Epilogue

Practices for Project Leadership

Successful project leadership is an ongoing process of learning. Thus, this book’s content, format, and structure were designed with a clear purpose: to encourage an attitude of responsibility for one’s own learning and to facilitate the learning process. This was also the main guideline for developing the following nine practices for project leadership.

The eight contextually rich and vivid cases should have provided you with enough direction to start the long journey from management to leadership. Leadership develops primarily through on-the-job experiences. However, experience alone without thoughtful reflection is meaningless. Moreover, effective reflection should be done in light of a theory or a model of the phenomenon at hand.

The individual practices should guide you in building your experience base, one practice at a time. The nine practices as a whole represent an overall model for project leadership, a model built on the basis of the actual behavior of successful practitioners. As such, this model can serve as an excellent tool for facilitating your ongoing thoughtful reflection.
First Practice: Embrace the “Living Order” Concept

About 2,500 years ago, Heraclitus, a Greek philosopher, argued that the only constant in our world is change. Today, the economic, social, and political challenges of globalization and the rapid technological innovations make this statement as true as ever. Indeed, Peter Vaill, an American professor of management, explains that the complex, turbulent, and changing environment faced by contemporary organizations renders the leadership of these organizations like navigating in “permanent white water.”

In using the “permanent white water” metaphor, Vaill calls our attention to the fact that the external environment of contemporary projects is full of surprises, tends to produce novel problems, and is “messy” and ill-structured. However, it was the French Nobel Prize winner Henri Bergson who a century ago proposed a concept of order that today might help us to better see project reality. In his 1907 book Creative Evolution, Bergson claimed that there is no such thing as disorder, but rather two sorts of order: geometric order and living order. While in “geometric order” Bergson related to the traditional concept of order; in “living order” he referred to phenomena such as the creativity of an individual, a work of art, or the mess in my office.

As the cases in this book clearly demonstrate, all projects aim to reach a perfectly functioning product with geometric order. At the start, they may face great uncertainty—living order—that does not completely disappear over the entire course of the project. Gradually, some parts of the project approach geometric order, though in an era of “permanent white water,” the project as a whole does not assume geometric order until late in its life.

In a 1977 Harvard Business Review article, professor Abraham Zaleznik of Harvard Business School, was the first to pose the question “Managers and leaders, are they different?” Zaleznik answered
resoundingly in the affirmative. He further explained that one crucial difference between managers and leaders lies in the conceptions they hold of chaos and order. Leaders can tolerate chaos and lack of structure, and thus, they are ready to keep answers in suspense, whereas managers seek order and control. Zaleznik added that the instinctive move of the manager to prematurely impose order on chaos is more problematic to the organization than the direct impact of the chaos.

The project leaders throughout this book demonstrated that they did not rush to impose “geometric order” prematurely. They knew that their projects would inevitably be affected by one of more of the following:

- Changes resulting from the dynamic environment
- Surprises resulting from the unique and often innovative tasks
- Difficulties of coping with challenging requirements and radical constraints, as well as with sudden changes in these requirements and constraints
- Numerous unexpected events and problems subsequent to the above difficulties
- Difficulties of coping with these problems due to the typical unique, temporary, and evolving project organization, which is composed of heterogeneous units

These project leaders were clearly able to tolerate the “living order” in their projects, and you, the reader, must as well. Reflecting on the stories in this book should help you embrace Bergson’s classification of two sorts of order. It should facilitate your ability to perceive reality as it is, to accept that you can’t avoid “living order” in your projects and that you better expect and tolerate it. As a result, you will quickly understand and easily apply the practices to your own project.
Practice Two: Adjust Project Practices to the Specific Context

Malcolm Forbes, the publisher of *Forbes* magazine, made the following insightful observation: “What is strength in one context can be a weakness in another context. I’m preserving—you are stubborn. I am flexible—you are weak. I am practical—you are opportunistic... It depends on the context.”

The current practice is a key practice that significantly affects all other practices. Indeed, the rationale behind the design of this book is to help the reader understand how successful project managers deviate from the common “one best way” approach and adjust their practices to the specific context of their project. Avoiding the “one best way” approach does not imply, however, that there are no “wrong ways,” that “anything goes,” or that you must always “start from scratch.” There is always the need to strike a balance between relying on the accumulated knowledge of the organization, on the one hand, and enhancing the flexibility and creativity within each individual project on the other.

In contrast to the literature emphasizing standard, context-free practices, all of the project managers throughout the book spent a great deal of time adjusting their practices to the specific context of their project. At the same time, the four distinctly different types of projects in the book allow us to see that in projects sharing common characteristics and coping with similar challenges, the project managers used many practices in a like manner.

Let us compare, for example, the use of procedures in a product development project with their use in a repeated tasks project. In the JASSM project, Larry Lawson, the project manager for Lockheed Martin Corporation, was instructed to throw out all the military standards and was given the freedom to put together his own approach as long as it met the project’s three key performance parameters. In
sharp contrast, the team at the Pathfinder project was expected to strictly adhere to the extremely detailed flight procedures. Moreover, there was even an extremely rigorous process for preparing and refining these flight procedures.

We can also compare between the different ways in which planning was accomplished in one project involving product development and another project involving repeated tasks. In the Yad Vashem Museum project, the only way for the contractor’s project manager to make progress was to frequently disregard the existing plans and instead embark on “planning by action” via well-prepared mockups. In contrast, the project manager of the harbor cranes transfer project prepared and followed an extremely detailed plan with about 300 specific activities for each sea voyage.

In all four cases, the project managers adjusted the practice to the situation. In the two product development projects, they adjusted the practice to be highly flexible and informal, and in the two repeated tasks projects they changed the practice to be highly rigid and formal.

Still, it is important to be aware that different contexts are found not only between projects, but also within projects. For example, the dairy project was forced to adapt to three distinct overriding strategies. It started with the development of a state-of-the-art-driven dairy, a “dairy of dreams” as they termed it. When they found that this strategy led to a huge growth in project scope and overall cost, they embraced a cost-driven orientation. Yet, when they learned that their domination in the cup products field was about to be threatened by their greatest rival, they switched one more time to a schedule-driven focus. Each change of strategy meant a change of context and was accompanied by an adjustment in project practices.

Following the change to a schedule-driven strategy, Zvika, the project manager, realized that the existing procedures for the bidding process would not allow them to accelerate construction. By convincing the committee to abandon the standard process, move it to the
construction site, and streamline it, Zvika and his team were able to significantly shorten the time necessary to choose contractors to fulfill the new schedule-driven strategy.

Likewise, the ACE project went through changes in its major drivers. After starting under severe cost constraints, the project ended up being ahead of schedule and under budget in the final stages. Thus, Don Margolies, the ACE project manager, decided to reverse the previous practice of good enough is good enough, to good enough is not good enough by supporting the uncommon step of taking off the instruments for recalibration.

The classical model of project management, in which standards are developed for virtually all situations, expects the project manager to serve primarily as a controller: to ensure that team members adhere to the established standard. This role entails only a minimal requirement for judgment and no requirement for adaptation. In reality, the project manager must constantly engage in making sense of the ambiguous and changing situation, and he must adjust the common practices to the unique situation. This process requires a great deal of interpretation and judgment based on rich experience. Stories, such as those presented in this book, that present a variety of contexts and solutions, are an excellent source for enriching your experience base.

Practice Three: Challenge the Status Quo

The most powerful developments in all eight projects took place as a result of the willingness of the project manager to challenge the status quo, usually several times throughout the life of the project. Challenging the status quo might significantly change the fate of the project and is the essence of project leadership.

Following are several examples of how our project managers challenged the status quo:
• In JASSM, Larry Lawson, the project manager for Lockheed Martin, tells how to cut costs drastically, the company took a risk and produced components of the missile at two small companies that had not previously been in the missile business. Rather, one had specialized in producing baseball bats and golf club shafts and the other in building surfboards.

• In Pathfinder, Jenny, the project manager for NASA, propelled and nurtured a unique organizational structure that was far from a traditional one. It was composed of four industry rivals, with NASA serving as an advisor and team member with limited authority.

• Judy Stokley, the project manager of AMRAAM, was authorized by the Pentagon to proceed with downsizing, yet she did not. She believed that without a far-reaching, unconventional change in the culture of the organization involving a shift from control to trust and responsibility, her mission would not be truly accomplished. So Judy took it upon herself to change the project’s culture.

• In the evacuation case, Yaron, the battalion commander, was instructed by his superiors to start training his recruits, but he did not. Yaron was of the opinion that training the soldiers whom he had on hand would not enable him to complete the mission successfully. Thus, Yaron embarked on a long campaign, initially against the will of his superiors, to replace many of his recruits.

• In the final stages of ACE, Don Margolies, the project manager, supported the uncommon step of taking the instruments off the spacecraft for recalibration. This operation had never before been done at NASA and put him at odds with both his superiors and his team members.
• Zvika, the project manager of the dairy plant, was convinced that it was time to stop the endless planning and preparation phase of constructing the new dairy. Against the advice of the client’s professional staff, he took it up with the head of the client’s organization, where he was finally able to obtain the green light to move ahead.

Is there a fundamental characteristic that these project managers share that can explain their unconventional actions?

In a famous essay, Oxford philosopher Isaiah Berlin described two approaches to life using a simple parable about the fox and the hedgehog. The fox is a cunning and creative creature, able to devise a myriad of complex strategies for sneak attacks upon the hedgehog. The hedgehog is a painfully slow creature with a very simple daily agenda: searching for food and maintaining his home. Everyday the fox waits for the hedgehog while planning to attack him. When the hedgehog senses the danger, he reacts in the same simple, but powerful, way everyday: He rolls up into a perfect little ball with a sphere of sharp spikes pointing outward in all directions. Then the fox retreats while starting to plan his new line of attack for the next day. Each day this confrontation takes place, and despite the greater cunning of the fox, the hedgehog always wins.

Based on this parable, Berlin attempted to divide the world into two basic groups: foxes and hedgehogs. Foxes pursue *many ends at the same time, yet they do not integrate their thinking into one overall concept*. Hedgehogs, on the other hand, simplify a complex world into *a single overall concept that unifies and guides everything they do*.

In recent years, several prominent management scholars have discussed this parable while attempting to answer the following question: Do successful senior managers behave more like hedgehogs or like foxes? The debate regarding senior managers is still ongoing, but when it comes to successful project managers, I have found that they behave both like hedgehogs and foxes, though they place the hedgehog in the driver’s seat.
Like the hedgehog, the project managers in all eight cases were guided by one overriding purpose: delivering successful results to the customer. They clearly felt a sense of ownership of the project, involving an intellectual and emotional bond with the mission that they were trying to accomplish. For these project managers, the project objectives were not simply the technical definitions of the customer’s needs. Rather, for them, project objectives meant first of all project results, and they felt total personal accountability for those results. It also meant that they had the self-discipline required for placing all other objectives and opportunities secondary. It was almost as if they were programmed to follow an inner compass that was always pointing toward true north. However, if they could not reach this goal by following conventional methods, they responded by challenging the status quo. This kind of response requires strong willpower and courage.

It is important to note, however, that this very focus on delivering results to the customer was also responsible for keeping the frequency of challenging the status quo within limits. These experienced project managers knew very well that challenging the status quo comes with its own risks and costs. In each case, they had to dedicate special attention and energy to overcoming the natural resistance to change, and to learning how to perform effectively once this resistance was overcome. This temporary disequilibrium in the project could have led to loss of momentum and progress, eventually hurting their ability to serve the customer. Since their primary focus was not on proving that they were heroes, but rather on delivering results to the customer, they were selective in employing this practice. Thus, their hedgehog’s mentality with its overriding purpose guided them in selecting the right cases for challenging the status quo.

And now to the role of the fox. It is evident from the eight cases presented in the book that while it was the project managers’ focused willpower that led them to challenge the status quo, the solutions to the problems they faced demanded a great deal of adaptability and
creativity. That is precisely the time when the focused hedgehog calls on the creative fox for help. By embracing the behavior of both the hedgehog and the fox, you should also be able to successfully challenge the status quo when the need arises.

Practice Four: Do Your Utmost to Recruit the Right People

In 1911, Fredrick Taylor, the father of “scientific management,” said: “In the past, man has been first. In the future, the system must be first.” One hundred years later and the project managers of all eight projects beg to differ loud and clear.

For example, Ray Morgan, the Pathfinder project manager, learned that finding the right balance between systems and people is critical to being a good project manager, but more importantly, he realized that people matter the most because they make the systems work.

Terry Little, the JASSM program manager, describes his management philosophy by declaring: “McNamara, I am not.” Here he refers to the limited impact he found in projects for the analytical approach of the Robert McNamara School of Management, where everything is quantifiable and based on models. Terry shares his own conclusion: “Projects move ahead because of the activities of people.”

The underlying assumptions and demonstrated behavior of the project managers throughout the book can be summed up as follows: People are the make-or-break factor in projects. With the right people, almost anything is possible. With the wrong team, failure awaits. Thus, recruiting should be taken seriously, and considerable time should be spent finding and attracting, and at times fighting for, the right people. Even greater attention may have to be paid to the selection of the right project manager.
Indeed, Shimon, the Yad Vashem Museum project manager on behalf of the client, understood the pivotal role of selecting the general contractor. He took great pains to identify and recruit the most suitable project manager for the contractor’s team by using an unconventional three-stage selection process based on multiple factors, not only the total cost of construction. After reviewing all of the proposals received, Shimon selected the company most likely to be awarded the job as contractor and then applied pressure on the director of the company to include his choice for project manager on their team. Shimon’s efforts paid off, and his request was met by a positive response from the company.

Yaron, the battalion commander in the Evacuation case, provides another example of the importance of finding the right people for the task at hand. When he realized that many of his squad leaders were not fit for the mission, he started a campaign to replace them and did not stop until he was able to reach the commander of the Israeli Air Force and recruit new squad leaders who were more suitable for the job.

Recruiting the right people does not have to mean recruiting the world’s most talented “stars.” Often this is simply not practical, and organizational politics might make it impossible for the project manager to steal away the best people within the organization because they’re already involved in other critical projects or fiercely defended by other managers. What’s important, as Brian Rutledge, the financial manager at JASSM, reminds us, is that “you have to get the right people for the right job at the right time.”

Even if they could have recruited many stars, our project managers would not have attempted to do so because they knew that if everybody is a potential CEO, then it becomes too difficult to develop a cooperative environment. Indeed, while recruiting, they were constantly thinking about the team as a whole, making sure that the selected team members could work with each other as required by the unique context of the project. Thus, they selected people not only
on the basis of their technical, functional, or problem-solving skills, but also on the basis of their interpersonal skills.

Allan Frandsen, a payload manager from the California Institute of Technology, looked for people who were a little bit out of the mainstream and could flourish in a university environment—people with the “right mix of talent and attitude,” a flexible outlook, and high adaptability. Indeed, he considered flexibility to be even more important than sheer brain power.

At times, especially for large projects, the project manager must select a group of leaders for his or her team. Chuck Anderson from Raytheon explains that the “right” people he was searching for were real leaders who would be willing to make swift decisions and take risks without fear of failing.

**Practice Five: Shape the Right Culture**

Project culture is what holds the organization together, providing project members with a shared frame of reference, rules for behavior, and an understanding of the dos and don’ts of project life. When project members share the same culture, they develop a set of mutually accepted ideas of what is real in their constantly changing environment, what is important, and how to respond.

The Talmud says: “We do not see things as they are. We see things as we are.” Cultural differences between project groups are often accompanied by divergent assumptions, values, and perceptions of reality that can have serious implications for project performance. As Don Margolies, the project manager of the NASA Advanced Composition Explorer (ACE) project, quips: “If Goddard (NASA) said the sky was blue, APL would say it was pink.”

Unfortunately, these difficulties are not uncommon for projects. Project organization is temporary, with a finite end, and is typically composed of groups from different organizations, often with a
range of cultures. The project organization evolves throughout the life of the project, where different groups join and leave the project as dictated by the unique nature of the specific project. The limited and relatively short life of most projects, and the typically different cultures and interests of the various groups composing the project render shaping project culture—one culture for the whole team—very difficult. Zvika, the project manager of Tnuva dairy plant, uses this vivid metaphor to illustrate the impact of working with different project cultures: “I used to compare the quick pace and agility of the “monkeys” on site versus the reliable, but inflexible, work of the “elephants” at AEG.”

It is important to stress that even in permanent organizations, shaping culture is not easy and indeed requires leadership. Professor Edgar Schein of the MIT Sloan School of Management, who is generally credited with introducing the term “corporate culture,” distinguishes between leadership and management by arguing that leadership creates and changes cultures, whereas management acts within a culture.

Indeed, the project managers in all eight cases in this book found that one of the key factors for project success was the need to shape the culture of their projects. Teamwork—mutual interdependence and mutual responsibility for project results—was one element of culture that was universally guided by the philosophy of “we’re all in this together.”

For example, the focus of the AMRAAM project was on shaping project culture, with an emphasis on teamwork, mutual trust, and responsibility for results. This change was successful as a result of the deep commitment and personal involvement of the two project leaders from the U.S. Air Force and from Raytheon. A more limited effort to improve teamwork and trust, but nevertheless a creative one, was introduced by Don Margolies, the NASA project manager of ACE. Don attempted to alleviate some of the problems that resulted from the cultural differences between APL and NASA Goddard by
introducing frequent face-to-face meetings. Fortunately, the short distance between Goddard and APL went a long way toward establishing a trustful relationship and cultivating a partnership between the two organizations.

The cultural change in the Pathfinder project was also focused on collaboration, this time not between two organizations, but rather between the project team and the residents of the island of Kauai, who had a natural apprehension about outsiders. Ray Morgan, the AeroVironment project manager, explains how Dave Nekomoto served as their entrée into the community, smoothing the way for them in dealing with the local authorities. Still, they had to take a highly unconventional approach to “fitting in” and establishing a good rapport with the local residents: “Dave had—how shall I say it?—a thing for karaoke. So we sang with him. Yes, that’s right, we sang.” The “mandatory” karaoke parties held at Dave’s place with the whole NASA and AeroVironment team helped to break the ice and form a crucial basis of trust with the people of Kauai. Once the locals felt invested in the team’s success, they were ready and willing to do whatever they could to help AeroVironment reach its goals.

Project leaders need to shape their project culture not only to promote a “teamwork” culture, but also to ensure that the “right” culture fits their unique context. Making such a successful change is often dependent on having the right people and sometimes may be accomplished only by replacing some key people. For example, in the Evacuation case, Yaron, the battalion commander, did not have any choice but to replace many of his squad leaders to be sure that his battalion would embrace the required attitude of “with determination and sensitivity.”

However, even selecting the right people does not always bring about the desired cultural change. For example, Allan Frandsen’s hand selection of his small team at the NASA Jet Propulsion Laboratory was still not enough to foster development of the right culture on the team, at least not fast enough. To accelerate this change, Allan
moved the team from JPL to Caltech. Although Caltech is only seven miles from JPL, there is a noticeable cultural difference between the two institutions. Allan assumed that being surrounded by scientists and interacting with them on a daily basis in Caltech’s research environment would help the new team to quickly develop an adaptive culture—a culture that allows, and at times may actually encourage, tailoring, bending or even breaking the rules when necessary.

Another example of facilitating the desired cultural change can be found in the JASSM case. By being a failure-tolerant leader, Terry, the JASSM project manager, was able to develop a culture of autonomy, risk taking, learning, and innovation. Larry Lawson, Lockheed’s project manager, describes Terry’s reaction to the team’s initial failure and how he used it to help shape this culture:

“After months of working seven-day weeks, our first missile launch after the contract award failed... It was the defining moment for the program... Terry could have said, ‘I don’t trust you, and I want to have an independent technical review.’ But that’s not what he said... Instead, he asked me if I wanted some help. Teams are defined by how they react in adversity—and how their leaders react. The lessons learned by this team about how to respond to adversity enabled us to solve bigger challenges...”

Practice Six: Plan, Monitor, and Anticipate

Classically, planning and control is portrayed as the backbone of successful projects. According to this outlook, planning establishes the targets and the course of action for reaching them, while control ensures that the course of action is maintained and that the desired targets are indeed reached. Therefore, control involves measuring and evaluating performance and taking corrective action when performance deviates from plans.
The cases in this book demonstrate that in today’s “permanent white water” environment, while planning and control are still central for project success, their scopes are significantly different. In general, they demonstrate that the planning time and the planning methods are strongly affected by the stability of the available information. For example, in the two product development projects, much of the information was missing or highly ambiguous and remained volatile throughout the life of the projects. Thus, only short-term plans were prepared, and a great deal of planning was accomplished through prototyping as part of “planning by action” (more on planning by action in Practice Eight).

The change in the scope of project control has been even more radical. Classic concepts of project control were developed for stable environments in which it was expected that planning would be fairly accurate and implementation would largely adhere to the plan. Accordingly, the primary role of project control was to identify deviations from the plan and adjust execution to conform to the plan. Today, however, the central role for measuring and evaluating performance is to provide quick feedback necessary for further planning. The main purpose of project control is not to answer the question “Why didn’t your performance yesterday conform to the original plan?” but rather, “What kind of feedback can help you learn faster and perform better tomorrow?”

Under conditions of uncertainty, measuring and evaluating performance, which is classically regarded as project control, can serve only as a means to monitor performance. But by no means are these activities enough in order to provide project control. Project control, that is, ensuring project targets are reached, can be achieved only by applying all nine practices described in this epilogue.

Successful project managers do not limit their monitoring to events occurring within the typical boundaries of their assigned role. These project managers know that in a dynamic environment, projects succeed only through the constant monitoring of performance
and changes outside their formal boundaries. Terry Little, the U.S. Air Force project manager of JASSM, demonstrated this notion by taking a trip to visit one of the contractors’ suppliers. Terry was aware that a government project manager does not normally go to visit the suppliers of a prime contractor. However, he was also aware that such a visit would allow him to anticipate problems even before they actually occurred, leaving sufficient time to attenuate and often eliminate their impact on the project.

The critical importance of anticipation has been demonstrated throughout the book. In particular, many of the most crucial “challenging the status quo” actions were initiated proactively by the project managers, primarily as a result of their constant engagement in ongoing deliberate anticipation. Deliberate anticipation entails focusing attention on identifying irregularities, as well as early signals of possible problems, and being flexible and ready to respond.

Allan Frandsen, the ACE payload project manager, concisely described his project management philosophy, with anticipation of problems topping the list as the most important role of the project manager:

“To lead a project effectively, one has to establish and maintain the flexibility to take appropriate actions when needed. If I had to write down the ABCs of project management, ‘A’ would signify anticipate. Of course, a good project manager already knows, at least in general terms, what is supposed to happen next—but all too often it doesn’t. So what are the alternatives? Are there sensible workarounds? What can I do now to lay the groundwork or facilitate matters should something go wrong? These and other questions make up the ongoing process of anticipation. And because it is an ongoing process, the ‘A’ in the ABCs of project management could just as well stand for ‘anticipate... anticipate... anticipate.’”
Practice Seven: Use Face-to-Face Communication as the Primary Communication Mode

Because a project functions as an *ad hoc* temporary and evolving organization, composed of people affiliated with different organizations, communication serves as the glue that binds together all parts of the organization. When the project suffers from high uncertainty, the role played by project communication is even more crucial.

The project managers in the book employed a great variety of communication mediums, covering a wide spectrum from high tech to high touch. In the following example, Zvika, the project manager of the dairy plant, explained some of the unique features of the high-tech communication systems that he developed for his construction site:

“...an advanced work station was installed on site to produce blueprints. The blueprints were sent to the site via the intranet, and within minutes, all the necessary copies could be made and distributed to the many contractors on site. In addition, the team of inspectors we had on site carried out daily documentation of progress via digital cameras. The photos were distributed via the intranet network to all the designers and contractors in Israel as well as abroad. Receiving an up-to-date documentation of the situation on site was helpful, especially for the foreign designers working abroad.”

However, Zvika goes on to describe another component of the communication system that he used on site:

“As much as we invested in ‘high-tech’ communication, I believe that the key was rather ‘high-touch’ communication... all project meetings, from the beginning of the work to its end, took place on site. The designers of the facility met weekly there, and each of the meetings began with a tour of the site. These meetings were very effective, both for solving problems
in real time and for building strong cooperation among the various design engineers.”

Indeed, face-to-face communication is repeatedly shown to be a powerful tool, particularly for novel and ambiguous issues and when building social bonding and trust is crucial. Its strength lies in the fact that it provides timely and personalized feedback by using multiple channels of communications, including eye contact, body language, and facial expressions, which can convey a deeper and more convincing message than any other form of communication. Furthermore, face-to-face interaction provides a valuable opportunity for ongoing responsiveness. By seeing how others are responding to a verbal message even before it is complete, the speaker can alter it midstream and provide necessary clarification. When interaction takes place in a group setting, the number of verbal and nonverbal “conversations” that can be conducted simultaneously is almost impossible to replicate with any other media. Thus, face-to-face communication is the best medium for quick resolution of ambiguity and for building a strong foundation of trust.

Although face-to-face communication is often expensive, its significance and popularity were stressed in each one of the eight projects. For example, when returning from a visit to Raytheon for a series of face-to-face meetings, Dennis Mallik, the U.S. Air Force chief financial officer of AMRAAM, found that his colleagues at home were stunned with the kind of information he was able to get from the contractor. Then, Dennis reminded them, “You’ll be surprised by how much better you do once you get to know the people you’re working with.”

In recent years, scarcity of attention has become the key challenge for effective project communication. Herbert Simon, the Nobel prize-winning economist, provides a succinct description of this challenge: “What information consumes is rather obvious: It consumes the attention of its recipients. Hence, a wealth of information creates a poverty of attention.”
Frank Snow, the Ground System and Flight Operations manager at Goddard Space Flight Center, discovered the power of face-to-face communication when he attempted to offer help to another member of his team, who was terribly suspicious of the Goddard project office. This researcher at Caltech, who was located about 2,300 miles away, responded to Frank’s offer by sending him a blistering email that basically said, “Hell no!” Frank decided to fly across the country to Caltech to talk with the researcher. Frank summed up the results of his trip:

“Clearly, face-to-face communication went a long way toward dispelling his suspicions about my intentions. I don’t recall after this ever getting another 300-word email from him of the ‘no-thank-you-and-please-go-away’ variety. As a matter of fact, I think I can even say that this was the beginning of a fruitful relationship that lasted for the rest of the project.”

There is no doubt that Frank succeeded because he was willing to listen patiently to his host’s concerns. Yet, Frank was also able to ensure that his host would listen to him because he was able to capture his host’s attention.

**Practice Eight: Be Action-Oriented and Focus on Results**

What is the most important leg of a tripod? The missing one!

Successful project management stands on the following three legs: people, information, and action. Yet, action is regularly ignored.

Lucy Suchman opens her book, *Plans and Situated Actions: The Problem of Human-machine Communication*, with a comparison between the different navigation methods employed by the European and the Trukese navigator:
“The European navigator begins with a plan—a course—that he has charted according to certain universal principles, and he carries out his voyage by relating his every move to that plan. His effort throughout his voyage is directed to remaining ‘on course.’ If unexpected events occur, he must first alter the plan, then respond accordingly. The Trukese navigator begins with an objective rather than a plan. He sets off toward the objective and responds to conditions as they arise in an ad-hoc fashion. He utilizes information provided by the wind, the waves, the tide and current, the fauna, the stars, the clouds, the sound of the water on the side of the boat, and he steers accordingly. His effort is directed to doing whatever is necessary to reach the objective. If asked, he can point to his objective at any moment, but he cannot describe his course.”

Suchman, whose research focus was on “purposeful action,” concludes that while the European navigator exemplifies the prevailing scientific models of purposeful action, she believes that ignoring the Trukese navigator is a serious mistake. The project managers in this book concur.

Conceivably, for navigation, neither method is superior to the other. The differences between these two methods might simply reflect different styles of thinking and acting. Yet, from the cases in the book, it is clear that for managing projects, the differences between the two reflect much more than just styles of thinking and acting.

The European method is most suitable when uncertainty regarding the task, environment, and constraints is low, as in an established production process (“geometric order”). However, the Trukese method is more suitable when uncertainty is high and the situation is novel and confusing, such as in the development of a new product using an immature technology or while coping with a disruptive technology (“living order”). The projects in the book employ a mix of these two methods, but there is clearly a greater use of the Trukese method in the early phases of most cases.
The comparison between the working styles of the two navigators highlights the three key components of the current practice:

- Planning by action
- Management by hands-on engagement
- Focus on results

Following are three short examples from the eight cases that demonstrate these components.

### Planning by Action

In JASSM, Larry Lawson, the project manager for Lockheed Martin, highlights the use of prototyping by one of their suppliers for the development of the missile. The first prototype they built took a long time, but the end product did not measure up. Still, the process allowed them to learn what things they didn’t have to do or be concerned about, and as a result, the second prototype was a better product that took about half as long to build. By the time they started work on the sixth one, they fully understood the problem.

Terry Little, the project manager for the U.S. Air Force, explains that the use of prototyping by Lockheed Martin was one of the key factors in its ability to win the contract. As he explains:

“Prototyping is a wonderful way of learning, yet we don’t do enough of it because we would like to believe that if we simply get enough smart people together, we can run through the numbers, put them in the model, do the simulation, and it will all come out just like it is supposed to. But guess what? In the real world, it rarely happens the way we predict with our models. The reason people want it to be that way is because prototyping is not cheap—it is not cheap in terms of the money or the time required to do it. It is messy and sometimes you are embarrassed with the results, but eventually you reach your goal. In the long run, it saves you money.”
Management by Hands-On Engagement

In the transferring harbor cranes project, the two project leaders were closely involved with the workforce throughout the entire 24/7 operation. They worked on it in shifts, including weekends and holidays, staying together with the workers and even eating with them. As one of them underscored:

“This was our norm for all the special projects we carried out, and our people expected it. We believed that this way we could learn quickly about changes and react in a timely manner, and not less importantly, we could naturally infect the entire workforce with our passion and energy. We promised large bonuses to the workers, but we believe that the role model approach is a more effective motivator.”

Focus on Results

Sometimes even small gestures can take on far greater meaning than expected. Brian Rutledge, the JASSM financial manager, recalls the significance of such a gesture to promoting his results-focused orientation:

“After Terry said that we were going to be on contract in six months, he directed someone to make a viewgraph stating this goal: Be on contract by July 1. That was it. He wanted it pinned up in everybody’s cubicle. At first, I thought: ‘Oh man, this is goofy. I know what we’re doing. I don’t need to have a reminder on the wall.’ When I talked to other people working in the program office, I just rolled my eyes. ‘What’s this guy thinking?’ I said. ‘It’s like we’re in kindergarten.’ But after a few months, I had to admit that there was something to it. I saw it there every day when I walked up to my desk. I eventually found myself stopping to think: ‘What am I doing to get to that point, and what can I cut out of my work that’s preventing me from getting there? How am I getting distracted from the goal?’”
So they kept a chart to measure their progress—not a chart that used the project plan to monitor specific tasks, but a chart that plotted the results accomplished. The final outcome was a mission accomplished in less than five months.

The importance of the focus on results is poignantly captured by Karl Weick, a distinguished university professor at the University of Michigan: “The argument, in a nutshell, is the one set forth by a Persian proverb: ‘Thinking well is wise; planning well, wiser; doing well, wisest and best of all.’”

**Practice Nine: Lead, So You Can Manage**

In a world perceived as being in “geometric order,” projects require only plan-driven management. The cases in this book, however, clearly demonstrate that in the real world of “living order,” there is a need for both leadership and management.

Plan-driven management assumes a relatively predictable world and thus relies primarily on planning, control, and risk-management tools. A dynamic environment, where unexpected events are inevitable and the project is plagued with numerous problems, demands both leadership and management. Most of these problems are technical, that is, they can be solved with knowledge and procedures already at hand. Although solving these problems might require great flexibility and high responsiveness, they can still be resolved while maintaining the status quo. They just require good managerial skills. Other problems, however, are adaptive, that is, they are not so well-defined, do not have clear solutions, and often require new learning and changes in patterns of behavior. To address these adaptive problems, the project manager must be willing and able to make significant changes and to challenge the status quo. These problems therefore require leadership.
Another aspect that distinguishes between these two roles is that managers engage in routine activities, whereas leaders focus on and generate nonroutine interventions. Using this distinction, it is clear that the epilogue includes three practices requiring primarily routine activities and three that demand nonroutine interventions, as follows:

Practices requiring *routine* activities:

- Plan, monitor, and anticipate.
- Use face-to-face communication as the primary communication mode.
- Be action-oriented and focus on results.

Practices requiring *nonroutine* interventions:

- Challenge the *status quo*.
- Do your utmost to recruit the right people.
- Shape the right culture.

The remaining two practices, “embrace the living order concept” and “adjust project practices to the specific context,” can be considered infrastructure practices that affect all other practices.

So which role is more dominant, leadership or management? Does one need to strive to be a manager who is also a leader or vice versa? On the one hand, without being involved in the ongoing management of the project, the project manager simply does not know when to intervene and what is the best way in which to do so. Moreover, to maintain stability, the project manager must selectively choose the cases for which challenging the *status quo* is vital. Thus, the project manager actually ends up spending much more time on routine management activities than on leadership activities. So maybe management is the dominant role?

On the other hand, as the cases presented here demonstrate, without challenging the status quo and solving the adaptive problem
at hand, the project might simply come to a grinding halt. Only once the problem is overcome, using a nonroutine leadership intervention, can routine management actually proceed. That is, without leadership, there is no management! You must lead so that you can manage.

However, there is more to the debate of leadership versus management. Project managers are judged primarily not for what they do, but rather for what their people do. So far, we have discussed leadership and management as if performed by two different people. However, when these two roles reside within the same person, it is important to understand that leadership attitude and behavior inspire team members, even when the project manager performs just routine management activities. This is where the leadership role has the upper hand.

Dougal Maclise described Ray Morgan’s effectiveness as the project manager of the Pathfinder project in this way: “Whether one meets the optimist developer, the experienced builder, the inquisitive engineer, or the energetic cowboy, one always immediately feels that each one of his personalities is an authentic and sincere person. His genuine spirit is contagious. You simply cannot not follow Ray.”

As stated eloquently by an anonymous source, “Life is not measured by the number of breaths we take, but by the moments that take our breath away.” Although most of the time project managers perform managerial activities, the few incidences in which they act as leaders are what defines them in the eyes of their team members as leaders who they willingly follow.

Thus, distinguishing between management and leadership is helpful when you first begin shaping your attitude and developing your skills, but these roles are intertwined and indistinguishable once you become a successful project manager. What you actually become is a project leader.