

BEYOND FACETS

Evolving the way we think about the Human Factor

BY DR. SARA BOILEN, LIZ RIGGS MEDER, & EMMA WALKER

When John Lawton invented the first avalanche beacon at Cornell in 1968, he made a monumental leap forward for backcountry safety. His Skadi beacon, developed with significant input from Ed LaChapelle and fondly called the “hot dog,” pulsed electricity through a copper coil, resulting in sounds in the searching party’s headset that got louder as the receiving unit got closer to the buried victim. It would not be an exaggeration to say this was groundbreaking.

What Lawton set in motion at his Cornell lab has seen substantial improvements in the half-century since the Skadi hit the market. An increase in analog frequency in 1986 meant a longer range, and BCA rolled out the first digital beacon in 1997. Today, three-antenna transceivers are the norm, and we continue to see improvements in the technology every couple of seasons.

It’s time to apply that same thinking to subjective hazards we face in the backcountry.

When Ian McCammon first brought the phrase “heuristic trap” to the avalanche community at the 2002 ISSW in Penticton, he quantified something that he believed most travelers in avalanche terrain already knew. “Even though people are capable of making decisions in a thorough and methodical way,” he wrote in that paper, “it appears that most of the time they don’t.” In the last twenty years, McCammon’s work has often been used to answer that question: Why do people make decisions that have such terrible consequences?

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But McCammon never meant for his research to be an answer.

“I wrote that a long time ago,” he chuckled when we brought up his 2002 Penticton paper in a recent phone interview. McCammon believed his research would be a jumping-off point for further studies, papers, and inquiries. “Just teaching people about these traps isn’t enough to keep them from falling into them,” he told us. “My real hope was that it would be a kickstart for other applied research. I want people to say, ‘That’s great, but you know what we really need to do?’”

When Lawton built a beacon, researchers and developers saw it as an opportunity for continued improvements. Indeed, the recent recalls of several avalanche transceivers are not evidence of some inherent failing in the technology, but of a continued and concerted effort to be sure that people are using the best possible devices for the best possible outcomes. When it comes to behavioral sciences, though, we stopped at the “hot dog.”

Today, an overview of the acronym FACETS is sometimes used as a stand-in for an avalanche education lesson in and of itself. But FACETS was never intended to be a tool or educational point in and of itself: “Numerous studies suggest that merely learning a taxonomy of persuasion tricks does not make people any less susceptible to them,” McCammon wrote in 2002, specifically citing Pratkanis and Aronson (2000). “Thus it seems likely that effective human factors education must do more than provide a laundry list of heuristic traps: It must give people simple, viable tools for recognizing and mitigating heuristic traps and other decision errors in avalanche terrain.”



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The backcountry is not always a wicked learning environment.

■ MARK WHITE

It's time to evolve our thinking about human factors to the equivalent of a modern three-antenna digital beacon.

In response to McCammon's work, many educators began individually and collectively trying various methods to give students a process or the knowledge to counter common heuristic traps. Agencies and individuals created frameworks and procedures. Some even borrowed from other disciplines and adjusted those risk management strategies to apply them to risk in avalanche terrain. If FACETS is a hot dog, these frameworks are potentially two-antenna beacons. The problem is that we haven't figured out if those people have actually taken it out of the box and are using it properly—never mind whether it's actually helping them.

This leaves behavioral science in the avalanche world in its current predicament. In short, our technology and knowledge are not progressing and improving year over year. But—no less than beacon technology—our lives depend on them. McCammon built on the early work of Fredston and Fesler and Tremper, and by analyzing nearly 600 avalanche accidents and identifying common patterns and decision-making influences, attached data to their ideas and gave us a common language. Now, it's time to evolve our thinking about human factors to the equivalent of a modern three antenna digital beacon.

To help advance us to the next breakthrough, we think we should be working together to answer these questions:

1. What is currently being taught about human behavior and decision-making? What tools and processes have been developed to help people counter heuristic traps? What ideas and theories are informing how we communicate with the public?
2. What do participants actually take away from these courses? In other words, is our instruction effective? How do the end users understand our forecasts and hazard messaging communications?
3. How is this changing participants' behaviors? Are those behaviors leading to a reduction of accidents and near misses?

We are committed to taking the baton from McCammon and matching our understanding and education of human behavior in avalanche terrain with our knowledge of snow mechanics, radio technology, and rescue techniques. These questions just scratch the surface of the work to be done in this realm, and we're excited to see others involved; we know that researchers, such as those at Montana State University, Simon Fraser University, and others are trying to answer some of these questions as well. In other words:

some of this work is already happening, and we believe it's time to unify our efforts in order to amplify that work.

This fall, we will embark on this collaborative process by conducting focus groups at several regional SAWs, with the hope of a better understanding of question #1. Over the course of this coming season, we'll share the answers we uncover. The qualitative research will guide our next steps so that we can begin to build a roadmap for collaboration within our industry to address questions #2 and #3.

This work requires collaboration across disciplines. In the physical sciences, we see sound partnerships between researchers and practitioners, and we want to help our industry emulate those relationships with other fields. Our goal is to build a roadmap for collaboration within and outside of the avalanche world, with fields like psychology, education, and public health, and to draw upon existing expertise so that we can make our way to that metaphorical three-antenna digital beacon.

At the end of our conversation with McCammon, he reiterated his hope that more research will be done in this realm. "Here we are, 20 years later, and people are still dying from the same effects," he pointed out. "I really hope somebody either proves my early work wrong—or improves it immensely." ●

RESOURCES

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