CULTURE AS CAUSE
REFLECTING ON THE *COLUMBIA* ACCIDENT

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On February 1st, 2003, the Space Shuttle *Columbia* was tragically lost, claiming the lives of all seven crew members. It had been seventeen years since the *Challenger* accident. A seemingly long time which made the shuttle program seem safe – almost routine. Soon after the accident, a thirteen-member board was brought together to investigate the accident. From the outset, the board emphasized that it was not likely a random event that caused the accident, rather, the cause was most likely steeped in the organization's management practices, history, and culture, and significantly influence by changing priorities, budget constraints, and political compromises.

Many of you may be wondering why chapters from the *Columbia Accident Investigation Board Report* are included in the proceedings of a conference that focuses on the management of risks encountered in the outdoors. How could the catastrophic failure of a NASA orbiter impact our professional lives as practitioners? The tie between space exploration and wilderness programming is close knit indeed. As it can be so perfectly framed, space is probably the last true wilderness, making NASA the ultimate wilderness-based program. Orbiter crews, much like our outdoor groups, work in small teams, hand-in-hand, expanding the possible and deepening their understanding and connection to the environment. Technology and politics aside, the organizational and philosophical parallels between NASA and the outdoor education industry are remarkable.

All seven members of the *Columbia* crew believed that what they were doing was incredibly important for the advancement of all humankind. They profoundly believed that the information gathered from their mission was "worth the risk." In honor of the brave members of the crew, the Columbia Accident Investigation Board (CAIB) believed that it was their duty to learn everything they possibly could from the accident – to change how NASA does business so that the lives of the crew members would not be lost in vain. I, too, believe that it is incumbent on all of us to try and understand what happened and gain professional perspective from the lessons learned. The outdoor industry can learn a tremendous amount from this accident about ourselves, our organizations, leadership, and the management of risks. By critical reflection, I hope that our industry can learn from this tragic event.

"The foam did it." Literally speaking, the damage sustained from a piece of foam striking the orbiter led to the catastrophic accident – the proverbial broken widget. It would have been easy for the board to "find the widget that broke, find the person closest to the widget and conclude that the widget needs to be redesigned, fire the person closest to the widget and call it a day." Unfortunately, many accident investigations proceed in this manner and only scratch the surface. Thorough in their investigation, the CAIB assumed a much different approach by probing deeper and casting their gaze much broader.

The Board's investigative process examined all facets of the accident. In the report, one will not find terms such as contributing factors or underlying causes. Whether it was physical in nature, leadership and decision making, or

problems with NASA's safety culture, all factors were equally weighed. I thoroughly encourage you to read the entire report from beginning to end (all 180+ pages). And for the scientist in us all, the chapters explaining foam anomalies are fascinating! Following this introductory piece are two chapters that are most germane to outdoor education: Chapter 8, *The Accident's Organizational Causes* and Chapter 9, *History as Cause: Columbia and Challenger*. These two chapters have incredible lessons for us all to learn.

There are many different lenses through which we can view this report. Throughout this article, I refrained from being prescriptive or drawing any conclusions for the reader. Instead, I thought it would be more appropriate to pose questions and provoke a deeper level of thought - to frame the conversation so to speak - as readers sift through the information.

Before reading the report, I suggest viewing it through the "lens" of an organizational leader. In addition, I would suggest that you read the report from a "systems" perspective. Systems theory holds that people are not solely responsible for making mistakes; rather it's a problem in the underlying system that allowed the mistake to occur in the first place. A systems approach does not, however, absolve people from their responsibility or actions. On the contrary, people must always be accountable for their actions and for the role that they play in organizational systems and structure. As you read through the report, I offer you some points below to consider from an organizational leader/systems perspective:

The CAIB concluded that NASA suffered from a broken safety culture or as the Rogers Committee (*Challenger* investigation) referred to it, a culture of "silent safety." NASA's Achilles' heel was an organizational blind spot in regard to how it viewed its own culture of safety. There was a lack of congruency between what NASA believed to be their culture of safety and what was actually occurring in practice. Ask yourself these questions: Is the culture of your organization risk averse or does it embrace risk? Further, does your organization have an accurate view of its own safety culture? How do you know? Do you have organizational resources for helping you recognize these areas? Where are your organization's blind spots? Also, examine how cultural beliefs regarding risk can provide a "constant frame of reference" for organizations as they make decisions. How is risk defined in your organization? Do staff members define risk differently and, if so, how? Do you have a safety culture defined by the organization, promoted by management, and internalized by staff and participants? What is your safety policy and how are you structured to ensure its delivery and infusion into your culture? Do you have a centralized policy and oversight function that allows for the execution of your safety program at the field level? Does your organization's senior management establish the "what" and leave the "how" to field management and leaders?

The CAIB found problems in NASA's communication environment and structure. Examine your organizational culture critically: Does your organization embrace a culture of open communication regardless of structure or hierarchy? Does your organization rely on a well-seasoned communication and decision making process? Are minority opinions cultivated and sought out in your decision making process? Are organizational leaders
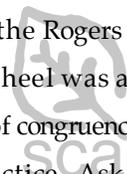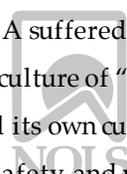
trained to, in the absence of a minority opinion, play a role of a "devil's advocate?" Do staff member's hierarchical positions in your organization influence how their risk assessment information is weighed?

A hallmark of outdoor education (and the not-for-profit world in general) is a culture of the can-do, go-for-it, we-can-accomplish-anything philosophy. NASA is steeped in a similar cultural history and, as the report concluded, this optimistic view may have served to undermine "critical thinking and decision making." Does this same philosophy serve to undermine critical thinking and decision making in your organization or for that matter in our industry? Are we aware that our industry's altruistic view of the world may influence us to accept more or less risk?

The CAIB found that the normalization of errors was a key factor that led to the *Columbia* accident. Has your organization become conditioned by success turning "the experience of failure into the memory of success?" Do you have appropriate mechanisms for identifying trends and following-up on "off-normal" operations of your program? Are there common practices that function outside of your organization's operating procedures that have become normalized by success and learned experience? Have near misses stretched the "proverbial" belt of accepted practices in your organization and thus, have these practices become institutionalized?

Many times when launching new initiatives and programs, organizations must commit to a second or even a third year of funding while the initial program is still in the field. Is your organization influenced by government policies, out of sync funding cycles, or scheduling constraints? Do these factors influence your organization's assessment of risk and subsequent decisions?

The CAIB suggested that NASA inappropriately placed the burden of proof on proving that the foam strike was unsafe rather than proving it safe. When confronted with a safety issue, how is your organization structured to respond? Are you structured to gain evidence that an issue is "unsafe" or are you structured to prove that the issue is "safe"?

The Board concluded that NASA viewed orbiters as operational when in reality they are still experimental. What are your organizations practices for launching new program models or operating existing program models in different environments? How about managing existing programs with different management structures? Do you have rigorous testing procedures and established "feed-forward" loops to make immediate adjustments and inform future decisions? At what point does your organization decide if a program model has been "established" and, from a risk management perspective, how would you manage it differently?

Often times due to programmatic growth, budget constraints, or the drive for efficiency, there is an organizational need to restructure. As mentioned in the CAIB report, NASA has undergone several major organizational restructurings. Does your organization have the ability to assess and catch new operational problems caused by restructuring? Does your organization have a mechanism in place to retain the organizational knowledge, history, and expertise caused by organizational change?
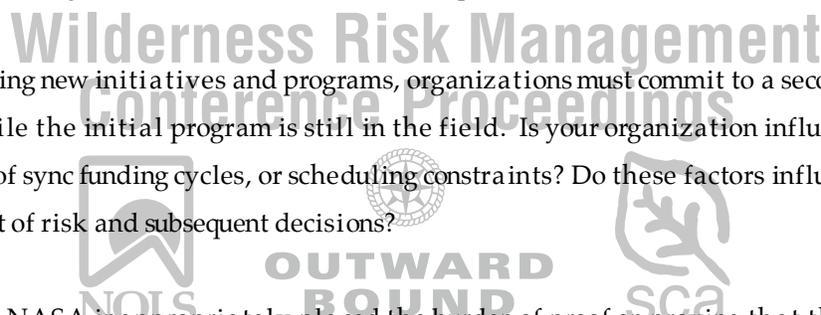
Incidents can and do happen, but we should maintain that all accidents are preventable if only in hindsight we learn how. The Columbia Accident Investigation Board (CAIB) conducted a very thorough review of the incident that we should strive to model. They sorted through an incredible amount of technical data and came to the conclusion that indeed "the foam did it." But they also concluded that the foam was not the sole cause of the accident rather there is an inextricable link between the physical cause of the accident and the culture of the organization.

Indeed, NASA operates an incredible amount of high-tech equipment and is very complex. Likewise, I challenge us to consider that many of our organizations are not as simple as they seem. Our missions may be straightforward but how we deliver them may not be. One of the qualities of a working safety culture is one that learns from itself as well as from others. The cultural parallels between NASA as a wilderness-based program and our own industry are strikingly close. The outdoor education industry can learn a tremendous amount about ourselves, our organizations, personal and organizational leadership, and the management of risks from this accident. By doing this, I hope that our industry can gain new perspectives and continue to grow our risk management philosophy and practices.

References:

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