



When Ken Killip set out on the trail from Milner Pass in the Rocky Mountain National Park Wilderness Area at about 6:30 the morning of August 8, 1998, he was already in trouble. He even knew it, but he ignored the ill-defined feeling he had that he should not make the trip. Park authorities would later say that he had chosen, "one of the most remote areas in the park. It's pretty unforgiving." He'd trained for the hike to Rock Lake, but not in that sort of rugged, alpine topography. Killip, a fire fighter, had ample experience in the woods. He'd even had some military survival training. But when he found himself faced with a true survival situation, like most people, he was woefully unprepared.

The plan was to hike south along the Continental Divide and turn east at the top of Mt. Ida. From the trailhead to the 12,889-foot peak, they would gain 2,000 feet in elevation. From there, they would descend into the Gore Lakes drainage and hike another two miles to Rock Lake.

He had been following John York, who knew the way. But York was a stronger hiker, and the altitude and terrain, were taking their toll on Killip. After repeatedly having to stop and wait for Killip, York grew impatient and left him.

Killip didn't comprehend the insidious process that was taking place in his mind. He had formed a mental map, undoubtedly wrong, of where he'd been since leaving his car. Now he was forming a mental map of the route from an unknown position to a destination he'd never seen.

Then a storm rolled in, and Killip decided to wait below the exposed ridge. As four day hikers joined him, the multiple stresses of weather, fatigue, altitude, dehydration, and uncertainty were eroding Killip's vital ability to reason.

Killip considered turning back, but it had taken so long to get where he was... Anyway, he told himself, he must be close to the turn-off for Rock Lake. The hikers said they'd seen York. So Killip pressed on. He climbed south up the steep slope of what he assumed was Mt. Ida. He'd been in motion for more than twelve hours. It was about six p.m., and he'd drunk the last of his water about two o'clock. The sun was going down, and the temperature was dropping. The rain continued.

When Killip at last reached the top, he turned east but immediately saw that something was wrong: The Gorge Lakes and the rock shelf, which York had told him he'd see, were not there. It was a crucial moment, the first real-life test of his survival training. And he was about to take the final exam.

You can count on two hands the number of scientists who study the way people behave when they become lost. What they've found is that every person goes through a predictable pattern, beginning with denial and often ending in death. Survival, then, is a state of mind. And it begins right where Ken Killip was, on that unfamiliar ridge, teetering between two courses of action: He could deny that he was disorientated and continue hiking; or he could admit that he didn't know precisely where he was and retrace his steps.

He still had options. But his circle of confusion had expanded by an order of magnitude. He had dropped off the continental divide before reaching Mt. Ida and was looking at a parallel drainage about a mile north of the Gorge Lakes. But few people ever retrace their own steps. Perhaps *Homo sapiens* simply has too deep an instinct for wayfaring.

Scientists have not yet agreed on a uniformly accepted model for the stages that people go through when they're lost--it's a fairly immature discipline, and there is a lot of individual variation. Some skip or repeat certain steps or reorder them. But most cases will reflect a general pattern something like this: In Stage One you deny that you're disoriented; in Stage Two you panic when you admit that you're lost; in Stage Three you calm down and form a strategy; in Stage Four you deteriorate both mentally and physically, as your strategy fails to get you out; and in Stage Five you become resigned to your plight as you run out of options. It is perhaps no surprise that the pattern closely resembles Elizabeth Kübler-Ross's stages of dying: Denial, anger, bargaining, depression, and acceptance.

Killip started down, as darkness and rain fell around him. There was the sense of urgency coupled with an irrational conviction: Certainly, he would see Rock Lake at any moment. But in a short while, he found himself blundering into dense timber in total darkness, his mind reverting to the simplest thoughts and strategies: Water. Sleep. No alarm bells were sounding in his brain--those functions had already shut down. His circle of confusion was expanding rapidly.

A chance flicker of lightning ignited reflections on a pond. Parched with thirst, Killip headed for it. He didn't even see the bear that drank there. He used his pump to filter some water and prepared to spend the night.

What made it worse was that he did not know how confused he was. He did not have what psychologists call meta-knowledge, which allows you to assess the quality of your own knowledge. When Killip at last saw the bear, he reacted with anger instead of caution. Anger is often the handmaiden of panic as you enter Stage Two. Although he was alone and had no way to get help if he were injured, Killip charged the bear, shouting and waving his jacket. Fortunately, the bear left.

Killip had food but no shelter. He carried garbage bags but was too confused to use them. In his muddled thinking, he did not make a fire, because he was a fire fighter and park regulations prohibited open fires. Still, he was able to rest, re-hydrate, and even to heat a meal on his camp stove. Unfortunately, in a wilderness survival situation, things don't just suddenly get all better.

Until he walked out, was rescued, or died, he was doomed to go through those stations of the cross. When he awoke, he was somewhat refreshed, and so he seems to have reverted to Stage One, denial, for a time. For several hours, he hiked deeper into the wilderness, exhausting himself. Now his circle of confusion had expanded to the point that he had no means of finding his way to any known location. Somehow the message penetrated to his muddled brain that the last door of the wilderness had closed behind him. "This is the point at which running or frantic scrambling may occur...", wrote William Syrotuck, who pioneered the study of lost people. "What they decide to do may appear irrational to a calm observer, but does not seem nearly so unreasonable to the lost person, who is now totally disoriented."

When he was 15, Bradley Woodbury was lost in the dense Cape Breton woods in Nova Scotia for three days. He gave a vivid description of what happened when he realized that he was lost: "The first feeling I had was a sudden urge, like an adrenaline rush, to start running, breaking things, trying to get that rage out of my system. My heart started beating really fast, and I just felt like I had a lot of strength and that I could do anything."

Killip began scrambling up a steep scree slope, determined just to get the hell out. Going in the wrong direction in a rainstorm, then, with fury casting caution to the wind, Killip lost his footing and went tumbling down the long grade. As he was being battered on the sharp rocks, his map and rope were snatched away. His knees and ankles were badly battered and torn. At last, he managed to grab a branch, wrenching his shoulder out of joint, but finally bringing himself to a stop. From there, he slid carefully down to a small pond, where he removed his boots and soaked his ankles. His injuries were worse than he thought: Severely pulled muscles in his shoulder, two seriously injured knees, and two badly sprained ankles. Despite wearing boots, several of his toenails had been ripped off. He had no choice but to stay the night.

On the third day, as Killip awoke in excruciating pain, he finally emerged from his see-saw between the first two stages. He progressed to Stage Three: Strategy.

As Syrotuck put it, "If they do not totally exhaust or injure themselves... they may eventually... decide on some plan of action."

" Despite his injuries, despite having no idea where he was, he told himself that he could return to the car. He began hiking (in the wrong direction) through forest so dense that he had to remove his backpack to squeeze through. He passed within a quarter mile of Rock Lake.

After a while, exhausted by the dense forest, he began climbing again. But a storm forced him down, where he took shelter beneath a tree among the rocks. With all his energy gone, he fell asleep. He awoke in the afternoon, wet and shivering. He was shocked to find that hailstones covered the ground to a depth of twelve inches. He was so impaired that he had slept through a hailstorm. He was now deep into Stage Four: Deterioration.

Since the body loses heat about 200 times faster wet than dry, hypothermia is the leading cause of death in survival situations. There is no national system of reporting such incidents, but the numbers that are available are sobering. According to a study of SAR operations endorsed by the National Association for Search and Rescue (NASAR), nearly everyone who'd been exposed to hypothermia for 24 to 48 hours was found dead. It's possible to die in just a few hours. And there have been cases of people dying when the temperature was 70. Syrotuck reported that half of all persons who died while lost in the wilderness were dead within the first 24 hours, 74 percent were dead the second day, and 92 percent had died by the end of the third day.

Less than 48 hours before, Killip had been a healthy, competent, well-equipped hiker, full of confidence and experience. Now, through his own devices, he had managed to transform himself into an injured, dehydrated, undernourished, hypothermic victim with little ability to reason effectively. As he waded through ankle-deep hailstones, he was at most a few hours from death. With narrowing options and widening confusion, every move now would constitute a life-and-death decision.

Anyone can get lost. But not everyone can survive the experience. "The hardest thing is to admit that you're lost," said Bill Antel, who still remembers vividly the five freezing nights he spent in the Breton Woods of Nova Scotia 30 years ago. "I figured that I'd wake up Monday morning and I would be around," he said, "but I wasn't betting too much on Tuesday.

I knew I was getting more tired, I was cold, I was wet, and I knew that my time was starting to run out." He was rescued. A small navigational error cost him five toes.

The most vexing questions about survival are these: How do people get lost in the first place?

And what determines who will survive the experience and who won't? You don't have to make a big mistake to find yourself in a survival situation. "Lost people often get REALLY lost," said John Gookin, FCSAR Operations Chief for NOLS, "when they make a small navigational error, get excited about it, and radically over-correct. It is like many of the one-car accidents in Wyoming," where he is head of SAR in the southern Wind River Range. "They stray to one side of the road, get emotional as they respond to the urgent problem, and roll their vehicle because they over-correct."

It would seem that a level head, confidence, experience, and training should all help someone to survive. But survival situations are fraught with paradox. Kenneth Hill, who has built on and extended the work of Syrotuck, is a professor of psychology at St. Mary's University in Halifax, Nova Scotia. He has spent the last 15 years studying how people behave when they get lost. In the course of his research, he has grouped people into categories, such as, hikers, skiers, hunters, children six and under, children six to 12, the elderly, Alzheimer's patients, and so on. The category that has far and away the highest survival rate is children six and under, "The very people we're most concerned about," said Hill.

Bubby Rogers, 3, for example, spent three nights out in freezing weather while lost in a Nova Scotia wood and suffered only mild frostbite. Despite the fact that small children lose body heat much faster than adults, they survive--better than experienced hunters, better than physically fit hikers, better than ex-military men. And the group with the worst survival rate is children six to 12. Clearly, those youngest children possess some secret that trumps all the knowledge and experience embodied in other groups. And when they reach the age of reason--the age when the left and right brain halves begin talking to each other--something happens that makes children six to 12 far more vulnerable. While scientists do not know how that can be true, some compelling answers suggest themselves.

Young children have no concept of two-dimensional space. They don't understand selecting a direction and traveling to a particular place. So they don't run. In addition, they follow their instincts. If it gets cold, they'll crawl into a hollow tree to get out of the weather. If they're uncomfortable, they try to get comfortable. If they're tired, they rest, so they don't become exhausted. If they're thirsty, they drink. "Like animals, they react based on the rule of what happens most often," said a child psychiatrist.

Small children do not create mental maps, do not try to apply logic, and accept the evidence of their senses. They do not experience denial. They do not have the idea of heroic action that bedevils most adults. Adult survivors uniformly report their experiences as heroic tales of overcoming enormous obstacles, of victory over adversity.

Children aged six to 12, on the other hand, will panic and run. If the trail peters out, they'll keep going. In fact, they'll run until they fall over, in some cases even crossing roads without stopping. And it's easier to succumb to hypothermia when exhausted. Once they reach a certain age, their chances of survival become very poor. "It's a huge mess," said the psychiatrist. "They have this new tool of reason and logic, but they don't yet know how to use it."

One experiment Hill conducts involves taking a group of university students into a small forest in Halifax, Nova Scotia, which is "notorious for its maze of poorly-marked trails," he said. "It's about the size of a large city park." Hill leads them in, and then asks them to lead him out. In 15 years, only one person has succeeded. It's hard to believe how easy it is to get lost. Hill has seen farmers get lost on their own property, straying nearly 12 miles from home, and construction workers get lost while clearing brush for a golf course. It almost seems as if someone up there is trying to teach us a lesson in humility: The more confidence you have, the more likely you are to get turned around.

Dan Montello, a U.C. Santa Barbara researcher who studies being lost, said, "In all cultures at all times, the threat of getting lost has been such a serious one, very often life-threatening, that it figures in our literature, our art, in our legends, in our myths, in our architecture. It's everywhere."

Edward Cornell is a professor of psychology at the University of Alberta in Edmonton, where he studies the behavior of people who are lost. "Being lost is a universal human condition," he told me. "But there is a very fuzzy area between being lost and not lost."

Hill says that in reality, the only time most people are not disoriented to some degree is when they're at home. Even traveling highways, we are constantly lost. That's why there are signs. "It rarely occurs to us," he wrote in his book Lost Person Behavior, "that we lack 'real' spatial orientation, such as knowing... the layout of the land. Rather, we may have the illusion of being oriented." That effect is far more profound in the wilderness. "If you ask hikers on a trail to point out where they are on a map at any given moment," Hill said, "they are usually wrong."

There are a number of factors that help to explain how that can be so, beginning with the human instinct to form mental models. While our senses are capable of perceiving the world around us, the human mind is not capable of processing it in all its complexity. Instead we create simplified models. "We are constantly maintaining a model in terms of our position," Hill said, "and most of the time it's wrong."

Here's how it works: Suppose you're searching the house for your copy of Moby Dick, and you remember it being a red paperback book. When you search, you don't examine every item in the house to see if it's Moby Dick. In fact, your mental model of the red paperback book allows you to screen out nearly everything you see until, at last, a red book blossoms in your field of vision. If, on the other hand, you're wrong, and the book is actually a blue hardback copy of Moby Dick, chances are you won't find it even if the title comes into view. Everyone is familiar with finding something "right under my nose." A faulty mental model is the explanation. It's the reason card tricks and magic acts work. You see what you expect to see. And you see what makes sense. That's why confidence, training, experience can work against us.

Being lost is a complex process, involving a whole range of emotions and behaviors as both cause and effect. Being lost is not a location, it is a transformation. When you get lost, you can easily become your own worst enemy. And your battle for survival is largely a battle with yourself. As Gookin put it, "Sometimes lost people really are out of their minds."

I watched a video tape of 15-year-old Bradley Woodbury as he was led out after three days lost in the Breton Woods. I've never seen anything quite so haunting before. It reminded me of the faces of men coming out of battle. He had that 1,000-yard stare, as if he'd just looked into the eye of God. The rescue workers who escorted him out knew: He'd been somewhere, but it wasn't in any damned woods. It was a place that few of us ever see.

Hill said that being lost "makes you afraid. And when you're afraid, you can't solve problems. You can't remember the simplest things [such as]: Which direction did I turn at that last intersection?"

The Yerkes-Dodson Law dates back to 1908 and correlates the effect of stress on mental efficiency. If there is too little stress, a person is not motivated. If there is too much stress, he's not efficient. Moderate stress has beneficial effect on the ability to solve problems. Different tasks reach their peak of efficiency at different levels of stress. In high-anxiety, high-stress situations, most people are incapable of performing any but the simplest tasks. In addition, stress erodes the ability to perceive--you see less, hear less, miss more cues from the environment. Under stress, your field of vision actually narrows. Then mental models take over, as we ignore clues from the environment that might help re-orient us. The mental model is unbelievably strong. "I saw a man I was hiking with smash his compass with a rock," Hill said, "because he thought it was broken. He didn't believe we were heading in right direction."

No wonder we try to bend the map to fit the world rather than admit that we're lost. Cornell told me, "Whenever you start looking at your map and saying something like 'Well that lake could have dried up,' or 'That boulder could have moved,' a red light should go off, because you're trying to make reality conform to your expectations rather than seeing what's there. In the sport of orienteering, they call that bending the map."

And if we proceed with that delusion, there will come a point at which we can no longer deny the evidence of our senses. "It's not something that happens to somebody immediately," Hill said.

"First it's a sense of disorientation: Uh-oh, I'm not in Kansas anymore. Then the woods starts to become strange... Landmarks are no longer familiar."

The mind's functioning--indeed, our very sanity--depends on a reasonable match between our mental model and the world around us. When disorientation progresses past a certain point, there is a dawning realization as the mental model becomes more and more sharply distinguishable from the environment. Since most of us are not conscious of the process, we have no way to reflect on what's happening to us. All we know is that it feels as if we're going mad. Then at last the full weight of the incongruity lands on us, and it can be so jarring that many people fall into a state known as woods shock.

Hill said, "Woods shock is a term for the fear that is associated with complete loss of spatial orientation. It is unique. It has very little similarity to any other kind of fear that has ever been studied. None of the rational abilities that the victim of woods shock had before being lost are useful to him anymore."

The term Woods Shock dates back to at least 1873, where it appeared in the journal Nature. It refers to that moment when "things get progressively more unfamiliar and mixed up," as you "develop a feeling of vertigo, the trees and slopes seem to be closing in and a feeling of claustrophobia compels you to try to 'break out,'" wrote Syrotuck in his classic monograph An Analysis of Lost Person Behavior.

Again, learning, experience, even instincts, will tend to work against us, because they operate in the service of the model, not the reality. Gookin wrote in the NOLS Staff Newsletter that "more experienced people are often more error prone... Education and preparedness can actually make someone more dangerous."

John Sterman of MIT studied the ability of corporate executives to learn and concluded that in even moderately complex situations, experience actually hurts performance. He noted "large and systematic deviations from rational behavior, little evidence of adaptation, and less time [spent] making their decisions." The more experience they had, the worse it was. It explains how large corporations, such as IBM and Intel, can get lost.

Even Gookin, with all his experience in SAR, admits how difficult it is to do what's right in the wilderness. Hiking solo in Yosemite, which he knew to be ill-advised, he decided to take a

shortcut through a fourth class col to save five miles on his return. "As I boot-skied down untracked snowfields and then thrashed through heavy alders and willows, I knew that this hike was well beyond my usual comfort zone, and it was haunting me." Undoubtedly, the only thing that saved Gookin from his bad decisions was that he knew he was in trouble and was more cautious than ever. Without that level of meta-knowledge, he might have met a disastrous end. As Gookin later wrote, "Solo hiking can be fatal."

Mike Turner learned that lesson when he went on a two-week solo hike in Gookin's SAR area in 1998. Despite the fact that Turner was experienced, knew the area, and even left an itinerary behind, SAR were unable to locate him. On day 21, Turner's dog showed up in town at about the time that a hiker stumbled onto his body. Like Killip, Turner had missed his route by one drainage. He was found with his left leg pinned beneath a boulder about 30 feet from a lake. There he lay, unable to reach the water, for nine days. He tied parachute cord to a soda bottle and threw it in the lake to retrieve water, but at some point the bottle became wedged in rocks and he could no longer pull it in. As Gookin reported, "A NOLS course had been through that drainage the week before, and any single hiker in that group could have helped Mike pull the rock off of his leg." Turner died of exposure.

Most people who travel in the wilderness--especially men--find it difficult to conceptualize having to face a true survival situation. But more people are going deeper into the wilderness than ever before. While statistics on the subject are scarce, the experts agree that not only are more people getting lost, they are doing so in more and more remote places, perhaps in part because of technology--everything from fat skis to all-terrain vehicles. And when that slender reed of technology breaks, it can leave us stranded farther from help than any time since we navigated the land bridge across the Bering Straits.

John Gray works ski patrol on Big Mountain south of Glacier National Park, where he guides backpacking trips in the summer. When visitors go missing, he is one of the people who helps to find them. "We're certainly seeing a rise in avalanche deaths," he said. There were 33 this year in the U.S. "It's incredible where snowmobiles are going these days. When Congress passed

legislation to protect the wilderness, it didn't bother to make certain areas off-limits because nobody thought anyone could get there. With the faster, lighter, snowmobiles that have bigger engines, people go everywhere now."

The truth is, no one knows how he'll react until he's in an actual survival situation. On August 4, 1999, Raffi Kodikian, 26, got lost in the Carlsbad Caverns in New Mexico while camping with his friend David Coughlin. For three days, they wandered with no food or water. Unable to stand it any longer, Coughlin begged Kodikian to put him out of his misery. Kodikian obliged him, stabbing his best friend in the chest twice. Coughlin was rescued that same day, having never gone more than a few miles from the mouth of the canyon and the road.

Steven Callahan, who was adrift in a five-and-a-half foot dinghy for 76 days between the Canary Islands and the Caribbean, wrote in his book Adrift, "I carefully watch for signs of mutiny within myself." This is something you can count on: Everyone who dies out there dies of confusion.

Ken Killip groped his way down through a foot of hailstones toward a small pond in a semi-delusional state. By chance, he had a pair of waders with him, and he had the presence of mind to change into dry clothes, put on his waders, and begin walking around the lake. It was a lucky break in his clouded thinking.

Many people in the last stages of hypothermia disrobe completely. One man was rescued wearing nothing but his wristwatch. Hill told me, "I have photos of a man who settled into a cozy bed of pine needles after removing his shoes, pants, and jacket, and setting his wallet, etc., on a nearby rock. Looking at the photos, he seems so peaceful, it's hard to believe he's dead. The photos have special significance for me, because I helped coordinate the search. Whenever I start to believe I'm some hot shit SAR expert, I pull the photos out and I'm over it. "But Killip managed to rally his resources and use the garbage bags to build a shelter where he could spend the night.

By day four, Killip was fighting to avoid progressing to Stage Five, Resignation, in which the victim gives up and will quickly die if not rescued. Fortunately, the sun came out, and it gave him a burst of energy. He dried his things and at last began assembling a signal fire. Indeed, Killip

began seeing helicopters and emergency vehicles up on nearby Trail Ridge Road. (To reach it, he'd have needed technical climbing gear.) At one point, a helicopter passed directly overhead, but like so many lost persons, Killip didn't believe that anyone was searching for him.

"You get into some really crazy thinking," Killip later told me. "You don't realize that you've started talking to yourself." He said he began feeding his rations to the marmots just to get them to come close. Then he'd talk to them. So the scene in the movie "Cast Away," where Tom Hanks makes friends with a basketball, is not that far-fetched.

Killip spent his fourth night in his garbage bag shelter, and the next morning, watched in horror as a helicopter passed right over him, so close that "I felt like I could throw a rock at him." Although he had lit his signal fire, the wind blew the smoke through the trees, and the pilot didn't see it.

"Then he turned and flew away. It was almost breaking my spirit." Teetering on the edge of resignation, Killip was stunned to see trackers come at him out of the woods. When the helicopter had flown over him the last time, the pilot had seen Killip's blue parka, which he'd hung on a tree to dry. He was rescued.

Killip, who lost 30 pounds in five days, is still recovering from his injuries. A full two and a half years after the incident, he had ACL reconstruction and was in therapy for it. His shoulder, ankles, and left knee cartilage were still bothering him. All that from a case of Wood Shock, which began at a point when he still could have backtracked.

And while it's tempting to criticize Killip, once Woods Shock sets in, the victim is destined to go through all the stages of being lost until some event--such as rescue--breaks the chain.

Anyone who enters the woods with the idea that he can't get lost may be taking the first step toward a dramatic fight for survival. I know. It happened to me.

One bright sunny day, with autumn light skinning the bark off of birch trees along Swiftcurrent Lake, I went for a walk in the park with a friend named Paula. We saw clouds forming at the higher elevations, but the weather didn't concern us: We were hiking the half-hour Nature Trail. We didn't even wear packs. We were more or less taking a walk in our own back yard, we

thought. Only our house was the Many Glacier Hotel, and our back yard was Glacier National Park.

When we came to the first fork in the trail, we felt so good that we changed our plan and headed up. We had now entered the first stage: Our circle of confusion blossomed to encompass a wider area. We were on an unfamiliar trail, and with no compass or map, we had no idea where we were going. Still we expected to be back at the Park Café in St. Mary's for a breakfast of hot apple pie.

An hour out, a mist settled and the sky had gone white and hazy. But we ignored it, gliding easily along, as the old forest drew us in by seemingly inconsequential increments.

At the next fork, instead of turning back, we headed toward Grinnell Lake. The air had taken on a slight chill, but we'd worked up a sweat, and it felt good. Certainly we could do a few more miles. Yet on we plunged. When the first drops of rain began, we slipped into our \$4.95 gift-shop ponchos--glorified garbage bags. Subtly, our physical condition was changing. We began feeling wet and cold, as we moved imperceptibly closer to Stage Two, panic. It was unconscious, of course, but we felt a growing sense of urgency, knowing that something was wrong. If someone had asked me at that point, I could not have described the ill-defined feeling. But these were the facts: We were walking into the whirling blades of a mountainous weather machine at the end of the warm season. We had little idea where we were and no way to learn. We were wearing light cotton clothing. But rather than backtracking, we felt more urgently that we had to reach Grinnell Lake as quickly as possible. It was pretzel logic, but I believe the thinking went like this: The more quickly we got to Grinnel lake, the sooner we could turn around and go home. It's stunning how quickly mental condition deteriorates in the wilderness.

At last, we stood beside the lake, its gray, metallic surface pock-marked with rain. As we hastily took the obligatory photographs of ourselves against the backdrop of waterfalls cascading from rock walls, which were now vanishing into vapor, the soft hissing of rain was suddenly replaced by the horrendous clattering of hailstones.

As I stooped down to pick one up, I was mesmerized by the icy water pouring off my hood and down into my boots. All at once, I noticed a surreal quality to the thunder tearing across the sky, the lightning sparkling on rim-rock. I looked over at Paula and saw that her face was pale and blotchy, her expression set with worry. Her teeth had begun to chatter. I felt a cold dread like plaster in my stomach. We began to run.

As water squirted out of our boots at every step, I flinched at each new blast of thunder, as if someone were shooting at us. After running some distance, we reached a fork. She went one way, I went the other, and then we turned back to look at each other in horrified amazement.

"It's this way," Paula insisted.

"I thought we came from that way."

And somewhat more feebly, she protested, "It looks different." Indeed, it does.

The wilderness is a door that is always closing behind you. You expect the way out to look the same as the way in, but it never does. The land is always changing subtly behind you. The weather only makes it worse.

Now we entered Stage Three: Strategy. We were going to figure out a direction to take. It was creative geography at its best. Our reasoning: If we could only agree, then we would certainly be right. We were just setting foot on one of paths, which later analysis showed was probably a game trail and led the wrong way--up the mountain and deep into the park--when we heard a human voice.

Without so much as a glance at each other, we crashed through a few meters of dense forest toward the voice and found ourselves on a dock, where a tourist boat had just pulled up. We brushed past the startled face of the park ranger and scrambled on board. It was the last boat of the day. As it backed away from the dock, layers of ice accumulated on the windshield. The hail had turned to a white-out of freezing rain. It was only when I went to survival school that I learned how really close we'd come.

There are two schools of thought on survival training, one modern, the other primitive. Byron Kerns's Mountain Shepherd Survival School in Virginia is based on his experience as an Air

Force Survival School instructor. Mark Morey's Vermont Wilderness Survival School in Bratelboro is based on primitive skills. I went to both, and while they seem superficially different, they share important similarities.

Kerns runs his school in a mountainous area near Lynchburg, Virginia. The woods are dense, confusing, and rugged, cut through with streams, cliffs, and rock ridges and beset by voracious ticks and venomous snakes. It is a perfect place to get lost. During my time with Kerns, I learned how to assemble a "ready pack," a fanny pack containing everything required to survive for at least three days in the wilderness. Thus equipped, we headed out to learn fire craft, emergency shelter, map and compass, how to obtain drinkable water, signaling techniques, and even how to eat bugs if I felt the need. It was straightforward, practical, and after a bit of practice at home and in the woods, I was confident that I'd never again find myself in the dangerous situation I'd been in on Grinnell Lake.

But the most important part of my experience with Kerns was something more subtle, something I scarcely noticed at the time. Kerns was a big macho guy with 12 years of military experience, including a stint with the Marines. When I saw him the first time, sauntering out wearing a 12-inch Panamanian machete, I had a certain impression of who I was about to meet. But Kerns is soft-spoken, polite, cheerfully earnest, and gentle to a fault. He moves slowly, never hurries, and is always carefully assessing himself and his environment. Even after a lifetime in the wilderness, each time he enters the woods, he approaches it with a deep sense of respect and humility, like a man interacting with a magnificent, dangerous, and unpredictable creature. Respect and humility: Write it large upon your wall. Those two little words could have saved Ken Killip from a world of pain.

"Guys want to stay up the night before a trip and drink and tell lies," Kerns said. "I tell them to have a what-if session instead. Make up scenarios and solve them. What if I break my leg? Who's had first aid training? What's our bail out scenario, our safety bearing? I'll tell you, there's a thousand things that can go wrong, and if you think of fifty of them, you're a genius, and I'm no genius. But I am ready."

Kerns wasn't always that way. Early on in his Air Force days, he took a group of pilots into the mountains near Spokane for survival training maneuvers. "I was a greenhorn and just misjudged our situation," he told me. He was also pretending to be the macho drill instructor: Go, go, go, push, push, push.

They had been crossing a vast snowfield, "and the weather was nice, in the forties. But the snow was slushy and people were getting wet, finding it difficult to travel in their snowshoes. They were starting to fatigue, and when I saw that we weren't going to make our point, I just kept driving them and driving them, which I now realize was a mistake." The wilderness is no place to try to prove how tough you are. "It started turning colder," Kerns continued. "And then darkness hit just like a curtain coming down." Even though he was an Air Force Survival Instructor, he did not fully appreciate the severity of hypothermia. "Suddenly everybody wanted to give up," he said. "They just sat down and lost all their will," which is both a symptom and a side effect of hypothermia. "As the leader, I had put myself in a very bad situation with these million-dollar pilots. And all at once, it hit me that I might actually lose them. They could die. I fell to my knees and I prayed. Faith is a very important thing in your will to survive."

Kerns said, "Then I got up and stumbled through knee-deep snow and ran into a barbed wire fence. It was almost as if I'd been guided to it. I ran my hands down it, and sure enough, there was a beautiful cedar fence post. I ripped it out of the ground, shaved it down to tinder and kindling, and got the fire going. It's amazing to see what fire can do. You're out in the woods, you're cold, you're lost, you're lonely. But the minute you light that fire, you're home, the lights are on, and supper's cooking. It made a world of difference going from complete darkness to light and warmth. It just turned everybody around."

Kerns said that he learned many lessons that night. "That experience is what taught me to carry everything in my pack. Have that tinder and have everything ready to make that fire. If it's 50 degrees or below, get it in your pack." Being prepared to survive is not too complicated for anyone, but it is too simple for some.

Kerns learned something else that night, too. His mastery and confidence in taking control and demonstrating that he could handle the situation had turned the pilots around even more than the fire. In addition, he was that much more able to save himself because of the fact that he wasn't thinking about his own well being. His only concern was for his pilots.

That lesson was driven home to me again and again: Helping someone else is the best way to ensure your own survival. It takes you out of yourself. It helps you to rise above your fears. You're now a leader, not a victim. And seeing how your leadership and skill buoy up others will give you more focus and energy to persevere. No matter how far down the stages of being lost you progress, this may ensure that you never reach the fifth stage of resignation. It is no surprise that many people who have had the experience of being seriously lost go on to become the best professionals on SAR teams.

It's just one more reason that you never go out alone, and never separate the group. There is a much higher survival rate among people who are lost in groups than people who are lost alone. One day, as we were hiking deep in the backwoods of Virginia, Kerns suddenly began shivering and refused to go on. "Help me," he moaned, "I'm freezing. I can't walk any farther."

I whipped out my large orange plastic garbage bag with the face hole already cut in it and put it over him. I had him kneel on a bit of foam rubber to insulate him from the cold, wet ground. I said, "I'm going to get you out of this. I have the will and the skill, and you're going to be just fine."

When you're working to save someone else, it's amazing how the tricks of survival just come tumbling out. Suddenly, you know more than you thought you knew. Continuing to reassure him, I used materials from my ready pack to erect an emergency shelter: A plastic drop cloth over parachute cord tied between two trees. Pebbles and acorns made buttons to tie off the fabric to my tent stakes. Within twenty minutes, we had shelter and a nice fire, and when he asked for a cup of tea, I had my canteen cup ready to boil water. From there, we could have done anything. "The most terrifying thing in the world to me," Kerns said after our simulated emergency, "is to be in the woods and not be able to help someone who needs my help. Not to have the knowledge, the skill, and the tools to make things come out right." Kerns gave me a checklist to use in a

survival situation. These are the matters you must attend to in their order of importance: Positive Mental Attitude, First Aid, Shelter, Fire, Signaling, Water, and Food.

When I saw that, I was bothered by that first one: How is thinking good thoughts going to get me out of this fix? I'd rather have a chainsaw and a cheeseburger. A cell phone would be nice, too. But gradually, after several months, it began to dawn on me that everything issues from the wellspring of the mind. The mind puts us in harm's way, and only the mind can snatch us back. Every expert I spoke to said the same thing: What's in your head and heart is far more important than what's in your pack.

"The first thing you do when you realize you're turned around or stranded for some other reason is stop. It's an acronym, S-T-O-P. Stop, Think, Observe, Plan. That's your first order of business," he said. "Then you check the physical condition of your people: Is someone sick? Is someone hurt? Do you need to evacuate? If someone has broken a leg, for example, is there bone showing? Before you do anything else, you will have to stop the bleeding or splint the break. Otherwise, while you're building a nice shelter, your partner might die of shock and blood loss." Similarly, since hypothermia can advance rapidly, you don't want to be out collecting firewood before taking steps to conserve body heat. "Shelter begins with your clothes," Kerns said.

Steve Foster of NASAR said, "You don't even need to build a shelter if you're dressed properly to begin with. It is significant that we rarely get a person dying from hypothermia in winter. They're already dressed properly. It's in fall or spring that they're taken by surprise."

"Most people dress to arrive, not to survive," Kerns said. "After that, you can think about your fire craft." While you may not need fire to survive, "seeing that light as the sun goes down sure is nice," Kerns said. "And a hot cup of tea will help warm you up."

Besides, a fire is useful for signaling. If Killip had built a fire, the lookout just above him on Trail Ridge Road would have spotted it the first night and he'd have been rescued--most likely on the second day. In some cases, signaling goes to the top of the list, as it would for example, when someone is ill, there's no danger of hypothermia, and an airplane is flying overhead. "Stop, think,

observe, plan," Kerns repeated. "That means you have to be flexible and use your head and your imagination."

In most cases, water and food are certainly less urgent than other considerations. For example, you don't want to be crashing through the woods trying to find a stream while a helicopter is flying over. But staying hydrated and properly nourished are important factors in keeping warm and in thinking clearly. As Gookin said, "Food stress never helps a situation."

Foster said, "We've never found somebody starved to death." That may be true. But for a person who is used to eating three or four thousand calories a day, hunger can lead to terrible decision making. Tom Jones was found by rescuers up in the branches of the only tree on a desert ridge near Dinwoody Lake in Fremont County, Wyoming. "He must have been out of his mind," said the searcher who found him. Jones had run out of food several days before. Unless you practice fasting, it's a very good idea to carry enough food for an emergency.

All of those things on the survival checklist take time and energy. A survival situation is a ticking clock: You have only so much stored energy (and water), and every time you exert yourself, you're using it up. The trick is to become extremely stingy with those scarce resources that you do have, investing only in those efforts that offer the biggest return. Hence, you never shout to attract attention but instead blow a whistle. As one SAR tracker said, "If you think Wall Street is conservative, you should see us." People greatly underestimate the need for rest in survival situations. While Kerns and I were doing map and compass exercises, he would frequently just stop and look around at the woods, discussing various considerations with me. I'd be thinking: Let's go, let's go, I know the way. And he'd just stand there. Now I understand why. Foster said you should operate at about 60 percent of your normal level of activity and rest and re-hydrate frequently. If the weather is cool, and you're sweating, you're working too hard.

The main thrust of Kerns's training was to prevent me from getting lost again. Interestingly, in Hill's experience, people who get lost once do not tend to get lost again, which accounts for Kerns's telling me, "Everybody ought to get lost once in a while." I had already done that, so Kerns and I spent most of our time on map and compass exercises to make me woods-proof.

Hiking off-trail, bush-whacking through dense forest in rugged terrain, I was surprised to see how easy it was to come out at a precise spot simply by carefully plotting an azimuth on the map and then following it. Kerns said that if I planned a trip carefully, set up a safety bearing, and kept a clear head and a pure heart, there was no reason ever to be lost. Yet you could be stranded by other circumstances, a flooded river, a snow storm, an injury. Then he, like dozens of other experts, said I should stay put and help would come. The problem is: I'd read so many cases where that strategy didn't work.

David Boomhower went on a 10-day hike on the Northville-Lake Placid Trail in New York State in 1990. He traveled alone, and although he had done a lot of planning for the trip, he ran out of food. So he looked at his map and decided that Sucker Brook Trail would take him to a road, where he could hitch-hike to town. He was not in trouble yet, but he had begun putting together the elements of a plan that would end his life. He traveled alone and took a shortcut. Although he had left his route with authorities, now they'd have no way to know where he was. Without thinking it through carefully, he had effectively eliminated all his options. All he needed now was one surprise, and he'd be in big trouble.

He got more than one. The unfamiliar trail was far more rugged than he'd expected. It crossed a stream 14 times before it petered out. Then the weather arrived. Although he was only 3.5 miles from the road, he could not figure out how to reach it. Even so, when he admitted to himself that he was lost, he did the right thing: He made camp and awaited rescue.

The search for him wasn't begun until he'd been gone 13 days and was three days overdue. Like so many searches, it ended while he was still alive. More than once, Boomhower saw the airplane that was ferrying the state troopers and volunteers who made up the SAR teams, but he evidently didn't know about signal fires. At dark he would light the lantern he carried, but the plane didn't fly at night. There is an annual July 4<sup>th</sup> fireworks display at the Lewey Lake campsite, and he reasoned that he'd hear it and be able to walk in that direction. He would have, too, but for the fact that the fireworks were cancelled (for the first time in a decade) by the same rain that was plaguing Boomhower.

He kept a diary, gradually becoming weaker and weaker. One of his last diary entries was, "I wonder if anyone has died out here, waiting, believing in that 'stay calm and help will arrive' bullshit." David Boomhower set out June 5<sup>th</sup>, and his body was found accidentally October 20<sup>th</sup>. He lasted 55 days, according to his journal.

The truth is that most of our beliefs about search and rescue come from movies and television, and in many parts of the United States, they are myths. As I began to look into search and rescue, I was shocked to find that if you do get lost, it's not at all a foregone conclusion that someone will find you--"or even search for you," Hill added.

If you walk just three miles, you create a search area of 28 square miles. That would take 264 searchers 12 days to cover thoroughly. There are no national SAR standards. While there are many ASPN standards concerning technical rescue (such as of mountain climbers), there are none for the 'S' part. The local sheriffs, state police, and fire departments, which conduct most searches in the US, often delay employing skilled trackers, dog handlers, search coordinators, or equestrian teams (who call themselves "unpaid professionals") until well-intentioned "spontaneous volunteers" have trampled the signs, tracks, and clues that might have led to the missing person.

If you want to know who's in charge of search and rescue in this country, the answer is: Nobody. So the question of whether or not to stay put very much depends on where you decide to get yourself lost. "Every inch of Nova Scotia I'd stay put," Hill told me. In 1986, a 9-year-old boy, Andy Warburton, was lost in Nova Scotia, prompting a reorganization of all SAR activities in Canada. As a result of the shock that followed his death and the scandal that followed revelations of scarcely-credible incompetence on the part of the searchers, Canada now has the best SAR in the world, with Nova Scotia being especially good. There is simply nothing comparable to the Canadian system in the US.

Most county sheriffs have to use volunteers because they don't have resources. "The local sheriff isn't going to know how to spell NASAR," Hill told me. "Most places are really still employing what I call the Posse Method: Send some people west and some people east and tell them to bring

'em back if you find 'em, boys. The searches are completely unstructured. Not many SAR jurisdictions are capable of going about it in a systematic fashion." There is a whole science of search and rescue, but the people who employ it in the U.S. (Washington and New Mexico, for example) are still in the minority. "Remember, there are two cultures," Hill said. "Search and Rescue. The Rescue part is far more advanced and much better funded than the Search part." Hill said, "Any state where state police troopers provide the initial response for a lost person incident is a formula for disaster. The troopers don't train sufficiently either for search coordination or tactics. Why then would they want to do it? One word: Overtime. It's no coincidence that the only time police set rigid standards for volunteer SAR participation are those services which conflict with the opportunity for police to be paid overtime. These areas are: Dog handlers and divers. Police will insist on using police dog handlers and divers when more competent civilian services are available--for free. I have a lot of respect for these guys, but SAR is among the lowest of their priorities." The worst states, he said, are Vermont and Massachusetts.

"Massachusetts is especially bad: The worst place in North America to get lost. SAR is extremely politicized. Don't hike in Massachusetts without a GPS, a map, a compass, and a cell phone." (By contrast, the best places, other than Canada, are Washington, California, New Mexico, Colorado, North Carolina, and Virginia.)

So the problem that Boomhower faced--to walk or to stay put--is not a trivial one. The fact is, most searches end when the person they're searching for walks out. But in those cases, most people are not profoundly lost. They are overdue and may have other reasons for not returning on time. If you have told people where you're going and have faith in the SAR in your area, and if you are unsure which way is home, then waiting is probably the best strategy. If you can make yourself visible by using fire, brightly colored clothing, a space blanket, or some other means, chances are you'll be spotted. Sometimes people can sit down and rest and quiet their minds enough to figure out which way to go. But if you're the slightest bit unsure, you may be widening the search area and delaying your own rescue. You may risk injury, and you may become more profoundly lost.

The paradox is that in a survival situation, your mind can betray you. Every person who gets lost spends at least some of the time convinced that he's going the right direction. It made me that much more troubled by the first item on Kerns' list: Positive Mental Attitude. There had to be a way to get my mind right.

The morning I arrived at the Vermont Wilderness Survival School near the Green Mountains, a group of children about eight years old were silently moving through the forest, pretending to be deer. They had their hands cupped to their ears to amplify sounds. When an instructor snapped a twig, they scattered into the forest and vanished.

My first thought was that if they tried that in Idaho, they'd wind up riding home strapped to the hood of a pickup truck.

We caught up with them a hundred yards farther on, and Mark Morey sat them down and told them a story loosely based on Jack London's "To Build a Fire." As he finished and the main character froze to death, their eyes were wide. Then Morey said, "Now I've just fallen in a stream, and my feet are wet. I'm freezing cold. We have only one match. My feet are encased in ice. I'll die in five minutes unless I have a fire. Build me a fire. Go!"

The children began gathering tinder, kindling, and fuel, working quickly and without comment. As Morey counted off the minutes, they expertly lay the fire and had it going in four minutes and fifteen seconds. They worked harmoniously, putting self aside and helping each other. The exercise wasn't about fire craft. It was about teamwork, empathy, about how much more effective being concerned for someone else makes you in saving yourself. The life guard doesn't drown. The deer game, too, was about empathy--with animals. The exercise heightens perception. It moves information--what you perceive--into the place in your brain where you think and analyze. In Glacier National park, I had seen the clouds coming over the mountains at the start of our hike. But I did nothing with the information.

"What we're doing," Morey explained as we made our way through the woods, "is loss-proofing these kids by building empathy and observational skills. In that last exercise, we demonstrated something we've discussed with them: The fight for survival requires a burst of energy. You have

to become like a weasel, moving fast and getting the job done. Those kids just saved my life. One day they may save a life for real. They're learning to put the needs of the group ahead of their own."

Morey is one of the very few people I've ever met who would survive being dropped naked into the woods. He is, in truth, the Robinson Crusoe I was hoping to find when I recently reread Defoe's novel. In fact, he even looks a bit like the original cover illustration.

It's fitting that Morey chose "To Build a Fire," because much more so than Defoe, it gets at the deep implications about the relationships among knowledge, mental models, attitude, perception, and survival. At the end of the story, London's main character dies, watching his sled dog stare at him from the comfort of his natural coat of fur, and he understands what a joke has been played on all of us: We're the only animal created not to survive. From the moment we're born, we are in a survival emergency, needing blankets, fires, and a technology that has to be created wholesale. We are natural fugitives--it's been that way for perhaps a million years--and if we're evolving at all, it's getting worse, not better. The moment we're lost, all our instincts work against us. Our only defense is our mind, and it can be our worst enemy at times.

He told me that inner city kids and farm kids did well in his course, while suburban kids "had no survival instinct, because they have no predators."

We reached another group of children, who were working on fire craft with bow drill sets. I had never seen fire made that way and was skeptical to say the least. Yet I watched a 10-year-old boy named Jacob make a roaring fire in about ten minutes. I asked him how long it had taken to learn. He told me two years.

That afternoon, I began work on my own fire, and it took me two full days with a lot of help from Morey. By the first evening, I did not have a warm fire to sit by, but I had the raw materials with which to make a bow drill set. I was dirty, tired, and drenched in sweat. I was glad that my life didn't depend on that fire.

It wasn't until I had left the school and thought about it, however, that I realized that fire was not the point. What Morey was really teaching was a path to seeing and knowing the world. And to

see and know the world is to survive in it. Like the Zen disciplines, the archery and martial arts, such primitive skills could move perceptions and knowledge into the place where we turn decisions into actions. In other words, none of Morey's students is going to go out and ignore a big old rain cloud, as I had done. He's going to smell it, see it, feel it, long before it comes and ask himself: What is the correct thought? What is the correct action? Morey's training is making it impossible for them to embark on the stages of becoming lost, which begin in the unquiet mind. The second day, with Morey guiding me every step, I did manage to make fire--by the skin of my teeth. It took hours and I almost blew it at the end when my spindle slipped, sending the fragile coal flying. But Morey salvaged it and transferred it to a tinder bundle he'd made (making a tinder bundle is an art unto itself). I cupped it in my hands and blew it to life. Within seconds, I could feel the heat searing through the tinder. Its power was immediate and magnificent.

The lessons of that two-day process struck me as profound. Like making art, making fire is a deeply human act. Through it, we know our world in a way that no animal ever will. I felt like a sorcerer. The burning bush had spoken, and I was a believer.

The previous day, I hadn't understood what one of Morey's instructors meant when he was showing me how to make fire with a hand drill. As he'd spun the spindle between his palms, he'd mused, "Fire is sex. The male spindle enters the female fire board, and the baby is the coal. You have to tend it gently." Now I knew.

Morey's school is full of enchanting surprises, all of them meant to extend the deep connection between awareness and survival, to uncouple the left and right brain and let us think with the mind of the child. When he taught us navigation without compass or map, I did not believe it was possible. But the lesson was not about finding your way in the woods, it was about navigating the human mind. As we hiked through dense forest, he stopped every 20 or 30 yards to point out something, to examine and discuss things we found. When I'd followed him deep into the woods, he asked me to close my eyes and point the way home. It is a humbling experience to find that you can't.

Morey directed my attention to the last place we'd stopped to talk. We could still see it from where we stood. "Remember, we talked about the bittersweet vine there?" We'd taken a sample of a type of vine that's good for making cordage. So we walked back to that spot. Then he pointed to another spot, where he'd shown me ways of seeing and walking that were used by Native American trackers and other aboriginal peoples. Morey called them owl eyes and the fox walk. It can alter your state of perception, he'd said. We returned to that spot. From there, we could see the place where we thought we'd found a hoof print but it turned out to be the entrance to a vole tunnel. We'd discussed the difference between voles, moles, and mice.

Thus, hopping from one conversation to the next, we were able to retrace our steps exactly and to remember in great detail not only where we'd been but what we'd said and did at each spot. "It's called song lines," he said. "And it's an ancient navigational technique used by Australian aborigines." The children are taught songs about the journey of a hero. At a certain age, they have to make the actual journey. All the navigational clues are contained in the songs. "If you do that when you go into the woods," Morey told me, "you'll never be lost."

I was skeptical when I first heard about pretending to be a deer or an owl or a fox. But three weeks later, Morey was still able to recite in minute detail the steps in our journey. He remembered specific fallen trees, a patch of Japanese knotweed, and the way the wind was moving the leaves on a stand of maples. "It's not like I tried to remember that," he said. "It's an ancient instinct. And it's still alive." It was the first time I'd heard a strategy for making the mental map match the world. Map and compass are an artificial method for doing that.

Each child in Morey's school selects a "secret spot" in the woods. Each day, the students are directed to spend some time at their secret spot. "They do this through all the seasons," Morey said. "They learn to stop and think. They learn to be calm and alone. They will never feel that the woods are alien. So if they ever get lost or otherwise stranded, they won't panic."

Getting lost, if it doesn't kill us, is a transforming experience. Dennis Kelly, known as the most prominent contributor to search and rescue theory in the United States, wrote an essay entitled

"The Victim," in which he said, "Many rescued victims relate their experience when lost as clouded with visions, hallucinations, and dreams."

Debbie Kiley, a sailor who was adrift at sea for five days, told me, "It's amazing how quickly the delusions set in."

Obviously, the same experience can have very different outcomes, depending on how you view it. One person may run screaming up the trail in a panic. Another may lie down and die. And a third might say, I have the skill and I have the knowledge, and I'm going to learn something from this. The most fascinating question is why some people survive and others don't. The mind of the survivor is epitomized by Kiley, who said, "When I was out there and people started to die, I knew that I wasn't going to die. It was just a matter of figuring out how."

In 1982, she was delivering a yacht from Maine to Florida and was sunk in a hurricane with four other crew members. It had been an ill-fated voyage from the start, with an incompetent captain (John Lippoth), a drunken mate (Mark Adams), and the captain's girlfriend (Meg Mooney), who had no sailing experience. Only Kiley and Brad Cavanaugh knew how to behave on a boat. Adams, who was drunk at the time, let the survival raft go in 90-knot winds on 45-foot seas. Mooney was severely injured in the rigging as the yacht sank. The five were left clinging to the outside of an inverted Zodiac with no supplies or protection from the weather. After treading water for 18 hours, Debbie looked underneath the water and was amazed to see hundreds of sharks circling them. "Why they didn't attack before, I don't know," she said.

She and the crew managed to turn the boat over and spent five days in it, during which the captain and mate drank salt water, went mad, and swam away from the boat. They were immediately eaten by sharks. Mooney died of her injuries while lying in the bottom of the boat, which was awash in feces, urine, pus, and seawater.

When I asked Kiley how she and Cavanaugh survived, she said, "I got Brad on the boat and I felt like it was my job to keep him alive. And I think he thought the same about me. Brad and I had a little rule: If I'm asleep, you're awake, and if you're asleep, then I'm awake." While the sharks were eating Mark Adams, Kiley and Cavanaugh could only sit and listen to the "frenzy going on

under the boat," she said. "That is the only time in my life I felt like I was just walking down that fine line of sanity. You never know what's reality and what's not with all the crazy dreams and stuff going on, so my big thing was to hold onto reality. So the way I clung to the here and now was to say the Lord's Prayer over and over and over. I knew I was in big trouble when I couldn't remember the words anymore. So here's Mark, he's overboard, the sharks are eating him underneath the raft, Meg's dying, it's in the middle of the night, and it's the first night that the stars are out. It was just very haunting."

I asked her what advice she had for others: "Trust your gut," she said. "I had my misgivings about the trip all along. It just didn't feel right. So I have just one piece of advice for people: Your gut tells you what to do. Believe it. I didn't, and a lot of people are dead and I have to live with it. Also, never forget that you can't depend on anybody. You really have to have it within yourself to do it." About the mind of the survivor, a SAR worker with NASAR told me of a case in which they'd rescued a man who had survived against all expectations--six days in the desert in temperatures above 100 degrees with no water. When they asked him how he did it, he told them he was in the middle of a divorce, and it really pissed off that he was lost, because he "just didn't want to let the bitch get everything." Anger, adrenaline, determination, prayer, faith--whatever keeps the boat afloat--I hope I find it when I need it.

Because, "Some people just give up," Hill said. "Fifteen years I've been studying this, and I can't figure out why. It's not who you'd predict, either. Sometimes the one who survives is an inexperienced female hiker, while the experienced hunter gives up and dies in one night, even when it's not that cold."

When that first nightfall comes, you can sometimes tell quite a bit about who will make it. It can be the most terrifying thing a person has ever experienced when that curtain closes and the animals move in. As one SAR worker said to me, "That first black-ass night out there can really put the zap on your head," as the last tatters of civilization are sloughed off, putting us in touch with the amazing forces that are masked by the everyday noise of our surroundings. That's why fire is so important. It is our last connection to civilization. It says: Yes, we're human. And we're still here.

Steven Callahan, a ship-wrecked sailor, spent 76 days in a rubber raft. He survived by spearing dorados for food. In his book, Adrift, he wrote, "The dorados have become much more than food to me. They are even more than pets. I look upon them as equals--in many ways as my superiors." Once you're cut loose with no recourse from the fragile bulwarks of civilization, new worlds are opened to you; and you never see your old surroundings in the same way again. You see through them to a truth that is at once more profound, more beautiful, and more terrifying. With his bones sticking through his skin from starvation, Callahan bandaged the last disintegrating trinkets of civilization on which he gambled his life. Around day 45, his raft was punctured by a flailing dorado he'd stabbed with his spear gun. Working all night to repair the potentially-fatal tear, he was harried by a 10-foot shark. Then in the morning, he speared another fish. Callahan wrote, "In less than two seconds, the fish neatly unscrewed the point and left with it. The dorados have awaited their chance to test me. They have destroyed my ship, disarmed me, and now they mock me... I am awed by the intricate perfection of the world in which I find myself." He had achieved the mind of a child--the uncoupled mind.

In ancient cultures, young men were sent into the wilderness to sit and fast for days in search of a vision. It was a rite of passage, perhaps a religious custom, but underneath, it was survival school, a test of those inexplicable reserves that separate the living and the dead. It is also a way of simulating that split state of mind that survivors describe, a state that grants us peace at the very moment when panic is closest. One part of us fights like an animal while another watches with detachment as the petty flesh is torn and tortured. Only in that way can we do what has to be done. Then we see "the intricate perfection of the world."

So few of us ever take true responsibility for our actions. We live in a culture of lifeguards, of insurance and lawsuits, where someone else is always responsible, and someone else is always to blame. But take one wrong turn in the woods (or more aptly, in the mind), and we go directly to the stone age, minus the company of our tribe. Then it's up to us. In a survival situation, we're suddenly called to account for the long arrears of our inattention.

Hill said, "That's why we advise people who become lost, the first thing you should do is sit down, calm yourself, get your arousal level down. And think about the best way to get out of this situation." Or as Debbie Kiley put it, "Be still. If you can't make a decision, just be still."

"We come from cities and learn to expect things to stay the same," said Mark Morey. "But they don't. And it kills us, quickly or slowly."