In a commentary on the OP-Ed page of the New York Times entitled “Failure Is Always an Option” (August 2003), Henry Petroski, a civil engineer on the faculty at Duke University, shined a spotlight on the organizational culture at NASA when he addressed the disastrous failure of the space shuttle Columbia in 2003. He described the existence of three unique subcultures within the organization—scientists, engineers, and managers—and the lens through which each viewed the Columbia mission and the 1986 Challenger loss. Although the groups coexisted under the overall umbrella of NASA, only the managers prevailed in the critical decisions made during both of the fateful flights. The remaining groups were unconvincing either with hard facts or political influence. Unfortunately, this unchallenged dynamic proved fatal.

As in the NASA case, most executives either overlook or dismiss the underlying systemic structures and embedded processes that make up an organization’s culture. Because culture is untidy, muddled, and abstract, people tend to ignore it when making complex decisions or seeking concrete solutions. Consequently, many leaders act as if their decisions are objective and logical. They pretend that clusters of interests, organizational attitudes, or ingrained patterns of behavior do not influence their choices or affect business results. Only when crises occur do they scramble to look for reasons below the surface. It is our task as systems practitioners to draw attention to these misperceptions before disaster strikes.

The Power of Culture

Every organization has a unique culture. With minimal effort, groups with as few as 10 employees will develop chains of command, acceptable codes of behavior, and unique language that support and sustain their beliefs and attitudes. For example, in the “start-up” frenzy of Silicon Valley in the 1980s, the engineers and young programmers who populated the computer industry, many fresh out of high school, balked at wearing traditional business attire: dark suit, white shirt, and staid tie. The casual dress they preferred stood for and propagated a cultural belief that hardware and software developers are independent, creative individuals who work best when not bound by the constraints of hierarchical authority.

Over time, this attitude led to a series of practices, procedures, and policies that came to characterize the Silicon Valley culture. For example, Apple Computers was one of the original and most well-known start-ups in California. Employees and managers alike wore sandals or high-top sneakers, ragged blue jeans or shorts, and collarless tee shirts; played basketball on outdoor courts set up by the company; and binged on junk food while working grueling hours. Cofounder and CEO Steve Jobs declared his programmers “artists” and “pirates,” and he rewarded their commitment with perks of stock options and working retreats at cushy resorts. His claims that Apple products were “magical” and would “change the world” became embedded in the organizational culture and convinced many—media, shareholders, directors, and employees—of the superiority of the company’s hardware.

Unfortunately, this cultural climate had numerous unintended consequences. Demanding product schedules fueled a pattern of divorce, health problems, and even suicide. And despite the hyperbole, for practical reasons, such as pricing, the products failed to gain dominance in the marketplace.

The Apple example shows how an organization’s culture develops over time, how it affects the way the enterprise operates on a daily basis, and how it is perceived within and outside of its walls. It also illustrates how executives frequently make crippling judgments when they do not factor the effects of their organization’s culture into their strategic and tactical decisions.

The Complexity Factor

Because of the complexity of an organization like NASA, the likelihood that multiple and conflicting views will develop is high. Within the space agency, three subcultures each saw the space shuttle through their unique lenses. Petroski says that “to scientists the vehicle (shuttle) was a tool.” For the NASA managers who lobbied Congress for the Agency’s budget, the shuttle was a technology, and even a flawed mission was proof of success. But the managers’ view was light years away from that of the engineers, a group who, according to Petroski, “achieve success in their designs by imagining how they might fail.” In 1986, when the two groups

Continued on next page
With both of the doomed flights, these groups faced off with little or no understanding of each other's views or agendas. From the evidence, we might hazard a guess that NASA's overarching culture didn't support healthy collaboration or respect for differing opinions, and that dissent and conflict were suppressed. Fortunately, most organizations do not regularly make life and death decisions. Nevertheless, the NASA case reiterates that ignoring the hidden impact of organizational culture can have serious consequences.

Culture: Ties That Bind

The image of the “iceberg,” commonly used in the systems thinking literature, is useful to conceptualize the role of culture (see “Looking Beneath the Surface”). We can consider culture to be a systemic structure that shapes and is shaped by individuals’ feelings, attitudes, and beliefs as well as by official and informal policies and procedures. These structures give rise to patterns of behavior and, ultimately, to specific events. Because events are easily visible and patterns and structures are usually hidden from sight, we often focus our problem solving on the surface level.

Using published reports about NASA, we can use the iceberg model to explore how its culture might have contributed to the shuttle tragedies. Events: The space exploration program is a symbol of vibrant scientific endeavors and military strength. To the public and politicians, space flights serve as a gauge of success. Thus flights are the focus of NASA’s multiple goals and are the observable events or outcomes of its programs.

Patterns: In both failures, the managers’ subculture exercised its authority in the face of engineering and scientific concerns. Following each shuttle accident, NASA management focused on the technical issues that led to the failures and didn’t delve beneath the surface to explore the human factors that might have contributed, that is, how people in the organization communicated with each other and made decisions.

Structures and Cultural Beliefs: NASA’s executives, the manager subgroup, understood the need for ongoing government funding. Because they perceived that delays in flights could affect political support, public enthusiasm, and financial backing for the program, they overrode the engineers’ recommendations. The NASA culture supported this unilateral decision making and squelching of conflicting opinions.

Rarely, if ever, can we pinpoint a single reason for a success or failure, and too often, we miss the complexity. By delving beneath the surface to examine the elements of an organization’s culture, we can uncover potential risks or opportunities that might otherwise go unnoticed and remedy or leverage them.

The Practice of Systems Discovery

Different tools are useful for casting light on an organization’s culture, including climate surveys and organizational gap analyses. Whatever the nomenclature, input gathered from face-to-face interviews is critical to uncovering the deep belief systems that drive what organizations do. The commonality among these activities, regardless of name, is that (1) information is gathered from across the organization, (2) the input is grouped into thematic categories, and (3) the data/themes are analyzed. This process works best when people from throughout the organization participate in a face-to-face process. Online employee surveys cannot uncover systemic gaps as they lack the level of detail needed to make complex situations clear.

Uncovering the beliefs and behavior from throughout the organization raises our awareness of underlying assumptions, stereotypical attitudes, disrespectful behavior—even fear of conflict. Awareness coupled with motivation can build better collaborations and, in turn, more effective thinking and acting.

Initiating this process in an organization can be difficult! Rarely will executives expend for information about the environment or agree to a massive reengineering project. But as we have seen from the NASA example, surfacing underlying dynamics can be vital to an organization’s success. The key is to keep the process simple. “Steps for Surfacing Belief Systems” provides a skeletal checklist for practitioners.

The Role of Leaders

The CEO and the organization’s managers set the tone for any and all interventions through their actions and dedication. If today’s leaders are skeptical that organizational culture is key to operational and financial success, unlocking the mysteries of an organization will be beyond his or her reach. And many executives are “naysayers,” labeling the management of interpersonal issues as soft skills and relegating it to the “nice-to-have” column. This is a fallacy. These are the challenging issues of the workplace, and they require sophisticated skills. Pretending that interests and attitudes do not impact the bottom line is a mistake.
**But, buyer beware!** There is no panacea or “flavor of the month” solution, only the hard collaborative work of delving into the forces that cause our organizations to work the way they do. Executives must comprehend the rigorous demands of what they are “buying.” Not all problems can be solved with a single effort. We, the practitioners, must set clear and realistic expectations for an intervention. **Sell simply; see complexity; seek clarity.**

The news today is littered with stories of organizational failure. Executives can and must learn from these, but it is the meaty challenge of systems practitioners to look at the dynamics that led to these sensationalized failures and translate them into terms that managers value and understand. The bottom line is that cultural knowledge is an important asset for success.

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### STEPS FOR SURFACING BELIEF SYSTEMS

Tackle a concrete problem or process. Examples include “Why are projects always behind schedule?” or “Why do we spend so much time on rework?”

- Gather narratives about the identified problem; analyze and group data into thematic categories, bringing scattered information together into meaningful patterns.
- Clarify ambiguous terms: trust, communication, ethics, isolation, “buy-in.” By exploring people’s understanding of these concepts, you will surface belief systems.
- Once you have a sense of the assumptions, beliefs, and practices that are part of the culture, explore what continues to work well and what is leading to undesirable outcomes.
- Review current business processes; recommend an overhaul of the irrelevant.
- Recommend simple work processes that directly address the problem you were sent to analyze. A step-by-step pragmatic approach reduces anxiety and builds trust.

**Overall Guidelines**

- Throughout the process, practice authentic and respectful behaviors.
- Listen with intent and care.
- Address highly charged situations immediately. Emotional disturbances interfere with our cognitive intelligence.