other the greatest treasures of their house. But in a last word to the wise of these days let it be said that of all who give gifts these two were the wisest. Of all who give and receive gifts, such as they are wisest. Everywhere they are wisest. They are the Magi.*

If you are fortunate enough to have a heart filled with universal love, you will automatically want to give back some of your time, talent, and treasure. The irony is, if you cannot feel that amazing sense of universal love in your heart, giving will open up that amazing space inside of you. It is the 'fake it until you make it' phenomenon. The way you choose to give is up to you. It could be by tithing at church, getting involved in a professional or civic association, donating to a charity or be any other method that works for you.

During the years when you're raising a family, it can be a challenge to find the time or the money to do this. But get committed and involved in something bigger than yourself, even if it is in a small way. Every time I have had the opportunity to give of my time, talent, or treasure, I have been rewarded many times over.

Life Lessons

In personal relationships, being a good receiver is just as important as being a giver. Graciously receiving a compliment, acting out of kindness, or gifting someone with a simple "Thank you," acknowledges the pleasure that the giver receives from giving. Your gratitude is a gift to the giver.

Unfortunately, too many people see their jobs as merely a means to a pay check. They moan when their alarm goes off in the morning and cannot wait until Friday comes so they can get two days off work on the weekends. This is a sad state of affairs for millions of people, and it is difficult to see how one can be an effective leader with this mind set. So one must find fulfillment in what he or she does to be an effective leader.

I believe that giving back can be one of the pathways to finding meaning and fulfillment in one's life and work. There are many who subscribe to this belief, including Peter Buffett, author of "*Life is What you Make It: Find Your Own Path to Fulfillment*." Peter's message is that everyone, regardless of wealth, education or status, has something to give back to society, and doing so helps shape and define us as individuals.

My personal career did not start out with this value in mind. For my early career, I want to "be" a project manager; I wanted to "be" a father and husband. When I started to give back of my time, talent and treasure, I started to find greater meaning in my work, which helped me be a better leader. I don't know how or why this works, or whether it was just a coincidence. Perhaps giving back helps 'exercise' that mesolimbic part of our brain, and we then learn ways to give meaning to all aspects of our lives.

In any event, I believe a life that is lived on purpose is the most fulfilling and effective, where the distinction between work, play and life become blurred, and we simply live.

PART X
EPILOGUE

41 WE HAVE MUCH WORK TO DO

"Start where you are. Use what you have. Do what you can."—Arthur Ashe

When we look at the state of the world today, it is obvious that we have a great deal of work to do. If we look back over the last fifty years, the U.S. baby boom generation has been a driving force in markets and consumption. If we now look at the population boom of the developing world, the U.S. baby boom pales in comparison. Todays world population profile is a post war baby boom on steroids. This is clearly evident by the facts, depicted below in figure 41.1, and it is also evident to anyone who travels to the developing countries, and experiences being surrounded by young people everywhere. The global household formation rate has reached the highest rate in history, and it will continue to grow for years to come. According to the U.S. Census Bureau, the world population reached seven billion on March 12, 2012, and the median forecast for the year 2100 is a world population of ten billion.

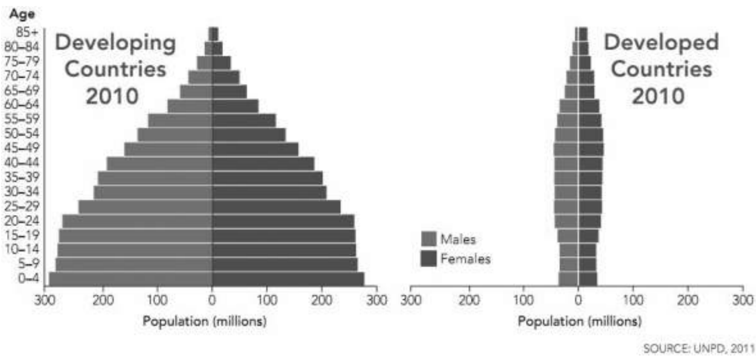


Figure 41.1 World Population Profiles

Within my ongoing career in engineering, construction, and development, I have been involved in many resource development and infrastructure projects, and I am acutely aware of the finite amount of natural resources we have available to serve the needs of this growing population. The existing reserves and assets will eventually approach the twilight of their productive years, and companies are reaching out to more remote locations, deeper deposits and challenging developments, to replace them with new resources using new technologies. The expansion and development of key industries including mining, energy, infrastructure and utilities, is requiring ever larger and more complex capital project expenditures. The global infrastructure/ construction market is set to grow to a $13 trillion annual market by 2020.

The Organization for Economic Co-Operation and Development (OECD), estimates that by 2030, the total combined annual capital investment requirements for telecommunications, road, rail, electricity and water, are likely to total an average of 2.5% of world gross domestic product (GDP). If electricity generation and energy-related infrastructure investments in oil, gas, and coal are included, the annual share of GDP rises to around 3.5%.

Today, 40% of the world's population lives on less than $2.00 per day, but this situation is changing. With the advancement of instant global communications reaching out to even the most remote African villages, the developing world is quickly moving beyond a barter economy, and this carries with it the integration of village economies into the global system, and expansion of demand for goods from beyond the village.

The big challenge in engineering and construction in the coming decades will be to do more with less, and do it efficiently, on time, and under budget.

World Internet Usage

World Regions	Penetration (% Population)	Growth 2000-2012
Africa	15.60%	3606.70%
Asia	27.50%	841.90%
Europe	63.20%	393.40%
Middle East	40.20%	2639.90%
North America	78.60%	153.30%
Latin America / Caribbean	42.90%	1310.80%
Oceania / Australia	67.60%	218.70%
WORLD TOTAL	34.30%	566.40%

Figure 41.2—World Internet Usage

Source: Internet World Stats: http://www.internetworldstats.com/stats.htm

A balloon of the global working age population and the emergence of interconnected global trade and resource constraints will drive the need for a whole new infrastructure to meet the needs for energy, transportation, food, water, clothing and shelter.

It seems clear that the infrastructure of the developing world will not look like that of the developed world. For one reason, there are not enough natural resources to equip the projected ten billion people with the lifestyle of the developed world. Secondly, as we see with cell phone penetration to remote parts of the world, technology is 'leapfrogging' past the outdated infrastructure of the last century. We are seeing great strides in efficiency in all forms of material and energy usage, such as with LED lights, high efficiency refrigeration, synthetic materials and electric transportation. Nevertheless, we will continue to need both small and large investments in projects of all kinds.

Despite all the advancements in management and organizational science, we still see big problems with capital projects of the kind we need to support human development. Cost and schedule overruns are epidemic. In a world where capital is largely allocated to projects with predictable risk adjusted returns, our project development methodologies need attention, so that investment will continue to be allocated to where it is most needed. According to recent studies mentioned in the introduction, the greatest gap is in the area of leadership.

This is evident in work environments everywhere, where we also have much to do. In many companies, the work environment can only be described as toxic. Studies have shown that employee turnover is both preventable and very expensive. According to James K. Harter, Ph.D., Gallup's chief scientist for workplace management, people leave companies because of factors relating to the work environment. At least 75% of the reasons for voluntary turnover can be influenced by managers. Still, many bosses think that all turnover comes down to money (27).

When you consider all of the costs associated with employee turnover—including interviewing, hiring, training, reduced productivity, lost opportunity costs, etc., here's what it really costs an organization:

- For entry-level employees, it costs between 30% and 50% of their annual salary to replace them.
- For mid-level employees, it costs upwards of 150% of their annual salary to replace them.
- For high-level or highly specialized employees, you're looking at 400% of their annual salary (25).

There are a multitude of factors driving the need for high team performance teams throughout business and society in general. These include: rapid change, human development, conversion to a renewable and sustainable infrastructure, resource development, and doing more with less. Despite all the advancements in management science, there is still a need for a quantum leap in the area of leadership science and development, at a time when we truly have a lot of work to do.

42 CONCLUSION

In a review of the current state of the art and experience of corporate, government, and institutional investors in capital projects and IT programs, it appears that there is a need to bridge the gap between leadership and management. I hope that *On Time and Under Budget* will help transform the art of project execution by filling that gap with actionable tools, strategies, and tactics for team leaders in every environment.

The work environment found in the engineering and construction industries, aircraft manufacturing, and software implementation have led to advancements in the field of project execution and project management by teams. Faced with the reality of accelerating change in all industries and businesses, the need for an effective team approach to corporate renewal, reinvention, product development, re-positioning, and survival is growing in its importance.

The construction industry is one of the oldest known in the world. Man has always required shelter, and we marvel and the mystery surrounding the construction of the ancient pyramids in Egypt, the Coliseum in Rome, the Parthenon in Greece, and the other Wonders of the World. This is evidence that humans have had the ability to organize into productive teams and effective groups to successfully undertake complex and challenging tasks for a long time. Some of the same organizational skills used to build the pyramids were used to land a man on the moon. Because of the long history and longevity of the business of construction, certain knowledge about working in teams has become part of the DNA of the industry. For those readers who are trying to apply the lessons of teams into other work environments, let me summarize some of the more salient aspects of teams that I believe can make teams so successful in business and organizational performance.

1. Teams are made up of individuals with complementary skills (or not). Construction project teams are made up of individuals who collectively have the skills needed to carry out the program or project. At the management level, these include project directors, project managers, construction managers, quality directors, safety directors, project engineers, superintendents, cost and schedule specialists, human resource professionals, IT technicians, project accountants and others. At the trade level we have electricians, millwrights, mechanics, carpenters, bricklayers, tile setters, painters, operators, riggers, welders, pipe fitters, instrumentation technicians and a host of others. We take this for granted in construction, but having complementary skills on a team is a key approach to any kind of endeavor. There are exceptions to this. For example, in the MLM world (Multi-Level-Marketing), the group of individuals who are 'down line' from an associate are referred to as that associates 'team.' All of the members of that team are primarily focused on selling as their main activity and skill, so the aspect of complementary skills does not apply in this kind of team situation.
2. Teams are relatively small groups, made up of between two and fifteen people. Within a hierarchical organization, members of a team may also be leaders of teams who are below them on an organizations hierarchy, and on through the organization until you reach the front line worker. At one time, Toyota Motors had a total of four layers of management from the top CEO to the factory

floor. For an organization of that size and scope, this is a small number of layers. Each layer is made up of a group of teams.

3. Teams have well identified goals and objectives. In construction, the goals and objectives are easily identified. There is always something to build that is defined in plans, specifications, and performance criteria; there is most always a budget or contract amount; and there is a schedule. A team is assigned a level of autonomy that is clear and defined and consistent with the realities of the task at hand. The world of construction is simple that way, because the mission is always clear. These are good lessons to be applied when creating teams, that are created for other kinds of purposes which may not have such clear outcomes. Purposes such as strategy initiatives, product development, mergers, acquisitions, and change management. An effective team needs to have some quantifiable goals, objectives, and desired results, defined by a scope of work or state change, and constrained by time, money and other resources.
4. Effective teams have an: "All for one, one for all" mentality. "There is no 'I' in team" is a commonly heard phrase around construction organizations that place a high value on teamwork. Everyone is committed to the same team goals, and everyone works together to get things done.

The lessons and principles in this book represent my personal leadership point of view. They may not be the same point of view shared by all successful leaders, but I believe that is useful for everyone to develop their own point of view based on their values, experience, personal mission, drives and motivations.

After developing your point of view, it should be shared with the people you lead, regardless of the size or rank of the group. People need to know where you come from, and you will need to walk your talk. You will be well served to identify something that gets you out of bed in the morning, excited to tackle the day's challenges and opportunities.

Life Lessons

What gets me up in the morning? Let me tell you. In the preface of this book, I shared with you my desire to touch the hearts and minds of men and women where they work every day. In Chapter 1, I suggested some thoughts as to why being on time and under budget is important to our human society, and not simply a cold corporate imperative. In Chapter 37, I recounted a personal story about a letter that I received from the wife of a worker on my team that touched me deeply. Throughout the book, I have tried to show you how creating a culture of empowerment, specific goal achievement, integrity, accountability, recognition, fulfillment and enthusiasm is one of the best ways to get things done on time and under budget.

However, to conclude this book here would be an injustice to you, my dear reader. In the course of writing this book, I have discovered and clarified my mental model to a degree that is so clear and specific that it has captured my imagination and my being in such a way that I must share it with you to complete the picture. To give a wrap to this book, I first need to lay a couple more bricks in the foundation.

Brick one: In 1960, New York Times reporter Tom Wicker noted that "The Rev. Martin Luther King, Jr. had volunteered to lead a voter registration drive among blacks…." (26) From that time, until his death on April 4, 1968, King had a clear metric by which to measure his progress in the civil rights movement.

It is not entirely clear that his passion and leadership in the Civil Rights Movement was baked in the oven of his quest for voter registration, or if voter registration became his metric to measuring progress *after* committing himself so deeply.

Brick two: In a 2011 paper by Werner Erhard and Michael Jensen, a Harvard professor, they presented four ways of being to create the foundation of an effective leader (27).

> *"We argue here that the three ways of being we identify as constituting the foundation for being a leader and the effective exercise of leadership can also be seen as the foundations not only for great leadership, but also for a high quality personal life and an extraordinary organization. One can see this as a "value free" approach to values because,*
>
> *1) Integrity as we define it (being whole and complete) is a purely positive phenomenon,*
>
> *2) Authenticity is also a purely positive phenomenon (being and acting consistent with who you hold yourself out to be for others and who you hold yourself to be for yourself),*
>
> *3) Being committed to something bigger than oneself is also a purely positive phenomenon (that says nothing about what that commitment should be other than it be bigger than oneself).*
>
> *4) Being cause in the matter as a declaration of the stand you take for yourself regarding everything in your life is also a purely positive phenomenon.*

The life of Martin Luther King Jr. was a testament to the efficacy of Erhard and Jensen's third way of being, because King was clearly committed to something bigger than himself. Another thing about King that many people do not know was that the results of his commitment were measureable with a very specific and clear metric (voter registration) with which to measure his effectiveness. Voter registration was an indicator of the rise in hope and reduction of fatalism among the black community. This is mere speculation, but I can imagine that when King set out to increase voter registration in 1960, he became more acutely aware of the root causes of low voter turnout, and so he turned his attention to that on a deeper and broader level as his life mission.

In 1980, when I set out on a quest to discover what made the difference between a "good project" and a "bad project," I did so for somewhat selfish reasons because I thought it would be useful to me in my career. I looked for meaning in places that were outside of that quest, yet on a professional level, the search for excellence in project execution persisted.

I wish that I knew then what I know now because today, I can see the root causes of and cures for poor team performance. I now understand what an impact good leadership can have on results and in the hearts and minds of men and women at work. Furthermore, when men and women are fulfilled in their work, their kids are less inclined to become bullies, drug addicts, drops outs or suicide victims. I need not look for meaning outside of the thing that I have pursued for the last forty years.

What does one do, now that he is well into the second half of life and, still finding wisdom to live by? As discussed in the introduction, The Standish Group tells us that IT projects run over budget by an average of 45%. Price Waterhouse Coopers tells us that large projects run over budget by an average of 88%. Worker polls conducted by Harris organization indicate that only 15% of those surveyed felt that the organization enables them to execute key goals. Just as voter registration was an indicator of an underlying phenomenon, a reduction of project cost overruns, as indicated by specific industry metrics, is an indicator of the effectiveness of good leadership in the workplace.

If our assumptions are correct, workplace attitudes measured by the Harris organization should improve along with the other metrics. If there are other leadership indices out there to track, we will find them, and we will track them. Working to solve these problems is what gets me up in the morning. Transforming the quality of team leadership is certainly a cause much greater than one person. And it is a commitment that will always be relevant.

To become a world-class and powerful leader, you must ask and answer for yourself a couple of questions:

What is your commitment?

What is your cause?

DEAR READER,

PARTNER WITH ME IN MY GOAL TO TRANSFORM THE WORKPLACE FOR MILLIONS.

IF NOT YOU, WHO?

IF NOT NOW, WHEN?

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Appendix

Appendix 1
THE PROJECT MANAGEMENT BODY OF KNOWLEDGE (PMBOK) OVERVIEW

The Project Management Body of Knowledge (PMBOK) is a set of standardized processes and knowledge areas that have been assembled by the Project Management Institute (PMI) to support the dissemination of best practices, and advancement of project management as a professional discipline.

It is an internationally recognized standard (IEEE Std 1490-2003), and its content provides the basics of project management, applicable to any type of project be it construction, engineering, aerospace, or software.

PMBOK is organized around five basic process groups and nine knowledge areas that are typical of most projects. The basic concepts are applicable to projects, programs and operations. The five basic process groups are:

1. Initiating
2. Planning
3. Executing
4. Controlling
5. Closing

Processes overlap and interact throughout a project or phase. Processes are described in terms of:

1. Inputs (documents, plans, designs, etc.)
2. Tools and Techniques (mechanisms applied to inputs)
3. Outputs (documents, products, etc.)

		Initiating	Planning	
KNOWLEDGE AREAS	**Integration Management**	4.1 Develop Project Charter	4.2 Develop Project Management Plan	
	Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS	
	Time		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Resources 6.5 Estimate Activity Durations 6.6 Develop Schedule	
	Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget	
	Quality Management		8.1 Plan Quality Management	
	Human Resource Management		9.1 Plan Human Resource Management	
	Communications Management		10.1 Plan Communications Management	
	Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses	
	Procurement Management		12.1 Plan Procurement Management	
	Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	

PROCESSES		
Executing	**Monitor / Controlling**	**Closing**
4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.8 Close Project or Phase
	5.5 Validate Scope 5.6 Control Scope	
	6.7 Control Schedule	
	7.4 Control Costs	
8.2 Perform Quality Assurance	8.3 Quality Control	
9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10.2 Manage Communications	10.3 Control Communications	
	11.6 Monitor and Control Risks	
12.2 Conduct Procurements	12.3 Control Procurements	12.4 Close Procurements
13.3 Manage Stakeholder Engagement	13.4 Control Stakeholder Engagement	

Table A1.1—PMBOK Matrix

The ten knowledge areas are:

1. Project Integration Management
2. Project Scope Management
3. Project Time Management
4. Project Cost Management
5. Project Quality Management
6. Project Human Resource Management
7. Project Communications Management
8. Project Risk Management
9. Project Procurement Management
10. Project Stakeholder Management

Each knowledge area contains some or all of the project management processes. For example, Project Procurement Management includes:

1. Procurement Planning
2. Solicitation Planning
3. Solicitation
4. Source Selection
5. Contract Administration
6. Contract Closeout

Appendix 2
PRINCE2 OVERVIEW

Projects in Controlled Environments-Version 2 (PRINCE2) is a project management methodology that was developed by the UK Government Office of Government Commerce (OGC). It is used extensively within the UK Government as its project management standard. Its use is also growing outside of the UK government across Europe, Australia, the U.S. and other regions. (24)

Like PMBOK, it also defines steps and processes to employ during the stages of starting, initiating, directing, and controlling a project. It also includes managing stage boundaries, managing product delivery and closing a project.

In contrast with the set of process groups and knowledge areas found in PMBOK, PRINCE2 offers guidance toward designing a structured approach to project management. It offers users a method for managing projects within a defined framework in a structured organization. It describes procedures to coordinate people and activities in a project, a methodology to design and supervise the project within an organization, and how to adjust the project and react if the projects business case changes. The business case of a project can change for a variety of reasons. Changes in the business environment, or changes in the project cost or schedule estimates, can affect the business case.

Every PRINCE2 process is specified with its key inputs and outputs and with specific goals, tasks and activities to be carried out, which gives an automatic control of any deviations from the plan. The method enables an efficient allocation and control of resources across manageable stages. So instead of a large project being fully funded, authorized and delegated in one initiating step, it provides for project board involvement of stakeholders and boards at key gateways in the life of the project, to help assure that the original objectives are being met, and so that adjustments

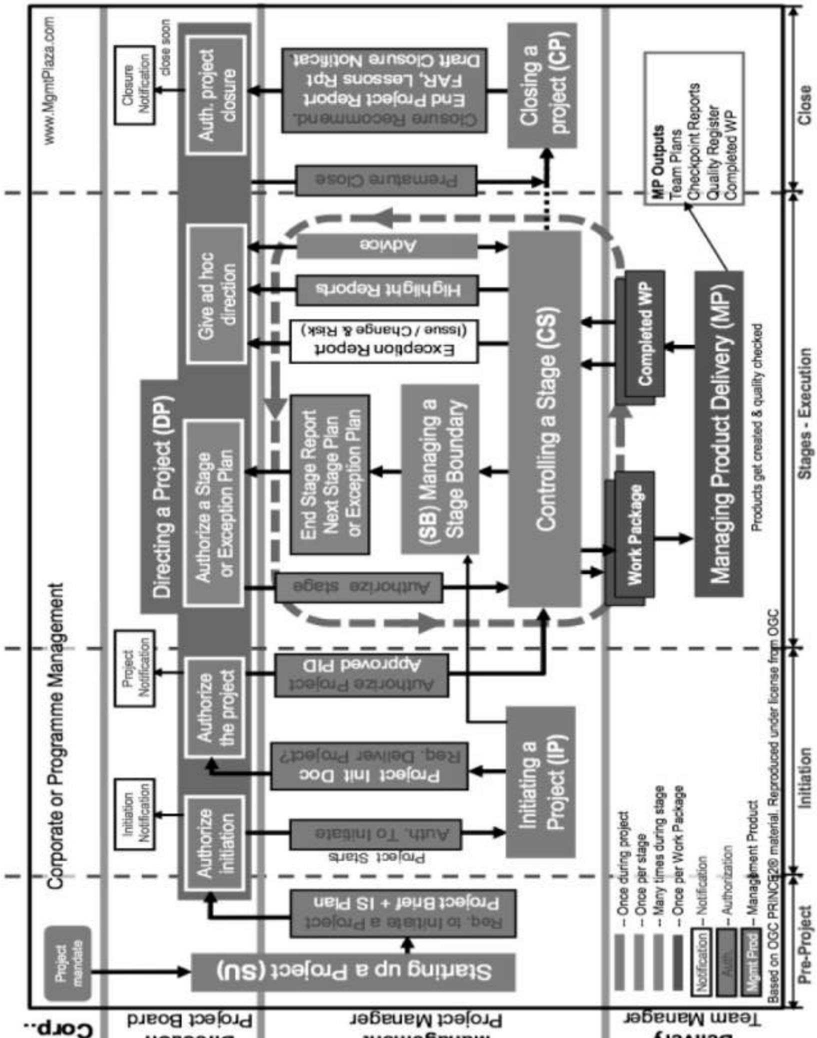
Corporate or Programme Management
www.MgmtPlaza.com
Project mandate
Starting up a Project (SU)
Req. to Initiate a Project
Project Brief + IS Plan
Directing a Project (DP)
Authorize initiation
Initiation Notification
Project Starts
Auth. To Initiate
Initiating a Project (IP)
Project Init Doc
Req. Deliver Project?
Authorize the project
Project Notification
Authorize Project
Approved PID
Authorize a Stage or Exception Plan
Authorize stage
End Stage Report
Next Stage Plan
or Exception Plan
(SB) Managing a Stage Boundary
Controlling a Stage (CS)
Give ad hoc direction
Exception Report
(Issue / Change & Risk)
Highlight Reports
Advice
Work Package
Completed WP
Managing Product Delivery (MP)
Products get created & quality checked
MP Outputs
Team Plans
Checkpoint Reports
Quality Register
Completed WP
Premature Close
Auth. project closure
Closure Notification
close soon
Closure Recommend.
End Project Report
FAR, Lessons Rpt
Draft Closure Notificat.
Closing a project (CP)
-- Once during project
-- Once per stage
-- Many times during stage
-- Once per Work Package
Notification -- Notification
Auth. -- Authorization
Mgmt Prod -- Management Product
Based on OGC PRINCE2® material. Reproduced under license from OGC
Pre-Project
Initiation
Stages - Execution
Close
Corp..
Direction
Project Board
Management
Project Manager
Delivery
Team Manager

Figure A2.1

to the project scope, cost, or schedule can be made. The system allows for clear delegation of decisions and authorities at appropriate project levels. Because it is a widely recognized and understood method, it provides a common language and thought process for all project participants. This helps facilitate a project that can proceed in a sequential, controlled, and organized fashion. It can be adapted to suit the size and complexity of the project, and the skills of the organization.

Appendix 3
LEAN CONSTRUCTION

When I first heard about Lean Construction years ago, my first impression was that lean was about cutting a project staff and crew to the bone, getting it 'lean,' like a low fat cut of steak. Working everyone hard and fast.

However, lean implementation is merely focused on getting the right things to the right place at the right time in the right quantity to achieve perfect workflow, while focusing on continuous improvement, minimizing waste, and being flexible and able to change. And although lean concepts started in manufacturing, based on the Toyota Production System, they are now used in the design and construction industries.

Elimination of waste and dedication to continuous improvement are at the core of the lean philosophy. The eight wastes of lean are:

1. Transport (moving products that are not actually required to perform the processing)
2. Inventory (all components, work in process, and finished product not being processed)
3. Motion (people or equipment moving or walking more than is required to perform the processing)
4. Waiting (waiting for the next production step, interruptions of production during shift change)
5. Overproduction (production ahead of demand)
6. Over Processing (resulting from poor tool or product design creating activity)
7. Defects (the effort involved in inspecting for and fixing defects)
8. Failing to tap into the human potential of your workforce (Referred to as: 'The eighth waste')

Lean is about teaching and training people and creating a culture of continuous improvement.

The Design Phase

Lean construction is a term that applies to the entire value creation chain in project development and construction. It begins in the project conception stage, where the project team builds the lean process into a future vision of the operating facility. In the conception, scope definition and design stages of a lean project, the user is heavily involved in evaluating the project in terms of the wastes that might occur when the facility is ultimately in use.

During the design phase of the project, the integration of construction personnel into the design team helps facilitate the value engineering process. When it comes time to build the facility, there are fewer constructability related questions from the construction team if they were involved up front.

Figure A3.1 shows the relationship between the Owner, Architect/Engineer and Contractor, where the Owner assembles an integrated project team from the very beginning. A Contractor is selected at the same time as the Architect or Engineer.

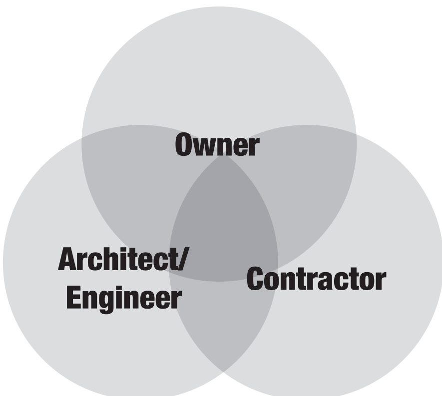

FIGURE A3.1—Integrated "Team Approach"

In the 1980's this was referred to as the 'Team Approach' to project delivery. It goes by other names, including 'design assist.' It was one of the key concepts that led to the rapid growth of McDevitt and Street Company in that decade. I had the opportunity to manage construction of the James Center in Richmond, Virginia, using this approach. The Owner–Contractor agreement was a conventional Guaranteed Maximum Price (GMP) contract, but aside from the set of contracts to design and build this project, there was a short 'Team Philosophy' agreement that was a three party agreement. Here is how it read:

> *TEAM PHILOSOPHY STATEMENT*
>
> *"The Owner has concurrently contracted with the Architect and Contractor to design and build the (PROJECT). The Owner, Architect and Contractor agree to work as a team to produce a project that meets the Owner's needs for function, cost and schedule. The Contractor has agreed to a Guaranteed Maximum Price (GMP) and schedule based on preliminary design criteria, documents and schematic designs prepared by the Architect. (GMP Documents) The Architect agrees to complete the detailed design, so that it is consistent with the original schematic designs, criteria and documents. If the construction documents prepared by the Architect are inconsistent with the GMP documents, then either the Owner will agree to a change and an increase in the construction price and schedule, or the Architect will revise the detailed designs so that they are consistent with the original GMP Documents."*

This simple statement enabled McDevitt and Street to enter into a GMP contract on the $300 million James Center mixed use project in Richmond, Virginia, and other major projects, based solely on a set of less than ten drawings and some estimates from a set of suppliers and design-build electrical and mechanical subcontractors.

Today, what was formerly referred to as the 'Team Approach' is called 'Integrated Project Delivery,' or 'Design Assist.' Boldt Construction has coined the term 'Integrated Lean Project Delivery' (ILPD), which is an approach that embodies the lean approach to both the design and construction.

Construction Phase

The practice of lean concepts during the construction phase is embodied in several tools and practices, including the 'Last Planner™' scheduling system, and 'Pull Planning™'. (These terms are trademarked by the International Lean Construction Institute.)

Pull planning characterizes several scheduling methodologies and philosophies which I have used to get team participation and 'buy-in' to project schedules. It is a collaborative approach to detailed planning, which does not eliminate the need for an overall project flow structure, including key customer milestones and 'need-by' dates. Characteristics of pull planning include a focus what it takes to get to the end on time, and participation of key project personnel including front line supervisors, trade superintendents, and general superintendents.

The 'Last Planner' system is a more sophisticated version of the 'look ahead' planning methods that we have used for a long time. The closer you get to the tradesman level, the more details are needed in the planning. If you think of planning and scheduling in terms of an analogy with a road map, the overall project CPM schedule provides a map of the interstate highways and state highways of a project, and the detailed look ahead plans provide the map of the 'side streets' and neighborhoods.

Some planners and schedulers simply take a 'slice' of the overall CPM and call that the look ahead plan. But this step is the antithesis of the lean approach, and it wastes the human potential in the crew members and foreman who actually have to do the work, because they have no input to a 'top down' scheduling approach.

Lean construction represents a body of knowledge and practices that represent some of the 'best practices' in the industry.

Appendix 4
SIX SIGMA

Six Sigma is generally associated with a set of tools and techniques used for process improvement versus project improvement. But we sometimes find within projects the opportunity for process improvement, and project designs are often required to perform in a way that meets Six Sigma standards, so a discussion of Six Sigma has value in the project environment.

The term Six Sigma comes from the realm of statistical analysis. In a Six Sigma process, the upper and lower limits of a parameter are no less than six standard deviations from the mean value. If a process is within Six Sigma standards, it results in no more than 3.4 defects in a million opportunities. There is nothing arbitrary about the 3.4 defects number. It is a statistical result that occurs when the Six Sigma parameters are in place. While this is a strict definition of Six Sigma, The Six Sigma techniques are also used outside of situations where the strict statistical definition does not apply.

Six Sigma Process

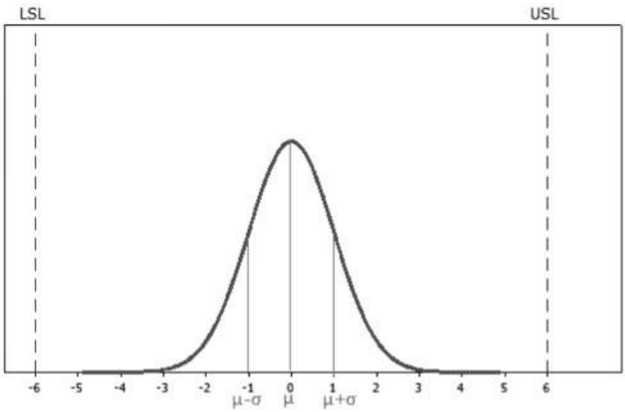

Figure A4.1—Statistical Representation of Six Sigma Metrics

Let me share an example of how this might strictly apply to an engineering and construction project. Several years ago, I was the director of a $250 million EPC project to design and install some pulse-jet filter-fabric baghouses on two coal-fired power plants. The purpose of the project was to bring the plants into compliance with some clean-air mandates. Typical of most projects like this, the power plant owner defined the expected performance of the installation by stipulating what the acceptable upper limits were on a set of emission components, measured in ppm (parts per million). Part of the installation contract included the design, selection, purchase, and installation of the system to monitor the content of the emissions from the plant. The details of the measuring and monitoring method were partially based on government regulations that governed the project. The air quality measurements were required at specified intervals, and then analyzed to assure compliance. Hypothetically, in a situation like this, these air quality measurements could be statistically analyzed to determine the mean value and the standard deviation of the measurement set.

If Six Sigma standards were to apply to this situation, the standard deviation of the values would be no more than one-sixth ($1/6^{th}$) of the specified upper limit of the allowable emissions of whatever emission component was being considered. For example, total particulates; NOx (mono nitrogen oxides); CO (carbon monoxide), or VOC's (volatile organic compounds). However, this means that if the mean measurement of these compounds was one-sixth of the upper limit, (following Six Sigma standards) then in every million measurements, there might be 3.4 of them that exceeded the upper limit. Now, the likely cause of the failure of the system to meet the requirements would be by a variation between the actual and specified raw emissions input into the system, or some failure in the operations and maintenance of the systems. In this case, determining whether the EPC contractor or the owner/operator was accountable for the failure, may not be so clear.

Six Sigma methods can also be used in a non-statistical way. Several years ago, the CEO of an organization I was working with put out a call to all employees and contractors, to make suggestions as to how the operation might save energy and reduce its carbon footprint. I wrote a six-page proposal for promoting a car-pooling arrangement, which would reduce emissions by millions of pounds annually. The CEO immediately wanted to do it and called together a Six Sigma team. In this case, the CEO was using a classic Six Sigma approach:

- Project selection is tied to organizational strategy. (Company had placed a value on sustainability.)
- Project benefits are tied to financial reporting system. (Company reported on its sustainability performance.)
- There was a recognition and reward system.

The Six Sigma team identified the metric that it wanted to measure. (Number of people carpooling and associated CO2 reductions). Then it developed an action plan and schedule for the tasks to be performed to facilitate the full implementation of the idea. About ten weeks after I made the carpool suggestion, there were carpool posters scattered around the operation, offering carpoolers a chance to participate in a drawing to win a reward. A conventional Six Sigma approach involves some kind of statistical measure of some element to meet the expectations of a customer or other stakeholder. In the case of the carpool implementation, there was a public interest served by reducing the emissions from employee vehicles driving to work. And although this was not the usual kind of application, it was a good place for a Six Sigma team to get involved, because there had been an organizational capacity to carry out improvement projects of this type. They used a project management approach to get the program implemented.

Typically, Six Sigma follows a set of cyclical steps to produce positive results, and the acronym for these steps is DMAIC.

1. Define
2. Measure
3. Analyze
4. Improve
5. Control

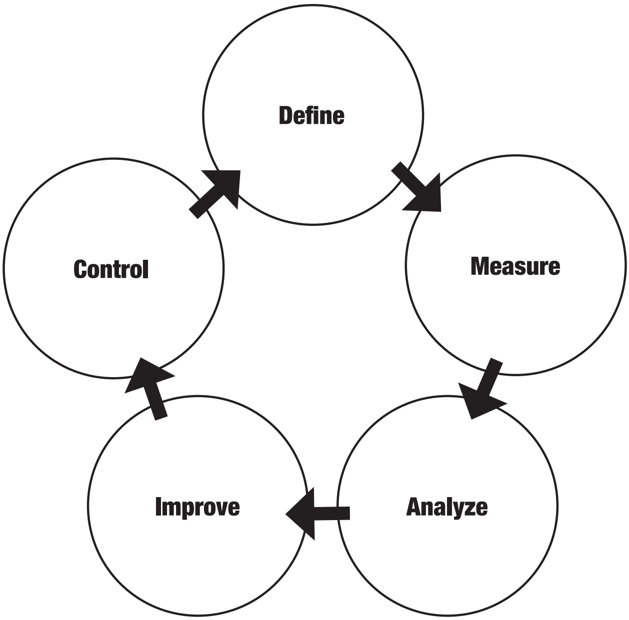

Figure A4.2—The Six Sigma Flow Diagram (DMAIC)

Value Stream Mapping

Value stream mapping is a key element of Six Sigma practice. The ultimate goal of this process is to eliminate wastes from a process or operation. The eight wastes of lean include:

- **T** Transport—Moving people, products & information.
- **I** Inventory—Storing parts, pieces, documentation ahead of requirements.
- **M** Motion—Bending, turning, reaching, lifting.
- **W** Waiting—For parts, information, instructions, equipment.
- **O** Over production—Making more than is IMMEDIATELY required.
- **O** Over processing—Tighter tolerances or higher grade materials than are necessary.
- **D** Defects—Rework, scrap, incorrect documentation.
- **S** Skills—Underutilizing capabilities, delegating tasks with inadequate training.

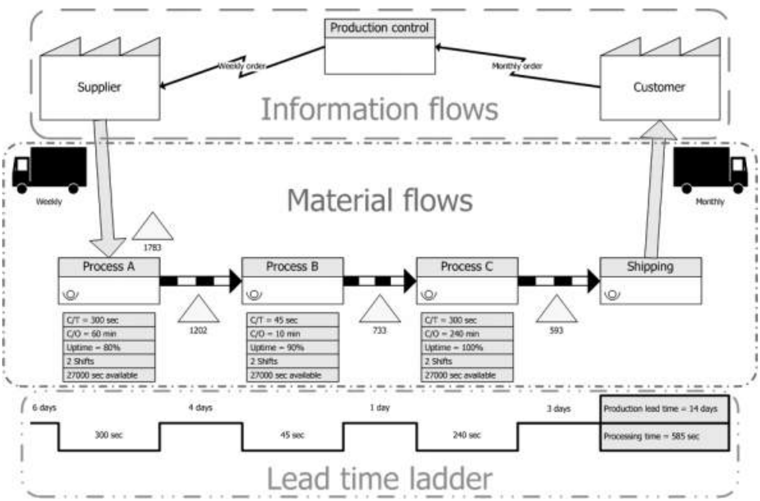

Figure A4.3—Value Stream Map Example

The process starts with creating a value stream map of the current condition by measuring the time used for each step in a process. The current condition is analyzed, and strategies are developed to eliminate the wastes that are identified in the value stream. Then the desired future map is created to reflect the future condition that should exist after process changes are made.

I have had the opportunity to apply and use Six Sigma and Lean techniques in construction operations improvement. In one case, we made a time-lapse film of a repetitive rigging operation and reviewed it with the construction team involved. In another, I did a time and motion study of mineshaft sinking operations. In the construction of a high rise building, with repetitive operations from floor to floor, I worked with the teams to look constantly for ways to improve and benefit from the learning curve. On a geothermal power plant in Hawaii, I used the foreman delay survey to eliminate wasted time and motion.

It is always helpful to have some kind of public graphical feedback of the ongoing results of the metrics from operational improvement efforts.

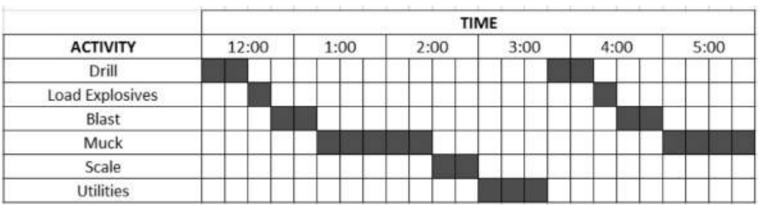

Figure A4.4—Cycle Time Analysis, Tunneling Operation

For a major copper mine development project by Anaconda Mining Company, I implemented a cycle analysis charting system as shown in Figure A4.4 above. This simple system provided everyone on the project the ability to look closely at each step in the operation, discuss options for improvement, implement changes and observe the results in graphical form.

Lean and Six Sigma concepts do not have to be too complicated to add tremendous value. Because Lean and Six Sigma tools and approaches are often used together, the term 'Lean Six Sigma' has evolved.

Appendix 5
AGILE DEVELOPMENT / SCRUM BASICS

The Scrum software development framework, developed and described in 1995, helps address one of the challenges of product development and scope definition. It is the most popular framework in the overall Agile methodology.

Software development projects have some unique challenges that arise in divining the customer needs in such a way that allows an orderly and sequential process for product development. Customers have varying degrees of knowledge about software, system capabilities and the resources required to produce specific features, within the array of their needs, wants and wishes. This differs from, say, a home remodeling project, where the cost of various elements such as granite tops, flooring, cabinets, and plumbing fixtures are easily determined in the planning stage. For example, a customer can quite easily determine '*marginal utility*' of a granite counter top versus a laminate top. The customer can determine a definitive cost comparison between the granite and laminate, providing information with which to make a decision between the two options. In the development of IT projects, programmers often speak in a different language than customers and have a different vocabulary. This makes it difficult to define the scope and all of the characteristics of a project at the time of inception.

It would be much easier to execute a software project if, at the commencement of the project, there was complete knowledge of the existing conditions and of the customer needs, wants and wishes, along with the marginal utility of those customer requirements. However, this is seldom the case. For this reason, the Scrum framework has become a widely used method for project development, and the most popular among the Agile approaches. It is an iterative and incremental approach, rather than a linear and sequential approach. It allows for 'early and often' delivery of usable product to the customer.

Scrum is not a software program or technology. It is a framework of organizing people, defining roles, processes, protocols and procedures for planning and executing an IT project, much the way a football team has numerous formations, including the T formation, the I, single wing, wishbone and so forth. Just as in football, software developers have created Scrum as a unique formation, with its own rules and protocols. It raises questions, and surfaces discrepancies in an organization.

The Team and Roles

The scrum team is made up of the following:

- Project Sponsor: The Project Sponsor hires the Project Manager. The sponsor is typically the key line manager who is responsible for the business results in the areas affected by the IT project. The Project Stakeholders can reside within the organization of the sponsor, or may be in an associated group or part of an organization.

- Project Manager: This person prepares the project plan and estimates of time and resources to be allocated to team.

- Product Owner: The Product Owner is responsible for maximizing the value of the product and the work of the Development Team. Having a single point of contact between the client users and the development team is crucial. This is a role of the Product Owner. The Product Owner gathers input from the client users, takes feedback and is lobbied by many people, but it will ultimately make the call on what is built. They are also solely responsible for the management of the backlog.

Product Owner should be knowledgeable, empowered to make decisions and engaged in meetings, motivating the team, and celebrating success.

- System Architect: The Architect is part of the Scrum team, and is responsible for defining the requirements of the system. For example, how many processes the system should be able to manage in an hour. The Architect determines how the system will fulfill the needs as defined by the Product Owner.

- Development Team: Development Team consists of a cross-functional, self-led team of individuals, including graphic designers, programmers, back-end developers and others as needed. The work of a Scrum team works on the client stories that have been grouped into one—to four-week 'sprints,' which make up a defined scope of work that can be performed in sequence within the overall project. The Scrum framework allows for delivering customer value early and often during the entire project. The completed work of each sprint is handed over to a subject matter expert, or business customer to do user acceptance testing. Team is made up of generalized specialists—people pitch in as team. The team is completely focused on quality.

- Scrum Master: Last, but not least, we have the Scrum Master who facilitates the whole process. He or she is a servant leader, building self-organizing teams, and empowering them to succeed. The Scrum Master works diligently to remove project impediments like a hawk. He or she keeps the process healthy and moving forward.

Stories and Sprints

The client needs, wants, and wishes are called 'user stories' and they are organized onto a 'product backlog' something like Figure A5.1.

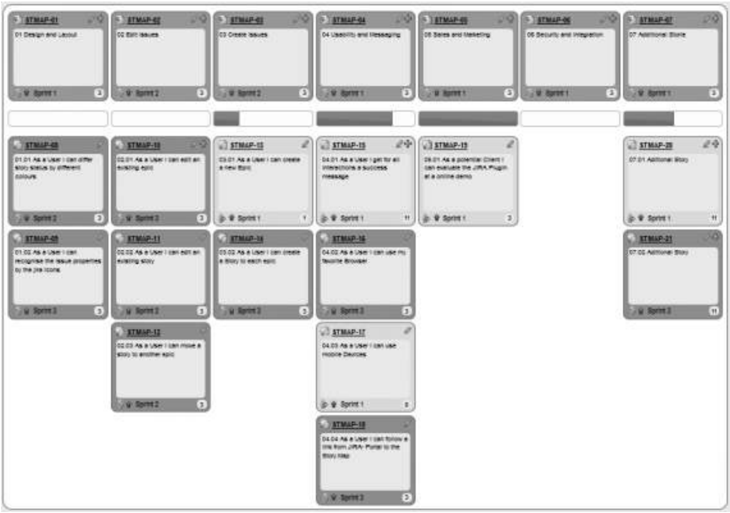

Figure A5.1—Product Backlog

Sprints are made up of one or more stories, selected in an orderly logical sequence, and lasting from one to four weeks. Every story has points, assigned based on complexity and size of the work. These points help in grouping the stories into manageable sprints. So, a sprint might be made up of ten points, consisting of a single ten-point story, or two or more stories with a combined total of ten points.

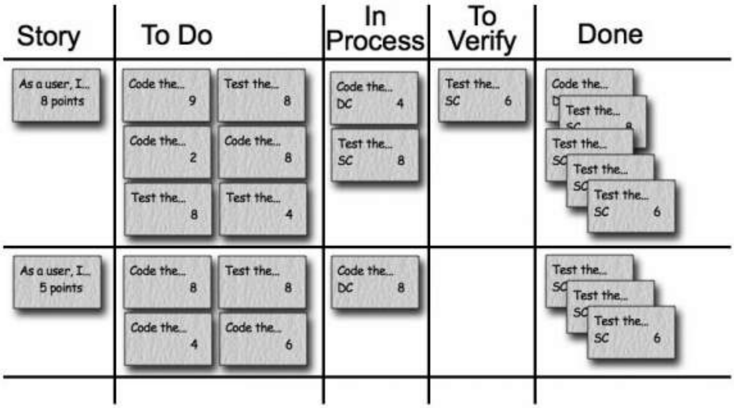

Figure A5.2—User Story Work Flow

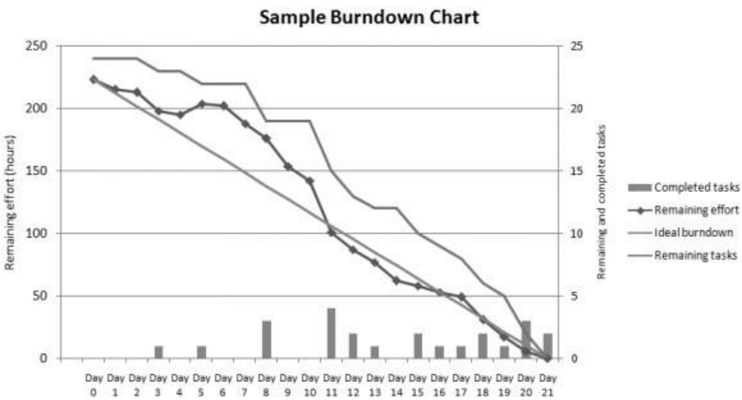

Figure A5.3—Sample Burn Down Chart

The project progress is tracked on a 'burn down chart' as shown above. The Y axis tracks the number of points completed, and the X axis is time. This is analogous to a project s-curve on a construction project. A burn down chart tracks the velocity of the work, or the rate of completion. This is equivalent to a productivity rate in construction.

Scrum Ceremonies, Meetings, Rules of Engagement

Day 1 of a sprint is the sprint planning meeting, where the team commits sprint into tasks, and creates a matrix.

Daily Scrum meetings are held at the same time and place every day. These meetings address three questions:

1. What did I work on and/or complete yesterday
2. What will you do today?
3. Are there any impediments in your way?

Just like rules in a football game, Scrum has some rules of engagement that help the functioning of the team.

In a Scrum project, you have those who are committed and those who are involved.

COMMITTED = Product Owner, Scrum Master, and Team Members are committed individuals who are accountable for success or failure of the project

INVOLVED = Stakeholders

Rules govern the behavior of the two teams. For example, there can only be one person in charge of the priorities, and that is the Product Owner. The team cannot have multiple masters.

The Product Owner accepts or rejects the work. For this reason, there needs to be 'acceptance criteria' defined up front.

Certification

The Scrum Alliance provides four certifications for Scrum practitioners: CSM (Certified Scrum Master), CSPO (Certified Scrum Product Owner), CSD (Certified Scrum Developer), and CSP (Certified Scrum Professional). Courses are required for initial certifications of CSM, CSPO, and CSD.

Potential for Using Agile in Construction

Agile Development is an iterative approach for developing and executing projects in the software, engineering or services sector, where projects can be executed and delivered to the client in stages. We do not yet see the application of Agile principles in the conventional engineering, architecture and construction fields, but there are some aspects of Agile that I believe could be adopted on a design and construction project. It may not be practical to use Agile Management principles for projects like building a bridge—it's pretty hard to deliver a bridge in stages—as you need the whole bridge from one side of the river to the other. But for complex software projects, where the end product may be difficult to envision, Agile project management is a dream.

Having said that, there are a couple of aspects of Agile Management that are worth being aware of, which can have applications to the design and construction industries. Even if Agile Development is only something to use on an IT project that is within a large infrastructure or capital projects, it is a discipline with some practices and approaches worth knowing about.

I can see some possibilities of applying this kind of thinking and process in the development of architectural or engineering projects. In one stage of my career, I was charged with the condominium development group for a large builder in Minnesota. When we were considering the acquisition of a land parcel for our next project, we needed to determine whether a three story of four story building would optimize the project in terms of esthetics, compliance with the local building authorities and financial return. Before we could freeze the schematic design, we first had to determine how many stories would be optimal. To make this decision, I gathered the architect, civil site engineer, mechanical and electrical engineers and sales agent for the project. We laid out the problem as a question, which then led to the assignment of specific tasks for each member of the team. For example, this builder had never done a four-story, wood frame building, so one of the tasks was to evaluate a couple different structural systems (masonry versus wood). We set aside two weeks to complete this part of the pre-design and feasibility of the project. (This would be similar to a 'sprint' in an Agile project.) After we completed this two week 'sprint' including the decision to make the building four stories using additional wood framing on the first story, things evolved. Every week was a 'sprint' with a series of weekly meetings where I helped guide the design and sales team forward in sequence, while evaluating some of the features on the 'wish list' of the project.

Executing the feasibility and design work for a long term mining project is another area where I have experience, and I can see where the Agile concepts could be applied in this environment. One of the first steps in conducting feasibility work is to define an ore body with geological drilling to a sufficient size that will justify and support the cost of a basic mine plant and infrastructure needed to make an economic return. During this stage of a project, there are still many possible 'forks' in the future path that the project could take. Often, in base metal mining, there is a core metal that is the primary product to be mined. But there are often other bi-products that can add value, if there is additional investment in the necessary process equipment needed to extract it from the main waste of the primary beneficiation process. There are also decisions to be made about the scale and size of the mine and plant, in terms of tons per day or year output. These and other variables have an impact on the ROI that can be expected from the investment.

In the engineering and construction world, the "user stories" can be thought of as design options needing to be analyzed, which can be arranged in 'sprints' of work phases, completed in a logical sequence. So, while Agile development was born to meet the needs of IT projects, there are some thought processes and methodologies which can have some application to the architecture, engineering and construction world.

Appendix 6
HOSHIN KANRI PROCESS

> *"Total quality does not guarantee the companies will produce strategies. Winning strategies must come from the minds of the leaders, augmented by inputs from the troops." –Edwin Artzt, Chairman/CEO, Proctor and Gamble*

Hoshin Kanri is a set of practices and processes used to identify and implement goal-based strategic change within a multi-layered organization. It has its own jargon and phrases to describe these process and practices, to allow common understanding and implementation. Hoshin Kanri has many benefits, including its role in helping a complex organization focus its efforts over a strategic timeframe and where it's most beneficial.

The primary steps in the Hoshin Planning process include:

1. Identify Vision, Mission, key metrics.
2. Identify 2-3 breakthrough objectives.
3. Set annual objectives, or quarterly.
4. Deploy via Catchball.
5. Review results weekly, monthly, annually.
6. Problem solving.
7. Reflect and Learn.

In a typical Hoshin planning process, the top level of an organization identifies one, two, or three goal-based 'breakthrough projects' that would take between three to five years to implement. These projects constitute the plan. After developing the initial plan, it is passed down to the next level in the organization for their input. After some shaping by that level, with the addition of some proposed strategies and tactics, the plan is passed back up to the top layer of the organization for concurrence with any changes that might be proposed. Then, after alignment is achieved between the two top layers of the organization, the plan is passed down to the third level in the organization. The process continues until it reaches the front line of the organization, thereby achieving internal alignment throughout.

Catchball

This passing up and down is called the 'catchball' process in Hoshin Kanri.

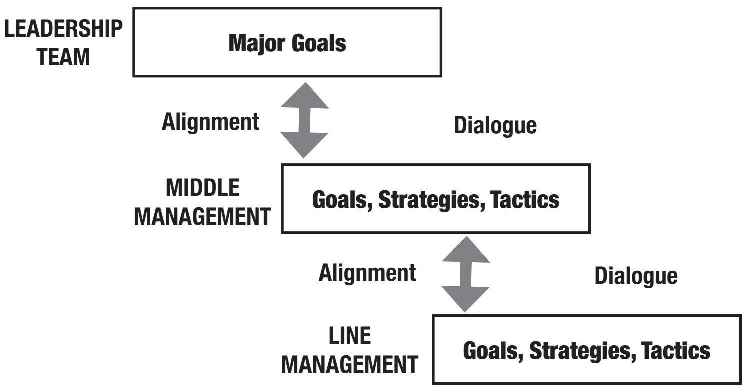

Figure A6.1—Catchball Process

Shewhart Cycle

At the conclusion of the catchball process, the organization has a written vision and mission, breakthrough objectives, annual objectives and a plan to deploy them utilizing something called the Shewhart Cycle. The Shewhart Cycle (PDCA) is a way to conceptualize and structure processes of continuous improvement.

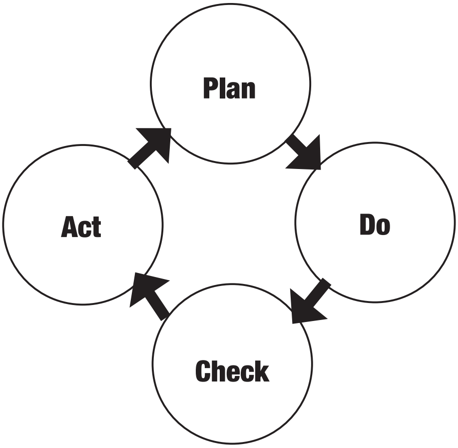

Figure A6.2—The Shewhart Cycle (PDCA)

X Matrix

The X Matrix is a tool used to organize the Hoshin Kanri process visually.

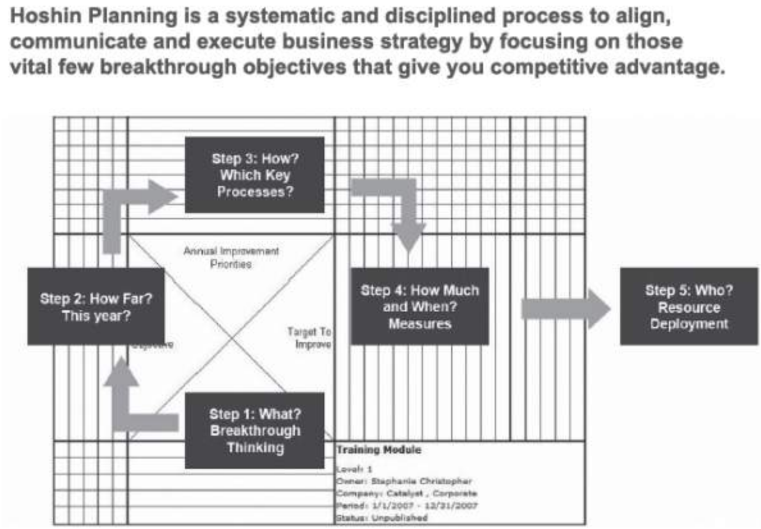

Figure A6.3—X Matrix

Bowling chart

A bowling chart is simply a time scale spreadsheet with a tabular list of milestones, tasks or goals in the left column and a time scale to the right. It provides a visual way to track progress. It is very similar to the look ahead schedules used on construction projects.

SAMPLE LOOK AHEAD PLAN Date: Client:

Job # : Project:

Month :

	Date :	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	ESTIMATED	
ACTIVITY	CREW SIZE	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	MANHOURS	COMMENTS
030 conveyor belt			x	x	x					x													90	commisiom
032 conveyor belt				x	x					x													40	Complete
transfer #1																								complete
Transfer #2																								complete
Transfer # 3																								complete
Transfer # 3 concrete front wall																								complete
crusher concrete (10 piers)																								complete
crusher grouting																								complete
crusher steel			x	x	x																			complete
Truck crossing concrete																								complete
122 conveyor			x	x																			20	complete
Truck crossing under pass																								complete
under ground commisioning			x	x	x	x	x			x	x	x	x	x									200	unknown
demob from under ground					x	x						x	x										120	
install fire and dust pipeing			x	x	x	x	x	x		x													60	complete
install ground montiors			x		x																		50	complete
Demob			x	x	x	x	x			x	x	x	x	x			x	x	x	x	x		450	equipment and office trailers
misc. things as they come up						x	x																75	reinstall hopper on sec crusher
TOTAL MANPOWER REQ	0	0	15	15	15	15	15	0	0	7	7	7	7	7	0	0	5	5	5	5	5	0	1,030	
Tools Needed																							Materials ne	4th load out pickup and pumps
admin					55								55						55			##		6th load out taho and pickup
																								20 load out pickup and welders
																								22nd demob dry
																								25th demob office trailers
																								28th completely demobed
																								move furnishinf out of offices by the
																								22nd

Figure A6.4—Look Ahead Schedule. 'Bowling Chart'

Appendix 7
CHANGE MANAGEMENT

Technology and changes in the business cycle are driving the need for continuous change within teams and organizations. In this environment, organizations face challenges in identifying the changes that will be the most beneficial to the effectiveness of their operations. When they do identify the changes that are needed, they often face internal resistance to implementation of those changes. The human tendency to resist change is referred to as 'homeostasis.'

To overcome the initial homeostasis, successful change efforts commence with a well thought out 'messaging' from key leadership at the appropriate level in the organization. I believe that there are a few key messages to be considered in any launch of change. If it is not currently present, the value and message of continuous improvement will help engage the creativity of a wide group. Change is easier to implement in organizations where a culture of continuous improvement and commitment to best practices is present. Another key message in many teams and organizations is safety. Customer satisfaction is at the top of key messages. In any case, the message needs to be about enduring values that can be universally supported. This is why many strategic change efforts include a process to identify the key values of an organization.

If a change only affects an individual team, then the team leader needs to be integral to the design and implementation of the messaging step. If a change is to affect an entire organization, then the top leader needs to be deeply engaged in launching the change and leading the execution.

There are many change management models designed to help overcome these sources of resistance.

Effective Change Management requires an assessment of the existing status and resources available to support the change effort. One successful change management model was developed by Prosci®—the ADKAR® Model. As described by Prosci®, individuals make changes successfully when they have the necessary Awareness, Desire, Knowledge, Ability, and Reinforcement. Users of Prosci's ADKAR® model have the outcome-orientation to change that enables successful personal transitions and achievement of organizational results. Here is the ADKAR® model, as described by Prosci®.

- **Awareness** of the need for change.
- **Desire** to participate and support the change.
- **Knowledge** on how to change.
- **Ability** to implement required skills and behaviors.
- **Reinforcement** to sustain the change.

ADKAR Element	Factors Influencing Success
Awareness of the need for change	A person's view of the current state How a person perceives problems Credibility of the sender of awareness messages Circulation of misinformation or rumors Contestability of the reasons for change
Desire to support and participate in the change	The nature of the change (what change is and how it will impact each person) The organizational or environmental context for the change (his or her perception of the organization or environment that is subject for change) Each individual person's situation What motivates a person (those intrinsic motivators that are unique to an individual)

Table continues on next page

ADKAR Element	Factors Influencing Success
Knowledge of how to change	The current knowledge base of an individual The capability of this person to gain additional knowledge Resources available for education and training Access to or existence of the required knowledge
Ability to implement the required skills and behavior	Psychological blocks Physical capabilities Intellectual capability The time available to develop the needed skills The availability of resources to support the development of new abilities
Reinforcement to sustain the change	The degree to which reinforcement is meaningful and specific to the person impacted by the change The association of the reinforcement with actual demonstrated progress or accomplishment The absence of negative consequences An accountability system that creates an ongoing mechanism to reinforce the change

By utilizing this ADKAR model, change leaders can assess the existing condition in order to prepare a change management process that will be successful and enduring. The possibilities are only limited by the imagination, and Chapter 22 describes a rapid change model that this author developed for a particular situation.

Appendix 8
LEADERSHIP ASSESSMENT

You have to know where you are before you can know where you are going. There are a number of leadership assessment tools available, and some of them have been mentioned in this book. Many of these tests are now available to every individual with an internet connection.

Here are two assessments that I have found to be highly reliable, and they are widely used.

DISC Personality

The DISC personality test is available online at a number of sites. Some purport to be free, others charge a nominal fee—about $29.00. Simply Google DISC personality, and you can find a number of options.

Myers Briggs

The Myers Briggs Personality Indicator (MBTI) personality test is available online at a number of sites. There are some 'copycats,' and we cannot tell you if they are good or not. Simply Google Myers Briggs MBTI test, and you can find a number of options.

MindTools

The MindTools site has been highly reviewed, and I like to refer to it as a resource from time to time. The following leadership self-assessment is a very simple eighteen questions to assess your current leadership attitudes and approach. This does not have the depth or same value as the DISC or Myers Briggs tests, but it can give you some insights into your own thinking. Visit MindTools.com and sign up for their services.

Part 1

		Not at All	Rarely	Some-times	Often	Very Often	
		1	2	3	4	5	Score
1	When assigning tasks, I consider people's skills and interests.						
2	I expect nothing less than top-notch results from people.						
3	When someone is upset, I try to understand how he or she is feeling.						
4	I think that personal feelings shouldn't be allowed to get in the way of performance and productivity.						
5	I am highly motivated because I know I have what it takes to be successful.						
6	I get upset and worried quite often in the workplace.						
7	My actions show people what I want from them.						
8	When working with a team, I encourage everyone to work toward the same overall objectives.						
9	I enjoy planning for the future.						
10	I make time to learn what people need from me, so that they can be successful.						
11	I'm optimistic about life, and I can see beyond temporary setbacks and problems.						
			Total Score, Part 1				

Part 2

		Not at All	Rarely	Some-times	Often	Very Often	
		5	4	3	2	1	Score
12	I doubt myself and my ability to succeed.						
13	I expect my people to work harder than I do.						
14	When circumstances change, I can struggle to know what to do.						
15	Time spent worrying about team morale is time that's wasted.						
16	I make exceptions to my rules and expectations—it's easier than being the enforcer all the time!						
17	I feel threatened when someone criticizes me.						
18	I think that teams perform best when individuals keep doing the same tasks and perfecting them, instead of learning new skills and challenging themselves.						
			Total Score, Part 2				
			Total Score, Part 1				
			Grand Total Score				

Score 18-34—You need to work hard on your leadership skills. The good news is that if you use more of these skills at work, at home, and in the community, you'll be a real asset to the people around you. You can do it—and now is a great time to start!

Score 35-52—You're doing OK as a leader, but you have the potential to do much better. While you've built the foundation of effective leadership, this is your opportunity to improve your skills, and become the best you can be. Examine the areas where you lost points, and determine what you can do to develop skills in these areas.

Score 53-90—Excellent! You're well on your way to becoming a good leader. However, you can never be too good at leadership or too experienced—so look at the areas where you didn't score maximum points, and figure out what you can do to improve your performance.

ABOUT THE AUTHOR

Michael (Mike) Vallez started his engineering and construction career at the age of seven, when he helped his father build the family home. Since then, his work experience has ranged from carpenter, ironworker and underground miner to project manager, director, chief operating office, operations manager, company president and consultant. His projects have included mines, power plants, chemical and process plants, oil and gas, commercial and residential complexes, high rise offices, hotels, manufacturing plants, river bridges, dams, highways and other facilities. His capabilities are bolstered by an educational foundation including a BS in Engineering from Michigan Technological University, and an MBA from the University of Utah, where he studied organizational and human performance. He holds a P.E. license, and is Lean Six Sigma Certified. He is recognized for his ability to execute aggressive projects and programs under challenging conditions.

The clients served and companies worked for include Rio Tinto, Rocky Mountain Power, Kennecott Utah Copper, Anaconda Mining Company, Molycorp Minerals, Xcel Energy, Union Carbide, Monsanto, IBM, Duke Energy, Exxon, Berkshire Hathaway, Ormat Technologies, Walter Resources, Kern River Gas, the University of Minnesota, the U.S. Army Corps of Engineers and many others.

Mike is the father of four children, and lives in Salt Lake City, Utah where he enjoys skiing, fishing, hiking, off-roading, and water sports.

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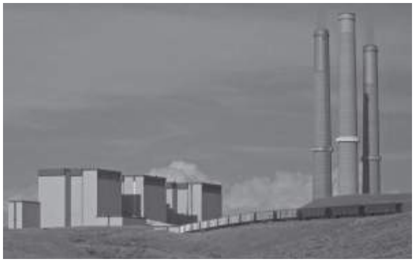
Puna Geothermal Expansion, Hawaii

Hunter Plant, Baghouse and FGD Project

Keystone Underground Block
Cave Project



Power Plant Shutdown

Shutdown to Convert ESP to Baghouse

Underground Copper Mine

Copper Smelter Modifications

Duke Energy Electric Center,
Charlotte, NC

University of Minnesota Concert Hall

Walter Resources Coal Mine

James Center

Sports Arena

Natural Gas Compressor Station

Cedar River Bridge

Mixed Use Urban Development

Marty Indian School, Yankton Sioux Reservation

Condominium Development

Senior Condominiums

Senior Condominiums

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p. 276: Figure 38.1, wiki

p. 290: Figure 41.1, UNPD, 2011

p. 292: Figure 41.2, Source: Internetworldstats.com

Appendix 1: Table A1.1, Source: Project Management Institute

Appendix 2: Figure A2.1, Based on OGC Prince2 materials

Appendix 4: Figure A4.3, Google Image Use Rights

Appendix 5: Figure A5.1, A5.2, A5.3, Google Image Use Rights

Appendix 6: Figure A6.3, Google Image Use Rights