

Heuristics Revealed

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Wray Herbert

On February 12, 1995, a party of three seasoned backcountry skiers set out for a day on the pristine slopes of Utah's Wasatch Mountain Range. Steve Carruthers, 37 years old, was the most experienced of the group, though they were all skilled skiers and mountaineers. Carruthers had skied these hills many times and was intimately familiar with the terrain. Their plan was to trek over the divide from Big Cottonwood Canyon to Porter Fork, the next canyon to the north.

Two hours out, they met another skiing party. A storm had dropped almost two feet of new snow on the range the day before, and the two groups stood together for about five minutes, chatting about the best routes through the mountains. A couple of skiers in the other party were a bit spooked by the foggy conditions, but they all decided that they would be okay if they chose a prudent route across the lower slopes. Carruthers' party broke trail through the sparse woods of Gobbler's Knob.

Within the hour, Carruthers was dead. As the skiers headed across a shallow, treed expanse, they triggered an avalanche. More than a hundred metric tons of snow roared down the mountainside at fifty miles an hour, blanketing the slope and pinning Carruthers against an aspen. The other party heard the avalanche and rushed to the rescue, but by the time they dug Carruthers out, he was unconscious. He never regained awareness.

The other two skiers in Carruthers' group survived, but they faced some serious criticism back home. What were they thinking? This pass was well known as avalanche terrain, and February was considered high hazard season. The chatter in the tight-knit skiing community was that Carruthers had been reckless, that despite his experience he had ignored obvious signs of danger and tempted fate.

None of this rang true to Ian McCammon. McCammon had known Carruthers for years, and the two had been climbing buddies at one time. Sure, Carruthers may have been a risk taker when he was younger, but he had matured. Just recently, while the two men were riding a local ski lift together, Carruthers had talked adoringly about his lovely wife, Nancy, and his four-year-old daughter, Lucia. His days of derring-do were over, he had told McCammon. It was time to settle down.

So what happened on that fateful afternoon? What skewed this experienced backcountry skier's judgment that he would put himself and his party in harm's way? Did he perish in an avoidable accident? Saddened and perplexed by his friend's death, McCammon determined to figure out what went wrong.

McCammon is an experienced backcountry skier in his own right, and a wilderness instructor, but he is also a scientist. He has a PhD in mechanical engineering, and as a researcher at the University of Utah, he once worked on robotics and aerospace systems for NASA and the Defense Department. He already knew snow science pretty well, so he began reading everything he could on the science of risk and decision making. He ended up studying the details of more than seven hundred deadly avalanches that took place between 1972 and 2003, to see if he could find any commonalities that might explain his friend's untimely death.

With the rigor of an engineer, he systematically categorized all the avalanches according to several factors well known to backcountry skiers as risks: recent snowfall or windstorm, terrain features like cliffs and gullies, thawing and other signs of instability, and so forth. He computed an "exposure score" to rate the risk that preceded every accident.

Then he gathered as much information as he could on the ill-fated skiers themselves, all 1,355 of them: the makeup and dynamics of the skiing party, the expertise of the group leader as well as the others, plus anything that was known about the hours and minutes leading up to the fatal moment. Then he crunched all the data together.

His published results were intriguing. He found many patterns in the accidents, including several poor choices that should not have been made by experienced skiers. He concluded that these foolish decisions could be explained by six common thinking lapses, and he wrote up the work in a paper titled "Evidence of Heuristic Traps in Recreational Avalanche Accidents." The paper has become a staple of modern backcountry training and has no doubt saved many lives.

Heuristics are cognitive rules of thumb, hard-wired mental shortcuts that everyone uses every day in routine decision making and judgment. The study of heuristics is one of the most robust areas of scientific research today, producing hundreds of academic articles a year, yet the concept is little known outside the labs and offices of academia. This book is an attempt to remedy that.

Heuristics are normally helpful — indeed, they are crucial to getting through the myriad of decisions we face every day without overthinking every choice. But they're imperfect and often irrational. They can be traps, as they were in the frozen mountain pass where Carruthers perished. Much has been written in the past couple of years about the wonders of the rapid, automatic human mind and gut-level decision making. And indeed the unconscious mind is a wonder. But it is also perilous. The shortcuts that allow us to navigate each day with ease are the same ones that can potentially trip us up in our ordinary judgments and choices, in everything from health to finance to romance.

Most of us are not backcountry skiers, and we will probably never face the exact choices that Carruthers and his friends faced at Gobbler's Knob. But just because the traps are not life threatening does not mean they aren't life changing. Here are a few of the heuristics that shaped the backcountry skiers' poor choices — and may be shaping yours in ways you don't even recognize.

Consider the “familiarity heuristic.” This is one of the cognitive shortcuts that McCammon identified as a contributing factor in many of the avalanche incidents he studied. The familiarity heuristic is one of the most robust heuristics known, and indeed one of the original heuristics identified and studied by pioneers in cognitive science. It is a potent mental tool that we draw on every day for hundreds of decisions, and basically what it says is this: if something comes quickly to mind, trust it. It must be available in your memory for a reason, so go with it. The basic rule of thumb is that familiar equals better equals safer.

That’s a very useful rule for, say, grocery shopping. There are potentially thousands and thousands of choices that must be made every time you enter your local supermarket. But what if you actually had to make every one of those judgments, comparing every kind of yogurt and every couscous brand before making a selection? You’d be paralyzed. So instead you spot the brand of yogurt or couscous you’ve bought dozens of times before; you grab it, you pay for it, and you’re out of there. No need to study every item on the shelf. It’s also a useful rule for ER physicians, airline pilots, and soccer players — people who have to make rapid-fire decisions and are trained to quickly identify familiar patterns and react.

Heuristics are amazing time savers, which makes them essential to our busy lives. Many, like the familiarity heuristic, are an amalgam of habit and experience. We don’t want to deliberate every minor choice we make every day, and we don’t need to. But there are always risks when we stop deliberating. McCammon’s avalanche victims, for example, were almost all experienced backcountry skiers, and indeed almost half had had some formal training in avalanche awareness. This expertise didn’t guarantee that they would make the smartest choices. Paradoxically, their expertise may have hurt them. They were so familiar with the terrain that it seemed safe — simply because it always had been safe before. It was familiar, and thus unthreatening. The skiers let down their guard because they all remembered successful outings that looked pretty much the same as the treacherous one. In fact, McCammon found in his research that there were significantly more avalanche accidents when the skiers knew the specific locale, compared to ski parties exploring novel terrain.

Most of the avalanches in our modern lives have nothing to do with snow. The familiarity heuristic (including the related fluency heuristic, discussed in Chapter 4) has been widely studied in the area of consumer choice and personal finance — and not just how we buy groceries. Princeton psychologists have shown that people are more apt to buy shares in new companies if the names of the companies are easy to read and say, which actually affects the performance of the stock in the short run. University of Michigan psychologists have shown that language (and even the typeface in which something is printed) can affect all sorts of perceptions: whether a roller coaster seems too risky or a job seems too demanding to take on. Even very subtle manipulations of cognitive familiarity are shaping your choices, big and small, every day.

So familiarity and comfort can be traps. But the fact is, Carruthers’ decision making really started to go wrong long before he even started waxing his skis. It started back in the warmth of the living room, when he or one of his buddies said, “Hey, let’s take a run out to Gobbler’s Knob tomorrow.” At that point, they triggered another powerful cognitive tool, known as the “default heuristic” or “consistency heuristic.” At that point, with their adventure still an abstract notion, they no doubt discussed the conditions, the pros and cons, and made a deliberate assessment of the risks of going out. But once they made that initial decision, the cold calculation stopped. They made a mental commitment, and that

thought took on power.

We have a powerful bias for sticking with what we already have, not switching course. Unless there is some compelling reason not to, we let our minds default to what's given or what has already been decided. We rely on stay-the-course impulses all the time, often with good results. Constant switching can be perilous, in everything from financial matters to romantic judgments, so we have become averse to hopping around.

But this powerful urge for steadiness can also lock us into a bad choice. Just imagine Carruthers' ski party standing out there on the slope, chatting with the members of the other ski party. At this point, they could have made the decision to turn around and go home. Perhaps the snowpack seemed too unstable, or a certain gully looked worrisome. The skiers were no doubt taking in all this information, but they were not deliberating the pros and cons with their full mental powers because they had really already made their choice. The heuristic mind doesn't like to second-guess itself once it has momentum, and these skiers already had two hours of trekking invested in this decision. It would have taken a lot of mental effort to process all the logical arguments for turning around and going home.

So they didn't. They stuck to their plan because they were cognitively biased toward going ahead rather than switching gears. They were stubborn, but not in the way we commonly use the word to mean an obstinate attitude. Their brains were being stubborn, in the most fundamental way, right down in the neurons. We default hundreds of times a day, simply because it's effortful to switch plans. We stay in relationships that are going nowhere simply because it's easier than getting out. We buy the same brand of car our father did and hesitate to rearrange our stock portfolio. And we uncritically defer to others who make decisions for us — policy makers, who make rules and laws based on the assumption that we will act consistently rather than question. Similarly, it's safer to need an organ transplant in Paris than in New York City. You'll find out why in Chapter 20, but the short answer is that it's the default heuristic at work.

There were other heuristics reinforcing the ill-fated skiers' commitment. They probably got some additional mental nudging from what McCammon calls the "acceptance heuristic." Also known as the "mimicry heuristic," it is basically the strong tendency to make choices that we believe will get us noticed — and more important, approved — by others. It's deep-wired, likely derived from our ancient need for belonging and safety. It can be seen in the satisfaction we get from clubs and other social rituals, like precision military formations and choral singing. It's a crucial element in group cohesion, but we often apply it in social situations where it's inappropriate — or even harmful, as it was in many of the accidents that McCammon studied. His analysis showed a much higher rate of risky decision making in groups of six or more skiers, where there was a larger "audience" to please.

Then the snow itself can make skiers do senseless things. Every skier knows the phrase "powder fever," which means the unreasonable desire to put down the first tracks in freshly fallen snow. Powder fever begins with the first flakes of a long-awaited snowstorm and peaks as soon as conditions permit the first treks out. The virgin powder won't last long; everyone knows that. So for a few hours it's like gold, valuable simply because of its scarcity.

Psychologists think this "scarcity heuristic" derives from our fundamental need for personal freedom. We have a visceral reaction to any restriction on our prerogatives as individuals, and one way this

manifests itself is in distorted notions about scarcity and value. Humans have made gold valuable because there is not all that much of it to go around, not because it's a particularly useful metal. So it is with new powder, and so it is with anything else we might perceive as rare, from land to free time. Scarcity can even skew our choices of lovers and partners, if we're not careful.

*These are just a few of the heuristics you will learn about in my book, *On Second Thought*. This book is not intended to be exhaustive. Some psychologists estimate that there are hundreds of powerful heuristics at work in the human brain, some working in tandem with others, sometimes reinforcing and sometimes undermining one another. As readers will see, aspects of the arithmetic heuristic overlap with the futuristic heuristic; the cooties heuristic sometimes resembles certain visceral heuristics; and so forth. The intertwining of these powerful impulses in the mind is in fact very messy, and this volume is meant as guideposts through the messiness.*