Risk Management for Outdoor Leaders

*A Practical Guide for
Managing Risk Through Leadership*

By
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Cover photos: Tom Bol (front); Doug Demarest (back)

Preface

When an outdoor education leader heads into the wilderness – whether leading experienced climbers, a group of children or NASA astronauts – he or she will encounter "risk" at every turn. It can be anything from a stream that is bigger than expected, weather that has turned, or a group member who ignores instructions. A good leader makes decisions that minimize harm and maximize the positive experience. This leader is an effective "outdoor risk manager."

We set out to write this book to share information from our combined 64 years of experience in adventure education. Both of us have spent extensive amounts of time leading outdoor trips. We've both worked as National Outdoor Leadership School (NOLS) instructors, branch school directors and risk-management directors. We've also both chaired the Wilderness Risk Manager's Committee; a group risk managers from prominent outdoor education organizations.

We have seen firsthand how "risk" inevitably crops up on every outdoor education trip. Using our experience and drawing from other experts, we have fine-tuned methods — which capitalize on practices like advanced planning, team building and clear communication — that can help any outdoor educator, be it a new summer camp leader or a seasoned NOLS instructor, face risk and minimize harm while leading successful wilderness adventures.

We call this "risk management." As in other industries, such as insurance or finance, risk can be "managed" on outdoor trips if approached smartly. Our field, broadly labeled as outdoor education, includes taking a biology class on a day hike in the forest and taking a leadership class on a multi-week expedition into remote wilderness. The former is still considered outdoor education while the latter is usually referred to as adventure education. Both outdoor and adventure education entail risks, but generally speaking the exposure to hazards, and thus risks, are greater in adventure education.[i]

We've intentionally chosen to use the terms "risk" and "risk management" in this book rather than "safety" and "safety management." The word safety implies freedom from harm. We know this is impossible both in and out of the wilderness. Indeed, much of the magic that occurs in adventure education is derived from living and traveling in wild places. Wild places (as well as civilized places) are not safe.

We've also intentionally chosen to use the term "incident," instead of "accident." The word accident is commonly used to refer to events that cause injury or damage from natural or human forces. Webster's Collegiate Dictionary defines an accident as an "unforeseen and unplanned event." In reality, many, if not most, of the accidents we see in the adventure program-

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ming profession are, in fact, foreseeable. They can be planned for (and therefore avoided or their harm minimized) through the use of controls and appropriate risk-management strategies. The word "incident" is a more useful term to refer to these events. Incident is defined as "an occurrence of an action or situation that is a separate unit of experience." This allows us to refer to events in a more factual way. Incident is a non-judgmental way to refer to events that may be accidental, intentional, a force of nature, errors in judgment or procedures, or an outcome of the inherent risks of participating in adventure activities.

In the insurance world, companies measure risk of injury, illness or accident and assign a monetary value to loss of life, loss of function or loss of enjoyment. Financial advisors and managers assess the risk of investments through quantifying the potential loss of income or gain from an investment.

In outdoor education, risk can to some degree be measured and calculated, but sound numbers are elusive and comparisons are often apples to oranges. Attempts to quantify risk are significantly influenced by subjective perceptions of danger and tolerances for risk. Still, this book lays out concrete steps to take that will measurably decrease the likelihood of injury, harm or failure on an outdoor education trip.

Adventure program managers have many tools for managing risks: training, curricula, protocols and reviews, to name a few. We believe that these tools are vital to risk-management, but they are useless without effective leadership. The heart of this book is how to creating a high functioning team with sound leadership and teamwork. This is most powerful risk-management tool you'll ever carry into the wilderness with you.

Introduction

On the fifth day of a multi-week ski expedition in the back-country of Yellowstone National Park, a participant fell and suffered what was eventually diagnosed as a fractured left femur. The temperature was 20-degrees Fahrenheit and would fall to zero overnight. Camp was a mile away, and the nearest phone or radio (this was before they were carried routinely) was 20 miles away. It would be dark in an hour.

What would you do?

This is an extreme example, but it is not an uncommon example of how risky an outdoor adventure trip can be. As a leader, you must be well prepared for all worst-case scenarios. But how do you do that when there are an infinite number of things that can go wrong?

In our experience, equipment failure is an uncommon cause of injuries in wilderness education; our modern outdoor gear is sound and rarely breaks [ii, iii, iv]. Likewise, while weather influences events, it only rarely is the major factor in an incident. It's people, individually and as groups, who contribute to most incidents. We call this the "human factor."

This book focuses on how best to "manage" the human factor and therefore how best to manage risk. We will take you chapter by chapter through how to best prepare and plan for an expedition (Chapter 1), maximize group communication (Chapter 2), sharpen your attitude (Chapter 3), use sound judgment (Chapter 4) and apply risk-management procedures in the field (Chapter 5).

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In the early days of aviation, mechanical failure was a common cause of crashes. This has changed today with our very reliable aircraft. Aviation safety researchers believe that crew coordination, communication and decision-making, not structural or mechanical problems, are now the greatest factors behind incidents.

Studies show that the "human factor" is a prominent source of error in aviation incidents, mountaineering mishaps and medical mistakes. Simulator studies by National Aeronautics and Space Administration (NASA) show the importance of leadership and communication in the cockpit. NASA's research shows that 70 percent of aircraft accidents involve human error.[v] An article on climbing incidents in Grand Teton National Park in the 1980s attributes the majority of incidents to human error.[vi] The medical field is now scrutinizing breakdowns in teamwork and communication to resolve errors.[vii]

We believe these same behaviors and habits – failures in leadership, teamwork and communication — are involved in every incident in outdoor education. How do we use this insight to enhance our risk management practices?

Experience is not necessarily a solution. Charlie Shimanski, Education Director for the Mountain Rescue Association, says: "Whether it is a climbing or avalanche accident, it is generally the more experienced that are at higher risk." [viii] In an article on the epidemiology of climbing accidents in Yosemite National Park, the authors reveal that it wasn't just the casual or novice climber who were injured; many experienced climbers cited a poor decision as a leading cause of an incident.[ix]

Training is not necessarily a solution either. Avalanche experts Dale Atkins and Ian McCammon note: "Unfortunately, a majority of avalanche victims have had at least some avalanche-awareness training, and many victims have considerable amounts of avalanche training." Their data implies avalanche incidents are not a terrain, weather or snow-pack problem. "Avalanche incidents are a human problem."[x, xi]

Sound rules, protocols and standards are not necessarily a solution. Emergency response plans provide tips to respond to incidents; medical protocols offer guidance; and field practices, manuals and textbooks communicate important procedures. Similarly, cookbooks offer a step-by-step way to make a delicious meal, but cookbooks — like these other resources — require that the cook think.

In the aviation field, a concept called Crew Resource Management (CRM) focuses on technically skilled teams operating in complex and changing environments – aircraft cockpits – and identifies strengths and positive behaviors that

enhance teamwork, communication and coordination. CRM is a leadership training process designed to manage poor teamwork that is thought to be the root cause in many aviation accidents. The behaviors CRM addresses include:

• *Lack of trust and ineffective problem solving secondary to poor leadership and teamwork.*
• *Lack of clarity of team goals, roles and decision points.*
• *Inability to use available information.*
• *Poor distribution of workload, which overloads individuals (often the leader) and fails to use talents within the team.*
• *Distraction and lack of situational awareness.*
• *Lack of clarity in communication from jargon, imprecise phrases, distracting chatter and lack of acknowledgement by the listener.*
• *Lack of assertiveness by less experienced or lower ranking team members.*
• *Inability to keep people informed of new information, decisions, actions or changing plans.*
• *Inability to recognize and resolve the effects of fatigue and stress.*

We believe CRM's lessons have relevance to what we do in adventure education, how we do it and where we do it. As outdoor leaders, we commonly function as small teams operating independently in complex and changing environments. Wilderness educators and trip leaders work within paddling, hiking and climbing teams, among other outdoor groups. Like pilots, we have to make decisions and take action under time pressure. These decisions and actions affect the lives of others and may need to be made without all the information we desire.

Incidents rarely have simple cause and effect sequences but rather an intricate web of events, actions and decisions. Seemingly insignificant events can go unnoticed or be disregarded but may in the long run and in the right sequence combine to lead to a serious incident.

The aviation research tells us that high-performing crews use leadership and teamwork to undo this web and isolate problems before they become an incident. These habits include preparing for contingencies, keeping the team informed, using the experience and expertise within the team, managing workload, recognizing fatigue, resolving conflict, communicating clearly, staying alert and maintaining an appropriate culture – with the most critical attribute being active leadership. Leadership is the overarching behavior that determines how well a team will function.

Risk management is rooted in the actions and decisions of leaders. Leaders must evaluate weather, assess the performance and abilities of participants and weigh these and other factors against course objectives. Leaders make decisions on a daily basis that can result in successful expeditions and healthy students, or the opposite. Creating high-functioning teams with sound leadership and teamwork is a key risk management tool.

This book examines leadership, teamwork and risk management in wilderness education at the interface between instructor and student, leader and team. This book is more than CRM in hiking boots. It culls information from a variety of sources — the medical field, studies on human decision making, reports of major incidents, anecdotes from successful outdoor leaders, as well as the National Outdoor Leadership School's 40 years of experience.

We've seen sound leadership, teamwork and communication at work on NOLS trips, within search and rescue teams, and in the patient compartment of ambulances. We've seen it in routine procedures and in hair-raising crises. We've seen it at NOLS and in the many other outdoor programs we've worked for, visited or reviewed, both in North America and abroad. It works, and we want to share it with you and help you become an effective risk manager.

In the scenario that opened this introduction, the leaders were good examples of effective risk managers. The leader on the scene found pain and tenderness in the upper thigh and suspected a femur fracture. The injury was stabilized. Students were directed to help the patient into warm clothes. They moved her onto a pad and into a sleeping bag.

While the patient needed help, the well-being of the remainder of the group had to be managed in the harsh winter environment. The leaders gathered and with a sense of urgency came to consensus on a plan, then briefed the participants. A helicopter evacuation that night was not possible. They would need to ski to the road to call for help. Their immediate task was to keep themselves and the patient warm, to move their camp to the patient, and to cook a meal.

A stove was started to melt snow for water, and eventually hot drinks. The patient was kept warm and comfortable and an improvised splint was constructed from an avalanche probe. A leader and three participants stayed with the patient. It took several hours for the other two leaders and participants to move the camp to the patient.

After dinner, a team of four left to ski to the road. They traveled on their previously broken trail with stove, food, tarp, full water bottles, maps, sleeping bags and other essentials.

Back at camp the patient ate, drank and got some sleep. She was understandably anxious about her predicament. The leader kept her informed and her mind off her problem with stories and conversation. Several times during the night, they adjusted the splint and used hot water bottles and massage to keep the patient's feet warm.

The evacuation party arrived at the road at dawn. One of the participants was very tired, so he and a leader stayed behind, while the remaining participant and leader continued to the ranger station to ask for a helicopter. Meanwhile, the participants at camp located a nearby meadow suitable for a landing, packed the site, and prepared a sled for the patient. When the helicopter arrived, the group briefed the paramedics and then brought the patient to them on the sled. Within an hour, she was in the emergency room.

Tom Bol

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Good preparation and planning are essential for a successful expedition: leader reviewing the day's hiking route with participants.

Chapter One: **Preparation and Plans**

One of the cornerstones of a solid foundation for effective leadership and teamwork is taking the time to adequately plan and prepare for an expedition. This is true whether you're preparing for a professional 30-day backcountry trek or a weekend hike with friends.

Simple, short trips can be done quickly by experienced adventurers. All you may need is a briefing (or conversation) before a peak climb or a fishing jaunt.

On a larger scale, your program will need a plan based on careful thought and attention to many details. You'll want an overarching expedition plan, daily travel plans, and contingency and evacuation plans (in the event things go awry).

Expedition Plan

Before you hit the trailhead, you'll want to come up with your expedition plan, which is your ideal vision of the trip. For this, you'll need to consider the route, required permits and regulations, travel logistics, immunizations, food rations, equipment and supplies. You should check guidebooks, read mountaineering journals, and research weather patterns and environmental hazards. You'll scrutinize maps and possibly talk with land managers and local residents.

You'll also want to consider what you want to achieve from the trip. What physical goals — traversing a pass, descending rapids, summiting a peak — do you hope to accomplish? And, perhaps more importantly, what lessons do you want your group to come away with? A sense of team? New outdoors skills? Enhanced communication? (See sidebar for more.)

Preparation and plans are not tasks to finish before the trip that then gather dust on a shelf – or molder in a backpack. They continue as themes in the field providing guidance for the trip through daily travel plans, contingency plans and lost-student plans.

Your adventure program may have its expedition planning done by a subcontractor. If so, you should review these plans, especially emergency and evacuation plans, to fully understand them and to clearly define roles and responsibilities. And don't assume the subcontractor has a sound plan.

Daily Travel Plans

While an expedition plan is made before the trip, as you travel you should develop daily travel plans.

Daily travel plans are often as informal as a conversation before a nature walk near camp. But sometimes they're complex and may include the particulars of a group traveling from one camp to another over several days. If the plan is simple, it's often done in your head. If it's complex, use a written plan.

When formulating a written plan, you should clearly and specifically describe the route, prominent features and anticipated hazards. A standard plan format can help make the task easier as well as help make planning a habit. (See below for suggestions on written plans.)

Vision, Mission and Goals

A sense of your trip's goals and priorities is vital to building teams, making decisions and managing risk. These goals and priorities should not just be about physical accomplishments, like climbing a peak or navigating a river, but include more intangible successes such as learning outdoor skills, appreciating the natural surroundings, or becoming a cohesive team. Effective leaders articulate the importance of climbing the mountain, descending the river, completing the traverse or making the open ocean-crossing but they balance this with more subtle yet equally important messages about lessons learned, communication strategies, and upbeat morale.

Renowned mountaineer Charles Houston M.D. remarked at a NOLS staff gathering in 1986: "What is the point of reaching the summit if you do not return with the good companionship of your partners?" Many of us would agree that summits, routes or timetables can be changed, or can wait for another day, while safety, friendship and learning are timeless.

On a sea kayaking trip, a standard daily travel plan might focus on chart reading, deduced reckoning, tide and current calculations and terrain such as reefs, beaches and exposed sections of coast. For hiking, a daily travel plan might feature "hand rails" or physical features like a stream that guides your travel or prominent terrain like a peak that make for helpful navigation-reference points. Standard features might include compass bearings, GPS coordinates, and potential hazards like rivers, boulder fields and high passes. A thorough plan also considers

the participants and how their health, skills, experience and morale might affect the group's travel.

A travel plan is also a decision-making tool. Use it to anticipate tricky decisions or "decisions points," such as where an alternative landing for a kayak might be. The mileage, timetable and decision points are carefully calculated when you are fresh and rested. They can be a valuable resource when you're tired and need to make a quick decision. You can compare your progress against your plan. Are you traveling faster or slower than anticipated? Is the weather changing? Have you reached a pre-determined decision point?

The plan should be complete, without being a tome. Use well organized bullet statements. You'll refer to it on the trail, in your raft, or in your boat cockpit. Keep it simple. After all, we want to travel, not spend our time planning to travel.

Here are examples of what a written travel, passage or paddle plan might include (A sample template is included as Appendix B):

People, Goals and Gear
• Participant names and their responsibilities (e.g. leader, navigator etc.).
• Skills and experience of the group?
• Current health concerns in group members?
• Goals for the day.
• Key equipment: first aid kit, water treatment, food, shelter, maps, navigation and communication gear.

Navigation plans
• Starting point and destination.
• Route description (use named map features and cardinal directions).
• Linear distance, elevation change.
• Significant waypoints, prominent features and decision points.
• Time-distance travel calculations with estimated travel and arrival time.
• How long it should take to get there.
• When to begin packing packs or boats.
• When to be walking or under way.
• Anticipated rest breaks or a lunch break.
• Expected to arrival time.

Anticipated obstacles and hazards
• Can the obstacle be avoided?
• Is the group capable of negotiating?

Contingency or Evacuation Plans
• Alternate campsites, rendezvous points.
• A plan if overdue, delayed or separated.

Contingency and Evacuation Plans

The expedition plan is your ideal vision for the expedition. It's optimistic and expectant of a great trip into the wilderness. It also needs to be realistic and anticipate that things can go wrong.

A "contingency plan" is a local, short-term plan that addresses routine and anticipated hazards and offers response tips. Contingency plans help, for example, when a group is traveling slower than anticipated, a raft flips, or a cell phone doesn't work.

An "evacuation plan," on the other hand, is a broad emergency-response strategy. You turn to it when things go very wrong. It helps you predetermine when you will self-rescue, and when you can't what additional rescue resources are available. It helps you anticipate how to communicate with outside emergency resources. And it maps out how to get a patient from the wilderness to the hospital.

Contingency Plan

Experienced leaders learn to mull over "what if" scenarios as they hike down the trail or paddle the coast. They're not morbidly fascinated with problems, they're practicing a good habit that helps them respond calmly with carefully thought-out action.

A contingency plan should be a routine part of any travel plan or activity briefing. Let's say you plan to lead your canoeing group across a 1-mile wide lake. This may be a standard route for you, but it's never been done on this day, with these participants and in these exact conditions. Before embarking, take a few minutes to talk with your co-leaders and participants (your "teams") about what may go wrong, and how you expect to handle it. Airline crews call this is a "briefing for operational threats." Weather can change. Equipment can break. Team members can stumble. Stay ahead of the curve by analyzing your plan and asking, "What if?": "What if the wind and waves build?" "What if we get spread out?" "What if someone falls in?" River guides do this routinely, telling participants how to swim in a river or respond to a rescue should they fall out of a raft.

Contingency plans are not just for the participants. Leaders should be clear among themselves what they expect from each other if a problem arises. River guides set their team expectations when they discuss not only how they will negotiate a rapid, but where they will stage their safety equipment, the order in which people will paddle and how they will handle a swimmer. Sometimes inappropriately called a "freak plan," a contingency plan prevents panic, because the response is anticipated.

Emergency Drills

Talking to participants does not fully prepare them to respond in a real emergency. Using an emergency drill can improve how people respond in a true emergency. The drill is in essence an interactive briefing, only it takes place long before the emergency. We routinely use drills to prepare students to respond to medical emergencies— practicing CPR is an obvious example.

Drills can be used to prepare participants to respond to lightning, bear encounters, or emergency kayak landings in surf. The basics are taught and practiced in a controlled setting, then reinforced before they really need to be used.

Drills have hidden team benefits too. They can teach an emergency skill, but they also can help a group gel as a team, clarify roles and expectations, and illuminate leadership and decision-making styles (something we detail in later chapters).

Staying Found: A Lost Group/Person Plan

Contingency plans should include scenarios for what to do if a group or individual becomes lost or delayed and cannot make it to camp. If you travel as one group, this can be fairly simple to handle because everyone is accounted for and all the gear and food are together. If you travel in separate groups and a sub-group becomes lost or delayed, things can become more complicated.

In anticipation of a sub-group becoming lost, first be sure each sub-group has shelter, food, cooking gear, clothing and a first aid kit in order to be self-sufficient. The second thing to do is set expectations for how a lost group should react once they realize they are not in the right place. If they are lost, but able to re-orient themselves, do you expect them to continue to try to reach camp or should they stay put, make themselves visible, and wait to be found? In the event of a medical emergency, do you expect the group to stay put or try to find the rest of the team?

Contingency planning for lost sub-groups should also include an agreed upon time for beginning a search. At NOLS, this is commonly at noon the day after the sub-group is due. But this needs to be designed with the specific program, group, weather and terrain in mind. In certain conditions, you might start your lost person search sooner.

Lost around camp

Typically, adventure program participants don't travel alone. But it is not uncommon for an individual to get lost simply walking around camp or seeking a latrine or an activity site. Be sure to brief participants on what you expect if they become lost around camp. Take a few minutes after arriving at camp to orient everyone to the surroundings. Define the perimeter of the camp with prominent natural features or "handrails."

If participants plan to leave camp (beyond the established perimeter) by themselves or in small groups to, say, go for a day hike or fish a nearby lake, they should take a "life support pack" (minimal food and clothing to spend the night out) and tell a leader where they will be, when they will return, and whom — if anyone — they will be with. They should take a map and compass or GPS receiver. Tell them to pick out landmarks along the route and to time the walk. These are valuable reference points should they get lost.

What to do if lost

A lost group or individual must actively work to be found. There are right ways and wrong ways to do this. Be sure to convey these strategies.

If a group is lost, the group should stay together. If they can determine their location, they should correct themselves and continue toward their destination. They should stay on established trails as much as possible, in case searchers are looking for them.

If a lost group doesn't know where they are and needs to send out scouting parties, they should scout in groups of two or more, with a plan for where each group will explore. Scout for a short time (about 30 minutes), set a turn around time, and leave at least one person at the spot from where the scouts left.

If an individual is lost, typically after leaving camp, suggest that he or she go to a high vantage point to get their bearings and look for the handrails. If close to camp, they can listen for people talking.

Anyone, whether a group or individual, who is lost and cannot determine their location, should stay calm, stay put, make camp and try to be visible. Making noise by shouting, singing or blowing a whistle can help if searchers are nearby.

If the lost group or individual has camping gear with them, they should camp on or near established trails, on the shore of larger lakes, or in open meadows. If they don't have camping gear, they need to find shelter well before dark. It is drier under evergreen trees or overhangs. It is warmer higher on hills and out of the wind. For unplanned bivouacs, look for water to drink and ways to keep warm. Cover up with leaves or pine boughs to create a pocket of warmth. Get a nap in early in the evening before the cold wakes you up later in the night.

Lost people should expect searchers (eventually) to be looking for them – especially if a set time for a search to begin has been met. In addition to camping in highly visible places, building large smoky fires can help searchers find a missing person. Doing all you can to be visible to searchers is often inconsistent with "Leave No Trace" principles and many land-management regulations, but in this case helping searchers find you takes precedence.

The lost person should be aware that searchers may be looking from the air. It's surprisingly difficult to see people on the ground or in the water from an airplane or helicopter. There

are many stories of lost people standing in open meadows and waving their arms vigorously, but who were invisible to searchers in low-flying aircraft. You can be more visible in open areas by lying down or laying out brightly colored items such as sleeping bags, ground cloths or rain gear. Geometric patterns are even more discernible than bright colors from the air. And the best way to be seen is to reflect sunlight from a shiny object. According to pilots, bright flashes of light are more readily seen from the air. Signal mirrors can be effective. If lacking signal mirrors, bright flashes can be created with jewelry, a pot or pan lid, or other metal objects.

Evacuation Plans

Managing a wilderness emergency begins well before you enter the wilderness. An evacuation pre-plan can help you better handle emergencies because you've already thought through the many variables.

First, you need to understand the capabilities of your group and to what extent you can self-rescue. Who has medical training? Who can climb? Who has great endurance? Knowing what kind of evacuation skills your group has can be extremely helpful in the heat of the moment. It's wise to develop criteria for how much of a self-rescue your group can handle before you embark. Know when you'll need outside help and what is available. Research available resources and contact local rescue groups. Know who is responsible for rescue in your travel area. Know if helicopters, technical rescue teams, or paramedical support are available.

Before you leave, you'll want to consider possible evacuation scenarios and write guidelines for their management. These Emergency Plans should include a sketch of your group's responses.

Here are questions to consider:
• If an injured participant can't walk, will you be able to carry him, and if so, how far?
• Is a helicopter an option? If so, who are they, how are they dispatched, and what are their capabilities?
• Can local search and rescue assist you? How are they dispatched? What is their anticipated response time?
• What special instructions do you need for serious injury, illness, or fatality?
• What are the available rescues services? Their names, addresses, and telephone numbers?
• Where are the closest roads, beaches, helicopter-landing locations, phones?
• What is your alternate plan? What will you do if your first option fails?

It sounds daunting, and at NOLS there are staff dedicated to creating evacuation plans. But the leaders of any expedition or adventure program should think and plan ahead. Details are important; small omissions in planning can have dire consequences. Errors have a tendency to multiply over time.

We've found that the following factors are key to successful wilderness evacuations.

Key Decision Making for Wilderness Evacuations
• Severity of Injury: How soon does this patient need to be in the hospital? Does the injury threaten life or limb?
• Distance to Road: What is the distance to vehicle transportation or additional help? Realistically, how long will it take you to travel? Do you anticipate traveling at night?
• Difficulty of Terrain: If there is an obstacle, can you manage it? Will you reach it when you are fresh or when you're tired?
• Anticipated Weather: Will it slow, stop, or alter your time table or your chosen evacuation method or route?
• The Group: Their physical strength, stamina, technical abilities, experience and ability to function in deteriorating weather or technical terrain?
• Communication Possibilities: Can you communicate quickly with outside resources by telephone or radio, or must your message be carried by foot?
• Transportation schedule: Who will meet you at the road? Did you leave a vehicle?
• Landing Zone: Is there a suitable landing zone (LZ)? Do you need to carry a person to the LZ?
• Outside Resources: Who might come and help you? How are they dispatched? What is their response time? What are their capabilities?

What type of evacuation are you considering?
• Walking or Skiing: For the patient who is able, this is easiest, safest and least complex.
• Simple Carries: Whether or not you can carry the patient on your back depends on your strength, the patient's size, and the nature of the injuries. For short distances this can be faster and easier than a litter.
• Litter Carry: Requires a larger group–at least 10-20 people. Slow (often only 1 mile an hour).
• Horse: Depends on the injury, the horse, the terrain and the skill of the rider. Often incorrectly assumed to be an easy option.
• Helicopter: Requires permission in wilderness areas.
• Ski sled litter: Litters using pulks (manufactured cargo sleds) can be effective.
• Snowmobile: Limited by snow conditions and wilderness boundaries. Don't over estimate the capabilities of a snow mobile.
• Vehicle: Consider the jostling a patient may experience on poor roads. Do you need an all-terrain vehicle or four-wheel drive?
• Boat: Is there a boat available? Coast Guard? Rapids? Surf? Exposed open water?

What type of communication do you anticipate?

- Will your cell phone work from this location? The service you expect at home may not be realistic in the wilderness and particularly in mountainous terrain.
- Assuming that no radio or telephone communication is available, messages must be delivered on foot. These messages are generally one-way and must be accurate, concise, complete and written.

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During the evacuation:
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- Keep the group together. Ideally travel in 3's or 4's, not alone.
- Be prepared with food, extra clothing, sleeping bags and marked maps.
- Consider: physical stamina, map, navigation skills and challenges, first aid skills and foul weather experience.
- Send written instructions including medical and evacuation report forms with a travel plan. (Appendix C is a sample Field Evacuation Report. Appendix D is a Sample SOAP Medical Report.)
- Communicate with your team with regular updates on the plan and the ongoing evacuation.
- Group maintenance. Maintain everyone's health by seeing to food and hydration. Some people may think they can't stop for a meal, to drink water or to rest. Successful evacuations require hard work and long hours, but the group needs to set a pace that everyone can sustain. It's not unlike emergency protocol on airplanes: Put your oxygen mask on first before assisting someone else with theirs — or you may be of no help.

Serious Injury/Illness/Fatality Protocol
In the event of a serious incident, such as paralysis, loss of limb or death, there will be many tasks and concerns to deal with in addition to the standard emergency procedures. Many organizations have written crisis-management protocols to use in responding to and managing a serious injury, illness or fatality. These protocol, however, are usually large documents, often administrative in focus, and rarely read by field staff. A concise version of a protocol that outlines expectations for field staff should be a part of your emergency plan. You should know crucial details of documentation and debriefing along with media contact, legal and administrative concerns. Serious injury, illness or fatalities in outdoor programs, while rare, are emotionally stressful. Clear expectations, effective communication, delegation of tasks and cooperation are essential to managing the crisis in the best interests of the victim, the family, course members, staff and the program.

Planning is a Habit of High-performing Teams

Highly-trained airline pilots say: "The high performing crews ask for more information, anticipate problems, consider more options, plan for glitches and plan early."

The expedition plan helps you prepare for a successful and enjoyable trip — and it helps you manage risk. The time invested in preparation pays invaluable dividends when you must make a quick decision when things go awry.

Unfortunately, groups who do not give a thought to an emergency during their trip are all too common. Our local search and rescue team was mobilized to search for two people who were missing in Wyoming's Wind River Range. The two had been part of a group of six friends who started out from a familiar trailhead without discussing how they would travel or what they would do if separated. They wound up hiking in two groups of two and four about 20 minutes apart. They rested separately in different locations at different times, never sharing a unified group conversation. A challenging river crossing lay on their route, and the hikers approached it in two separate clusters. The first group of two hikers waded across the turbulent water. The crossing was tough, and left them cold and wet. They took a break to dry off and warm up. In the meantime, the final four came to the crossing, didn't see the first two hikers, and wandered downstream where they found an obscure log bridge. They crossed with ease and continued on the trail. After an hour, they stopped to wait for their companions. When the two did not appear, the foursome returned to the river. Still unable to find them, they speculated that their friends may have been swept away while trying to cross the river. In reality, the two had continued up the trail and arrived at the destination lake that evening. The group of four searched up and down the river into the night. They never checked the destination lake, assuming the two would wait for them if they became separated. The following morning, they left the mountains and called for a search. The search team found the supposedly lost twosome happily fishing, wondering when the rest of their group would arrive.

The habit of planning is a vital risk-management tool. A plan that outlines when to turn around or stay put helps you avoid an unexpected night out. A plan that spells out what to do if a group is overdue helps circumvent unneeded responses and involved rescues. And a well-executed evacuation plan can save a limb or a life.

It's the leader's responsibility to articulate the vision and the plan, and to do so as often as needed. From the picture of the entire expedition to a snapshot of a day's activity, your team should understand what they are doing, why they are doing it, and what they will do in an emergency. A good plan can help you reach your destination in good style and good time.

Summary Points:

- Expedition planning is a foundation for risk management and successful expeditions.

- Continuous planning is a habit for high performing teams. They constantly evaluate variables and their potential impact on the plan. They seek more information, anticipate problems, consider options, and plan for glitches in advance.

- A written travel plan or oral activity briefing is a useful tool used on daily basis on a trip. They always include contingency plans.

- Contingency plans help you prepare for and anticipate mishaps, such as a capsized kayak or exhausted hiker.

- Articulate in advance what your team will do if a person or group becomes lost. Also, decide what to do should a sub-group be delayed or not make it to a designated camp.

- An evacuation plan should be researched before every trip. Determine in advance to what extent your group can self-rescue, and when and how you will seek outside help.

Six hands are better than two: pack lowering in Jordan Canyon.

Chapter Two: **Team Building & Communication**

When we debrief NOLS students after an expedition or Wilderness Medicine Institute (WMI) participants following a challenging night rescue exercise, they often talk more about the leadership, teamwork and communication skills that were required to complete the task than the specific technical skills needed. They are energized by the peaks they summited, the rivers they paddled, the rescues they performed, yet the conversation almost always turns to how successful the leadership was, how well the group worked together, and whether communication was effective. These students learned what researchers know from observing airline pilots and NASA astronauts: a team's successful performance is closely linked to effective leadership, teamwork and communication.

Experts have discovered that weak leadership, flimsy teamwork and poor communication can prevent teams from sharing critical information or making sound decisions. Airplane crashes have happened because a co-pilot felt he couldn't tell the pilot the fuel was low or the altimeter reading was wrong. Incidents have happened on outdoor adventure trips because participants couldn't overcome a dysfunctional team and speak up, report observations, ask questions, or clarify ambiguous information.

Expedition Behavior

"Expedition behavior" is the attitudes, values and practices that make up the culture and style of a group and determine how effective its leadership, teamwork and communication will be. At NOLS, expedition behavior represents practical tasks as well as sets the tone for the group.

On the practical side, expedition behavior details how the essential camping and travel chores will be broken down and completed in a timely and efficient way. As part of their expedition behavior, students learn to set up camp, cook, clean and stay organized.

But expedition behavior also defines the "style" for the team. At NOLS, students are steeped in the value of good conduct like doing more than their share, staying organized and carrying extra weight for a weaker teammate. They learn the importance of watching for fatigue in others as well as noticing it in themselves, lending a hand as well as asking for help. They learn to listen as well as speak-up and share ideas. Leaders are responsible for modeling positive expedition behavior.

On a day-to-day basis, positive expedition behavior makes for fun, enjoyable and successful trips. It is fundamental to a good team which respects all team members' skills and ideas. And when an inevitable error happens or challenge arises, it is

why a team can detect and manage the issue before it becomes a problem.

Building Teams

If you are planning a personal trip, you can select people who work well together, enjoy each other's company, and have the skills and experience necessary to attain your objective. You know each other's fitness level, attitudes, moods and habits, as well as each other's approach to risk management and use of judgment and common sense. But in many outdoor programs, leaders, co-workers and participants are thrown together because they were hired or signed up for a particular program, not because they chose to travel together. A "team" doesn't already exist. It must be built by the leaders.

In this scenario, don't leave your team's leadership and teamwork to chance. Handling the demands of equipment, food and course logistics are time-consuming, but you must devote equal time to conceiving your "team." Take time to conscientiously discuss your and your fellow leaders' communication and decision-making styles, comfort level with giving and receiving feedback and personal and course objectives.

Two school teachers leading a wilderness orientation trip may have different expectations for leadership, teamwork and communication. Two friends taking a local youth group on a backpacking trip may have different expectations of hierarchy and structure. Even when the leaders are old friends, or have worked together many times, don't assume that you will be able to work seamlessly together. Clarify your trip or course goals, roles, responsibilities and decision-making styles in advance — for both routine activities and emergencies.

Some team building questions to consider:
• What is the goal of this trip?
• What are your roles and responsibilities? Who is in charge?
• How do you like to make routine decisions?
• What decision-making style do you want to use in a crisis?
• How do you like give and receive feedback?
• How will you handle conflict?
• What are the anticipated challenges and hazards?
• What is your plan in case of an emergency?

The process of building a team continues when the leaders add the participants to the group. Make time early on in the trip to describe to the participants your vision for teamwork and expedition behavior; the mission, goals and style of the expedition. Often this begins in a formal trip orientation. But it should continue as the leaders set a course tone and model the

norms for expedition behavior at the start of the trip and throughout its duration.

The Trip or Course Orientation: Setting Clear Expectations

The trips your organization offers are probably described in marketing materials, pre-trip information sent to participants and conversations with admission-registration staff. But don't assume all participants have read the material or held in-depth conversations. They may not have the same expedition vision as you. Often, another step is needed before venturing into the field: a pre-trip orientation.

At NOLS, the orientation is a formal process done at the start of every trip. During it, participants learn the expedition's goals, logistics, activities and anticipated environmental hazards, as well as the responsibilities of both the leaders and themselves. It's an opportunity to make sure everyone knows the expedition's goals and plans, and to set expectations for the trip's style — or expedition behavior.

Any trip, even a personal one, should have an orientation process. It can seem unnecessarily stiff or formal to spend a few moments reviewing your plan, but false assumptions are often at the heart of miscommunication, conflict and poor decisions on trips with professionals as well as friends. Even on a casual afternoon bike ride, it's a good idea to check in with companions and make sure you're in agreement on where you're going, the pace you'll take, and what to do if someone gets separated.

Briefings

Briefings should be a routine, regular part of your trip. They help clarify the team's goals and expectations. Lying await like rocks in a river are unarticulated or out-of-date goals and unclear or unstated teamwork expectations. Effective leaders articulate and explain goals, and they do so as often as is needed. Regular briefings before activities, whether for a fishing jaunt or a demanding climb, should be a tool you use again and again. Brief at the start of the day. Brief before you tackle a particular challenge, such as facing an avalanche-slope, river crossing or white water rapids. If your plans must change, brief on the revised plan.

Effective aircrews review flight plans they've flown again and again. They clarify what their roles are, what they expect from each other, how decisions will be made and what they might do in the event of an unforeseen event. Wilderness leaders should do the same. It could mean the difference between being healthy or injured, success or failure.

As their name implies, briefs should be brief — clear, concise and consistent. People can remember details from short briefings. Several 2- or 3-minute briefings during the day may be more effective than one 20-minute briefing at the start of the

day. A briefing shouldn't be a planning session or decision-making process; it's a time to communicate the plan.

As you brief, have your team put aside social conversation or low priority tasks and pay attention. Ask for and encourage questions. Check that you've been understood.

A sketch of an activity briefing:
• What are we doing? (What are the goals?)
• How are we doing it? (What's the plan?)
• When are we doing it? (What's the timetable?)
• Who is doing it? (What are our roles?)
• What hazards can we anticipate?
• How will we manage those hazards? (What are the contingency plans?)
• What gear do we need?
• How and when will we make decisions?
• How is everyone doing?
• What is our plan if someone becomes ill or injured?
• Have I been understood? (Repeat back information.)

A briefing can set the tone for a situation. In an emergency, it can be used to calm your team down. "Folks, let's take it easy. We've finished the assessment and the scene is safe. We next have to splint Bill's fractured leg, then log roll him onto a sleeping bag and treat him for shock. Let's take it one step at a time."

Modeling good expedition behavior

Good expedition behavior doesn't magically or spontaneously develop from a shared wilderness experience. It comes from conscious forethought and discreet actions. Build good expedition behavior by articulating your vision for teamwork and setting behavioral norms. Early in the team-building process, engage your participants in discussing good expedition-behavior attitudes, values and practices.

At NOLS, a discussion on expedition behavior also covers school policies such as no alcohol, smoking, illicit drugs or offensive behavior. We discourage any obscene or profane language and set expectations that everyone treat each other with dignity, serve the team's mission, and support leaders and teammates. Students learn they are expected to follow directions, especially regarding health issues, and that they will speak up, particularly when it comes to risk management. We include participants from the start as active partners in risk management, as members of the team, keeping them informed on plans and involving them in decisions.

Your team probably includes a core group of leaders and participants, but it is not static. It expands as you interact with different people: the bus driver, support staff who help with equipment and food, organization administrators and managers, outside rescue groups or land-management personnel.

You may work with a subcontractor who provides rafts, kayaks or canoes; who guides horses that carry your gear; or who cooks your meals and helps your group. Speak with these folks as best you can about your group's norms, expectations, roles and responsibilities. As the team changes, you need to include the newcomers and build the new team.

You can describe expedition behavior in words, but it's through action that the expedition members show they understand the concept. The best leaders model the behavior they want to see in their team. They both teach and lead. They take the initiative and time to make sure pertinent details of the plan are shared with team members.

Questioning Decisions, Advocacy and Assertiveness

An atmosphere in which participants and co-leaders can question, advocate and speak up needs to be consciously created. Peer pressure and poor self-confidence can make it hard for some students to speak up. Also differences in age, gender, training or cultural background can become communication barriers. And there is also a tendency for deference to hierarchy, making it hard for co-leaders to question a leader in charge or for students to speak up to leaders. "I might sound stupid if I say something." "Surely the leader knows about this problem with the rudder on the kayak." "They must have meant to turn left instead of right." But there are times when the nurse knows more than the doctor, the sergeant knows more than the lieutenant. Effective teams avoid these communication traps and can access the experience and knowledge of the entire group. Effective leaders build a team environment in which everyone can speak up, question decisions and seek clarification without fear of reprisal.

Make every effort to demonstrate to participants that they can speak freely. Consider the following:
• Let your team know you care about their thoughts by periodically checking in with them.
• Give them opportunities to speak up.
• Listen to their responses.
• Do not interrupt or "talk over" them.
• Do not rush through a discussion, and give the impression that they have nothing to contribute.
• Make eye contact.
• Ask: "Are you getting enough direction from me about what you need to be doing?"
• Say: "If anyone disagrees, please speak up."

Be aware that silence can be mistaken for agreement. Don't assume everyone has said what they need to. Put the responsibility on people who disagree to speak up, but at the same time check in with quieter people. Make sure they are not afraid to speak up. All too often in incidents, someone felt like they couldn't say something though they had important information that could have prevented the situation.

Avoid starting a discussion with a predetermined decision or assumption hidden — subtly or not so subtly — in your question. We've all experience times when the leader says "Any questions? Okay." or "Everybody's ready, right?" which really means the discussion is over. That habit can squelch conversation and stamp out good ideas. Consider: "This river looks crossable, right?" "We've done this before, ready to go?" "I don't see any problems here, how about you?" These questions convey that the speaker has already made a decision. Instead, give people ample opportunity to speak. Phrase questions like: "Is there anyone who's not ready?" rather than "Is everyone ready?" Ask questions that check for understanding, agreement or disagreement: "Okay, let's take turns and mention any concerns you have."

Be sure to use non-urgent situations to model an open communication environment. The habits your team develops while making simple decisions, like what to eat or when to break for a snack, will serve you in a crisis.

Inhibiting communication by being unreceptive to feedback or questions can play a causal role in outdoor incidents. A leader — "John" — of an annual college-orientation trip into the Rocky Mountains knows this firsthand. During one trip, John was a co-leader with an uncommunicative trip leader who routinely forged ahead with stronger students, leaving John and the slower students behind and uncertain of directions. At a difficult stream crossing, John found himself facing the rough waters while the trip leader and stronger students stood safely on the opposite shore. John tried to shout out questions about the crossing but couldn't hear the responses. Finally, John waded in with his group, only to slip and fall

Behaviors That Restrain & Behaviors That Encourage People To Speak Up

Restraining Behaviors	Encouraging Behaviors
Poor listening habits	Respectful, active listening
Not responding to input with action	Asking for critical evaluation
Sarcastic or condescending responses	Sharing information, not conclusions
Dominating a discussion with talkativeness	Responding to input with action
Having a pre-determined idea of the outcome	Checking for understanding on key points

when they were 10 feet from shore. John and the group were carried downstream by the current to the other shore. John scrambled out — wet and bruised — and caught up to the rest of the group, muttering, "That was cool, let's go" even though he was really quite shaken and had banged his knee real hard. Fortunately, John's injuries weren't worse, and fortunately for the program, a more responsive co-leader was hired the next year, possibly saving a student's life on that trip. Then, John felt comfortable asking for a belay rope on a tricky section of a 4th class climb, despite the fact that his co-leader and several students had already scaled it without the aid. But the other leader understood and backed up John's request. Later, a student who slipped and would have had a bad fall was caught by the belay.

It can't be overstated how important it is for an outdoor leader to create an environment in which students and co-leaders can speak up. It's an essential part of a risk-management strategy.

Former U. S. Secretary of State and U.S. Army General Colin Powell understood this when he said: "The day soldiers stop bringing you their problems is the day you have stopped leading them. They have either lost confidence that you can help them or concluded that you do not care. Either case is a failure of leadership."

Listening
Good listeners are active listeners. They ask questions, paraphrase, make eye contact and use positive body language. Poor listeners tune out, interrupt, debate and have quick, preconceived responses. Good leadership requires good, active listening.

Active listening helps you avoid the trap of hearing what you want to hear, not what is said. When listening actively you are focused on understanding what is said, not mentally preparing a response. Your response can paraphrase or summarize what you thought you heard and give the speaker a chance to correct or clarify. We find this especially important in cell phone or radio communications. These conversations are often rushed due to battery limitations or they are obscured due to static. Stating what you think you heard helps prevent misunderstanding. "I hear you requesting a helicopter at Lonesome Lake for a non-life threatening lower leg injury. Is that correct?" Repeating back instructions is another good habit. "I understand that you want me to pick you up at Bailey Meadows." Clarifying unclear information also helps. "I don't understand. Do you want information or do you want me to make this decision?"

Conflict Resolution
The potential for conflict is natural among people and is an inherent part of any group's development into a high functioning team. Disagreements will arise. Personalities will clash. Feelings will get hurt. While conflicts are okay, unresolved

conflicts are not. They impede communication and cooperation, and they can lead to incidents. Good teams are not immune to conflict, but they effectively manage it.

Conflicts can arise over differing fitness levels (a seasoned climber versus a hiker with vertigo), opposing perceptions of risk ("I think we can paddle in these waves" versus "The waves are too big for us; we need to stay on the beach"), conflicting goals ("I came to summit this peak" versus "It's taken too long to get here; we're about out of food– we should head down"), disagreements over responsibilities ("Why am I always stuck with the same camp chore?"), or annoying personal habits ("I hate the way she tries to take control of every situation!").

Typically, conflict arises on an expedition when expectations, roles and responsibilities are unclear. Participants are missing information or don't have a sense of the big picture. It's the leader's job to clarify the vision and roles.

When conflict arises, you should see it as a sign that your team may be unraveling. As a leader, you may need to step in, acknowledge the issue and set aside time to work through the conflict by listening to the different perspectives and opinions, restating or revising roles and expectations and committing to moving forward productively. If a conflict arises during a crisis, the team will need to put aside differences until the emergency has passed, only addressing immediate issues that are impeding progress. Later, when the crisis has passed, work to resolve the conflict and increase the team's ability to deal with its differences.

Clear and Effective Communication
Whether you are discussing how to cross a river or when to break for lunch, the members of your team need to understand each other. It seems simple. We talk to each other all the time. Talking is easy. But communicating effectively is difficult. Our words can be poorly chosen or laced with inscrutable jargon or acronyms.

Wilderness leaders are as guilty as anyone of jargon overuse. "We found a fast shear on loosely-bonded mixed forms above an R&R layer that popped on a RB4. We decided to avoid the slope." This may tell someone something, but it may be Greek to someone unfamiliar with technical snow terms.

Be simple, clear and concise when giving instructions, sharing information, or asking questions. Too often, we convert nouns to verbs that don't exist in any dictionary, and overuse adverbs and adjectives, rendering a simple concept incomprehensible. For example: "I c-spined the patient" is jargon for stabilizing a spine, but it could also mean immobilization on a backboard. Unless you saw the patient, you'd be guessing. Another example: "The patient was slightly nauseous, kinda sweaty and a little pale." Can't we just state: "nauseated, sweating and pale"?

Have systems in place when trying to convey information over distances or with other distractions around. If the wind or other background noise limits your ability to be heard, you may need to wait for or seek out quiet. Position yourself so that everyone can hear you. For example, always stand upwind so your voice carries.

Climbing signals use simple phrasing to be clear, concise and precise. At NOLS, we use "On belay" instead of "I'm tied in." "Up rope" instead of "Pull it up!" A simple "Thank you" acknowledges receipt of the communication. It's helpful if your team understands the words and uses them consistently.

NOLS Climbing Signals

Belayer's Signals		Climber's Signals
"On belay"	→	Climbing
"Climb"	←	
		"Rock"
		"Up rope"
"Thank you"	←	"Falling"
		"Slack"
"Twenty-five"		
"Fifteen"		
"Zero"	→	"Thank you"
"Rock"		
"Thank you"	←	"Belay off"

On the water, paddle gestures and hand signals allow us to communicate when we can't hear each other. They're commonly used during ocean launches, landings and exercises; between pods of boats during multi-pod travel; and when running river rapids. By returning that same signal you acknowledge that you've received and understood it, similar to the "thank you" used at NOLS during rock climbing.

Paddle signals may vary between groups, but here is a commonly used series.

1. ***Proceed*** (paddle held vertically).
Usually gives a waiting paddler permission to proceed. Occasionally used to get a paddler to come to you.

2. ***Stop*** (paddle held horizontally overhead).

3. ***Pod up*** (paddle pumped up and down in the horizontal position). This is used to gather a scattered pod.

4. ***Move left or right*** (paddle held diagonally across the body pointing in the intended direction of travel).

5. ***Emergency*** (paddle held vertically then swung side to side in a waving pattern). Signals that help is needed.

6. ***Okay.*** Tapping your flat palm on top of your head or making an "O" with your thumb and forefinger means "OK."

Leaders sometime point to their eyes, then at a participant, to indicate they need to be watched. A finger in a slicing motion across the throat is used as "This is no good — abort." Whatever signals you choose, make sure your team knows their meaning before they are needed.

The Perils of Portable Telephones

There is no question that cellular or satellite telephones and radios can be useful. If a participant needs to be evacuated, a cell or satellite phone can shorten the evacuation time. If there is a complicated medical situation, medical advice can be received from a physician. Yet the minute these devices become a crutch, they become hazardous. While the technology is improving, they still have limitations and can be unreliable — especially in mountainous or remote environments. Their reception can be fuzzy or non-existent. Batteries can die. A gadget can simply break. Electronics cannot replace training, skill, leadership and teamwork in the event of an emergency.

NOLS began widespread use of radios, which could be used to request evacuation, in 1989. In the late 1990s, the school began to also use cell phones as their coverage expanded. Most recently, satellite phones have been adopted as they have become more reliable. Indeed, NOLS has used radios or telephones numerous times to request evacuation. But not once were they directly responsible for saving a life.

Before any trip, you should decide when and how a portable phone will be used. Cell or satellite phones can be problematic if people use them in haste or with incomplete information. Needless rescue missions can be launched when just a little more self-reliance had been in order.

An example: A high school group was hiking an 11,000-foot ridge that separates Lone Bear Lake from Pontiac Creek in the Wind River Range when midday the weather deteriorated to whiteout conditions. As the teachers searched for a route down, two students grew cold.

Without personally checking the students, a leader radioed for help, believing the conditions were deteriorating quickly. A garbled message was sent indicating a "life-threatening emergency" with two "hypothermic" students. School employees who received the message tried to confirm the situation but were unable to contact the group. Worried, they initiated a rescue.

Meanwhile, a route down was quickly scouted, tarps were rigged in a saddle, and a stove was started for hot drinks. The cold students were brought to the makeshift campsite and placed in sleeping bags. Within 45 minutes, they were warm and coherent. Understandably, a search and rescue unit that reached the group, after traveling through the night in the storm, was not happy to learn that the S.O.S. had been made in haste.

A portable phone should never replace self-reliance and good judgment. If one is used, be clear about the protocol for its use.

Some guidelines:
• Are you informing another team member of your plan and coordinating support?
• Are you asking for help or for a rescue?
• Do you need information? If so, articulate your questions carefully.
• Are you asking for advice? Again, be clear about that.
• Are you asking the call recipient to make a decision for you?
• Are you informing someone of your decision?

Portable phones increase the need to verbally communicate clearly and concisely. A good report can facilitate an appropriate decision about the urgency of a rescue. It also conveys competence to a medical provider or rescuer. Writing your statements down first can help you compose your thoughts and make them as concise and complete as possible. An example of a good call:

Base: "Hello, NOLS Southwest EVAC line."
Caller: "Hi this is Drew Leemon on Trip#5. I have an urgent situation and request immediate transport of a seriously injured student.
Base: "OK, you have one student with a serious injury and need a rapid evacuation?"
Caller: "Correct. We are at Black Canyon. lat 33.174°N, long 108.161°W."
Base: "OK I'll repeat that you are at Black Canyon. lat 33.174°N, long 108.161°W.
Caller: "Correct. The patient's name is Johnny Depp."

This script says who you are, where you are, and what you need. If you have time and a clear connection, you can add details on the patient's condition or the landing zone. Regardless, you always give the essential information and have it paraphrased back to you for clarity.

Never forget that a peril of portable phones is a loss of self-reliance. With the spread of cell towers and satellites, our society now has unrealistic expectations for rescues in the wilderness. Search and rescue personnel tell tales of adventurers who expect quick responses in the middle of nowhere while they sit passively and do little to help themselves. It's an unfortunate attitude. The abdication of self-reliance and preparedness is the opposite of what is needed to survive in an emergency, and it's counter to the leadership you should aspire to.

Team Competency

Ideally, critical points in a technical system are backed up. This may be a knot coupled with an extra half-hitch, a climbing anchor placed with multiple anchor points, a sea kayaker carrying a spare paddle or a rappel made with a back up belay. Likewise, good teams have duplicate human resources.

Effective leaders discern available skills within their team. They call upon the knowledge and experience of each team member. They know who has specific skills in medicine, navigation, technical rope systems or rough-water paddling. They instill respect and trust in participants and therefore empower them to use their talents.

Good leaders are always learning. Rock-climbing experts often review safety points from the day before, learning from their experience. Excellent teams take the time to share knowledge and experience, helping members grow in competency.

In 1989, a passenger jet departing Denver suffered catastrophic hydraulic failure, leaving the pilot with limited controls. Their mechanical failure was unprecedented and critical, yet the crew's performance dramatically lessened the loss of life during the crash landing. The captain credits his crew's open communication: It was a crew member who came up with an innovative solution for steering the aircraft. "When the Captain does not know how to resolve a situation, why should they be the only one involved in the problem-solving effort?" the captain noted later. "There is a lot of experience sitting in the other two seats, so why not use it?"[i] An analysis of the cockpit recorder showed the team continuously asking for more information, clarifying details, and stating intentions and observations.[ii]

In a crisis, it is all too common to use a directive leadership style. Such a leader, however, can miss out on taking advantage of her team's skills and experience. The true advantage of a team is its collective wisdom. When you build a functional team — a group with good expedition behavior — you're fostering an atmosphere that may help you find the answer you need in a crisis.

Summary Points

- A successful team is closely associated with the effectiveness of its leadership, teamwork and communication, more than its skills.
- Expedition behavior defines the atmosphere of a team. With positive expedition behavior, a team is better prepared to detect and manage a problem before it becomes an incident.
- Teams need to be consciously built by their leaders with clear expectations of goals, roles and responsibilities.
- Concise, clear, consistent briefings keep your team aware of the plan. Brief at the start of the day. Brief at the start of an activity. Brief when your plans change.
- A good leader sets a tone in which participants and co-leaders feel they can speak up, question and share observations.
- Listening skills help leaders avoid the trap of hearing that they want to hear, not what is said.
- Effective teams don't avoid conflict, they manage it effectively.
- Clarity in communication is vital, and a skill to be learned and practiced.
- Portable phones should never replace self-reliance. They don't save lives, people do.
- Good leaders are aware of their team members' skills, and capitalize on them.

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[i] Haynes A. Eyewitness Report: United Flight 232. Accessed 6/1/2004 at http://www.airdisaster.com/eyewitness/ua232.shtml

[ii] Sexton BS, Helmreich RL. Analyzing Cockpit Communication: The Links Between Language, Performance, Error, and Workload. The University of Texas Team Research Project Department of Psychology The University of Texas at Austin

Expedition behavior and attitude can have considerable impact on your group's success: participants warming up with some hot chocolate on a cold rainy day.

Chapter Three: **Behaviors & Attitudes**

When we hear about an injury, close call or fatality, we tend to focus on the most obvious (and more exciting) physical aspect — an avalanche, lightning storm, raging river — and think of it as the "cause." If a hiker is rescued after a three-day snowstorm or a climber is crushed in a rock fall, it is the snowstorm or rock fall that is the obvious factor. But these are not necessarily the root cause.

The root cause is often elusive because it tends to be more subtle. We've learned through analyzing hundreds if not thousands of wilderness injuries, near misses and fatalities that the incidents are usually caused by the complex interplay of different contributing factors, many of which involve human error.

Contributing factors can be either "objective" or "subjective." "Objective factors" — sometimes called "environmental factors" — are the obvious physical aspects of an incident like a lake, a river, the weather, objects or animals. They are things we can see, describe or measure. In an incident, there may be several objective factors (a snowstorm and an avalanche) but typically one is prominent (the avalanche).

"Subjective factors," on the other hand, are our attitudes, behaviors, habits, states of mind and cognitive limitations. These are not easily described or measured. We bring them into the wilderness with us and use them in every decision we make. They color how we perceive and respond to the objective factors.

## Human Factors– A term with many meanings

In the fields of engineering, physiology and psychology, human factors refer to our cognitive, behavioral and physiological activity. These fields study how we think and behave, as well as how we physically interact with our environment in set situations. Their findings help airlines, for example, develop ideal instrument panels for crews, taking into account how they think, react and move.

In outdoor risk management, "human factors" refer to the negative attitudes and behaviors that can lead to an incident as well as the positive attitudes and behaviors that can proactively manage risk and reduce incidents.

Subjective factors are a subset of human factors, which refer to not just our cognitive abilities but also to our physical abilities and physiological reactions.

The interaction of "human factors" and environmental factors can lead to hazardous situations. Depending largely on the human factor — how a person or team is prepared, communicates and reacts — the situation may or may not escalate into an incident.

In 1983, Alan Hale described the interaction of human and environmental factors as the "Accident Potential" and illustrated it in this diagram.

SUBJECTIVE OR HUMAN FACTORS   INCIDENT   OBJECTIVE OR ENVIRONMENTAL FACTORS

Adapted from Hale, 1983
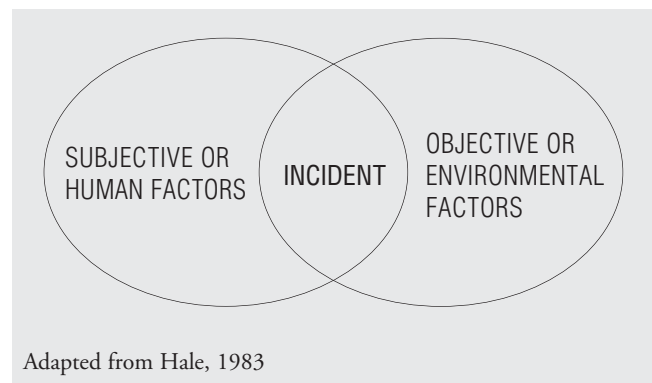
The greater the interplay or overlap of the subjective or human factors with the objective or environmental factors, the greater the potential for an incident. If the interplay is smaller, then it's less likely someone will get hurt or put a group at risk.

In another effort to categorize the contributing factors of incidents, researchers Dan Meyer and Jed Williamson[i] organized human factors into two subcategories: unsafe acts and errors in judgment. They referred to environmental factors as unsafe conditions. Meyer and Williamson developed a matrix to better understand what's at play in incidents. They contend that their matrix encompasses all aspects of any given incident. (See table on page 16.)

To effectively manage risk in adventure activities, a leader needs to develop the ability to recognize the subtle clues and patterns in the environment. Much has been written about how to anticipate hazardous weather, rock fall, tides and rapids. Our intention here is to focus on the less understood human factors.

Potentially Unsafe Conditions Due to:	Potentially Unsafe Acts Due to:	Potential Errors in Judgment Due to:
• Falling objects (rocks, trees etc.) • Inadequate area security • Weather • Equipment/clothing • Physical/psychological profile • Swift/cold water • Animals/plants	• Inadequate protection • Inadequate instruction • Unauthorized/improper procedure • Inadequate supervision • Unsafe speed (fast/slow) • Inadequate food/drink/medications • Poor position	• Desire to please others • Trying to adhere to a schedule • Misperception • New or unexpected situation • Fatigue • Distraction • Miscommunication of participants and/or staff • Disregarding instincts

Adapted from Williamson and Meyer, 2004.

The work by Hale, Meyer and Williamson has been a tremendous contribution to the field of outdoor risk management. At NOLS, we have used their tools to analyze the incident data we collect from our courses. Over time, we have departed from their work and zeroed in on the human factors that crop up again and again in incidents. We feel these are of particular concern. Some of these human factors describe negative behaviors or attitudes that we must be alert to and avoid. Others are positive behaviors and attitudes that can help you avoid incidents.

The factors are:

Negative	Postive
• Complacency • Overconfidence • Distraction • Differing perception of risk • Risk homeostasis • Expectations and peer pressures • Fatigue, stress and performance	• Situational awareness • Watchfulness • Self-awareness • Role modeling • Role modeling • Tolerance for adversity and uncertainty

Understanding Behavior and Attitude

Humans are fallible. We have both good and bad habits. There is a tendency in the field of outdoor risk management to focus on what went wrong in incidents. But that practice fails to identify and foster the human factors that go right and can be called on to reduce incidents. Here, we'll first take a look at the negative factors, and we'll follow with an analysis of the positive factors.

Negative Human Factors

Complacency

When you take on an activity for the first time, you are motivated to be organized and pay close attention to detail. You want to perform well and have a successful experience. Over time, if you lead that same activity — climb that same route, for example — again and again, the stimulation from its novelty diminishes. This isn't necessarily bad. You will be operating at a higher level of expertise. But there is a real danger of complacency. When something becomes routine, you may not be as alert or pay as close attention. Complacency dulls your sharpness and edge. It can also tempt you to seek new stimulation. This may be okay if you're on a personal adventure; you may learn something new. But when leading others, you'd better watch out!

Jed Williamson is also the editor of *Accidents in North American Mountaineering*, counsels outdoor-program managers to be alert to field staff who become bored and complacent. They may try an untested or unapproved method or dabble with a new route, and put their group at risk. We would never expect a pilot to open the intercom while approaching an airport and say, "Geez, I thought I'd try something different today, maybe cut an engine and see how well the airplane handles." Similarly, when leading a whitewater river expedition, a leader should never say: "Let's run this rapid without scouting, liven things up a bit."

If you find yourself thinking about a novel approach, stop and question your motivation. Will this serve the participant or yourself? Is it an unexpected or challenging situation that needs a different approach? How will this change the experience for the participants? Will it enhance their experience, or is it only an effort to relieve the monotony for you?

An outdoor leader who survived a spectacular fall while walking along the edge of a steep rock canyon wrote this: "Instructors who have spent time on technically demanding courses will recognize the phenomena of the casual day. I have often been guilty of rigorously instilling safety awareness in my students, while telling myself that experience and sure-footedness excused me from excessive caution. Casual day or not, exposure is exposure, and instructors, though we often forget it, are always human. I have been given a valuable lesson for a remarkably light fee."[ii]

Overconfidence

One of the outcomes from taking on and accomplishing challenging outdoor courses is an increase in confidence. Having a high level of confidence is great, but it needs to be balanced with a good dose of temperance. Being overconfident can lead to poor judgment and put yourself and others at risk. Like complacency, overconfidence can lead people to attempt things they're not ready to do. Outdoor leaders have an obligation to coach participants in the wisdom of being confident yet prudent and careful.

Firefighters often maintain an organizational culture of bravado — who is taking on the most risk, working the longest hours, getting the grimiest. Yet a machismo atmosphere of overconfidence can prevent firefighters from voicing concerns. Investigators believe such a culture contributed to the deaths of 14 firefighters in the Storm King fire of 1994 in Colorado. A "can do" attitude predominated, and the firefighters ignored or failed to recognize 12 of 18 danger-warning signs taught to all firefighters. Survivors noted that it would have taken somebody incredibly strong to say, "You know what, it's time to turn around."

In the outdoor education field, thrill-seeking behavior and a lack of respect for hazards is fed by an era in which wilderness sports have become adrenaline recreation and entertainment. We're in the era of the "X games," extreme sports and adventure racing. Thrill-seeking behavior is inappropriate on an adventure education expedition in a remote environment where your group needs to be self-reliant and an evacuation is a last resort. Be watchful for signs of invulnerability in yourself, co-leaders and participants.

Distraction

Outdoor leaders often do multiple tasks at once. At any given moment while traveling in the wilderness, you might be assessing participant performance, watching the weather and looking for environmental hazards; you might be making adjustments for these conditions while keeping your group together, wishing a slower participant was faster, considering your schedule once in camp, wondering about your co-leaders' abilities and agonizing over indigestion from an over-spiced breakfast — all while paddling, climbing, skiing or hiking.

The field of neurobiology tells us that while a human brain can process an amazing amount of information, it has limits. If your brain becomes overloaded, it will subconsciously sort the stimulus bombarding you – making you aware of some information but ignorant to the rest. It doesn't take much to tip the scale. You might choose to pay attention to the wrong thing. You might miss a critical moment when you could have intervened and prevented a problem — issued a paddle command, consulted a map or double checked a rope system.

No one is immune to distraction. Seasoned outdoor leaders have failed to clip into a belay anchor or finish tying a knot – things they've done thousands of times before. Participants, distracted by a conversation, have poured hot water on someone's foot.

Avoid distraction by:
- Being disciplined to do routine tasks correctly.
- Staying focused on the task at hand.
- Being aware when you're multi-tasking.
- Taking a moment to sort and prioritize where your attention should be.

Differing Perceptions of Risk

Each person has a unique perception of risk. If a situation is voluntary, familiar, controllable, routine, pleasant, predictable or avoidable, we perceive it as safe or less risky. If a situation is new, dramatic, dreadful, catastrophic or difficult, we perceive it as risky.[iii] Since many of the activities associated with adventure education have an element of the dramatic, they are often viewed by novices as dangerous. Conversely, outdoor leaders have come to know many adventure activities well so they see them as acceptable and safe. These differences in risk perception between leader and participant are important to understand.

An activity that is comfortable for one person may be frightening to another. A beginning skier may struggle frantically to control his speed on a gently angled slope while an expert zips down three times as fast while pulling on her gloves. A participant might desperately want a belay on steep terrain while a leader wouldn't think twice about scrambling up without a rope.

To be a good leader and risk manager, you must empathize with a student's anxieties. Their apprehension and trepidation affects how they perform. If you can't relieve their anxiety with information or lessons, you may need to modify the activity. Without attention to others' perception of risk, you could be putting you and your group unnecessarily in a dangerous situation.

Risk Homeostasis

"Risk homeostasis" is a psychological theory that says that each of us has a unique tolerance for risk that we hold at a constant level. This level is called the "target risk." People adapt their behavior, much like a thermostat, to maintain

their target risk level in response to "safety" equipment and other tools that mitigate risk.[iv]

The theory, primarily used in vehicle-traffic studies, suggests that things like seatbelts, airbags, crashworthy vehicle design and well engineered roads do not reduce car crashes. That's because people adapt to these tools and drive faster, tailgate or exhibit other risky behaviors. They are adjusting their "target risk" level to the new technology.

This theory has been applied to wilderness travel with the introduction of cell phones, avalanche transceivers and other technological advances. According to the theory of risk homeostasis, if these gadgets lower your perception of risk, you may ramp up risky behavior.

Risk homeostasis theory reveals to us that to lower the number of incidents, we must do more than improve technology. We need to adjust people's perceptions of risk. If people understand incident data, facts on health and safety, and are familiar with incident accounts, they may better understand the phenomenon of their target level of risk — and avoid the temptation to take on risk because a cell phone is in their holster or a computer reported there wouldn't be an avalanche.

Expectations and Peer Pressure
Successful adventure programs set clear expectations, laying out what will be covered on a trip and what activities will be undertaken.

Expectations have a down side: when they aren't fulfilled, people can be disappointed. More significantly, expectations can create pressure to perform. This pressure, a form of peer pressure, is familiar to us from our adolescence. Peer pressure never really goes away. As adults, our friends and colleagues can profoundly influence our behavior. While we may grow in maturity and develop greater skills, expertise and convictions, peer pressure can still raise its ugly head and negatively impact our decisions and actions.

We also place expectations on ourselves. Sometimes we can't live up to them. You may be looked to as the "medical expert" in your group by virtue of your first aid credentials and asked to help an injured student when in fact you have no real patient care experience. Because you're a hired leader for a trip, you may be deemed infallible by the students, and assume the expectations of that mantle. This pressure can place you in a position where you make a mistake or try something beyond your abilities.

It is always acceptable to say you don't know. It's okay to say you can't finish a route and you must turn around. It's essential to know when to stop and adjust priorities and schedules. That's true leadership.

The Invincible Leader Syndrome

Research in medicine and aviation has demonstrated that pilots and physicians often have unrealistic attitudes about the impact of stress and fatigue on their performance. They can be seduced into believing the quality of their work is not affected by exhaustion and tough conditions.[v] These same mind sets can be found among the young, strong and talented staff of adventure-education programs. They may think that if there is a problem, they can put their body in the way, or to paraphrase the culture of aviation — don their white scarf and goggles and fly out of trouble.

Experienced leaders know better. They don't believe that while participants can be tired, they can't. They don't rigorously instill safety awareness in their students while telling themselves they're infallible. A rough river, a steep cliff, an icy route are dangerous, and leaders are human. A leader who acts blithe while un-roped at the top of a cliff, thinking it helps his participants relax, is setting a poor example.

Schedule and Goal Pressures
Summit and road-head fever can afflict any outdoor leader or participant on adventure-education courses. And it can lead to trouble. Toward the end of a trip or a long day, you may be "smelling the barn." You're eager to get there and unwind. You're almost there, so you push a little harder, move a little faster, allow your group to spread out, let down your guard and potentially make a mistake.

Wilderness and weather are unpredictable and can make any schedule irrelevant. Summit fever occurs when the group is focused on the summit or goal, and they lose sight of clues that this may not be their day. Have the flexibility to turn back from a peak ascent without reaching the top if threatening clouds move in or your group is hiking slower than expected. You may have to wait for a better day or give up on the peak. What we've seen again and again in incident accounts is people continuing when circumstances argued for retreating. Setting a schedule and obstinately sticking to it is a dangerous habit.

There is a saying that circulates among NOLS instructors: "When the going gets tough, the tough go camping." Be patient and set your pace to the variables of the wilderness. You can't change natural phenomena like storms, high winds or rough terrain. You can change your plans. NOLS founder Paul Petzoldt spoke with admiration about leaders who had the humility and flexibility to change a schedule to fit their circumstances. NOLS has a long history of courses delayed by

events beyond the leaders' control and routes that were finished when it was prudent, not when it was scheduled.

Fatigue, Stress and Performance
Adventure education's culture is characterized by a strong work ethic. Leaders work hard, both physically and emotionally, putting in long days that may start before dawn and end well after sunset. Participants can also be under enormous stress from the physical exertion of wilderness travel, strain from living outdoors (sometimes for the first time), being thrown together with strangers, and adapting to a new diet and routines.

The deleterious effects of stress and fatigue on performance are well documented in medical literature.[vi] Our strength, stamina, mental and emotional health, and immune responsiveness decline if we are chronically tired, ill-nourished or under stress. We are more susceptible to injury when we become tired or hungry.

One study shows that injuries during wilderness activities tend to occur late in the morning or late in the afternoon.[vii] When people become tired or hungry, they are more prone to injury. A study of injuries on NOLS courses showed that over 50 percent of injuries occurred during the first 10 days of an expedition.[viii] We believe that stress and exertion at the start of trips, combined with the situation's novelty, led to injuries.

If you are leading a group of young, strong and vigorous students, you may need to coach them on stress's impact on their physical and cognitive faculties, their expedition behavior, leadership, judgment and decisions. They, as well as your co-leader, may need to be reminded that they have permission to ask for help. On a successful team, people can say when they are tired or hungry. It's not a character flaw to acknowledge your needs. It's a measure of wisdom and maturity to say, "I'm bushed. Can you take over?"

Positive Human Factors
Up to this point, we have highlighted negative human factors that can, if left unchecked, lead to poor decisions. Just as importantly, you should consider positive human factors that can help you circumvent incidents and successfully manage risk.

Situational Awareness
There is an old adage from the culture of search and rescue: The best piece of equipment you can bring into the wilderness is your brain. By being alert to and aware of your surroundings, peculiar circumstances and companions, you develop "situational awareness." Situational awareness is the ability to perceive reality accurately. It is a present-moment attunement to the environment, yourself and your team — a continuous interpretation of what is happening around you and with your team.

A lack of situational awareness can lead to unfortunate situations like "getting caught" in hazardous conditions that could have been avoided if warning signs had been detected. Ignoring building afternoon thunderheads while mountaineering can precipitate a hasty and dangerous descent in rain, wind and lightning. Confusing a minor medical injury for a major wound can cause unnecessary haste, poor decisions and avoidable risk.

A common tool used to help outdoor leaders maintain situational awareness is the so-called "risk-management triangle." In the center of the triangle are the human factors; on the triangle's three sides are the significant environmental factors. We have adapted the risk-management triangle for different activities like backcountry travel in avalanche terrain or, as shown below, sea kayak expeditions. These risk-assessment tools can help you maintain situational awareness.
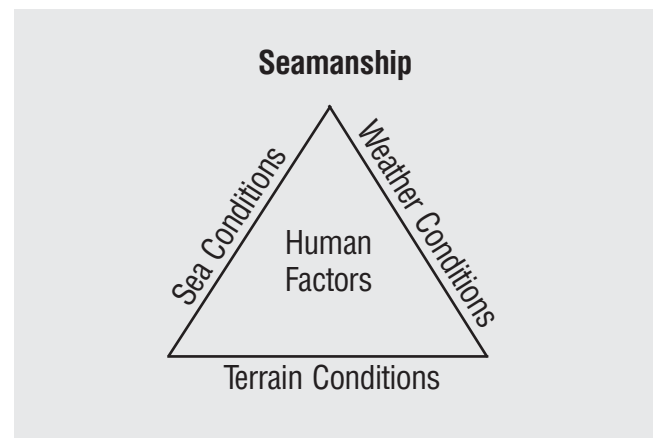
The U.S. Coast Guard has analyzed navigational incidents involving ships and commercial and pleasure craft. They found that 40 percent of incidents were due to the captain, skipper or crew losing situational awareness. This loss often occurs slowly and imperceptibly. The Coast Guard, along with the U.S. Naval Aviation Safety Command Training Center, has created a list of behaviors that are signs that you might be losing situational awareness; they have also put together tips to avoid these traps (see chart below).[ix]

ful. Have you ever walked away from a rest break during a long hike and not noticed the water bottle and map left on the rock? NASA astronauts have told us that being vigilant and having a relaxed awareness are key ingredients to successful space travel. Wise mariners call this watchfulness.

Researchers have found that high performing aircraft crews have trained themselves to check details when workload is low. They use down time to check in with their team. They run

Clues	Suggested Action
Confusion within the team. People aren't working together. They've lost focus.	Review your mission and goals.
A bad gut feeling	Intuition is a profound sense. Trust your feelings. Investigate what is going on.
Lack of vigilance. People get distracted, develop tunnel vision and miss the hazards.	Stay watchful and alert. Stop the group. Check on food and water needs. Focus on being aware.
Misperception from faulty information.	Ask questions. Verify sources and assumptions. Don't make things worse by guessing.
People begin to depart from normal operations and use unfamiliar techniques.	Speak up. Point out the unfamiliar procedure.
Failure to meet planned targets. You're off the travel plan timetable.	Speak up. Ask why you're off the timetable. Do you need to alter plans?
Unresolved discrepancies.	Information does not agree, is confusing or ambiguous. If something looks wrong, it probably is wrong.
Fixation or preoccupation.	When someone fixates on one task or becomes preoccupied with work or personal matters, they lose the ability to detect other important information. Know your team and be alert to people acting out of character.

Adapted from U.S. Coast Guard 2004.

You can also maintain situational awareness by making a conscious effort to be watchful; question assumptions; review plans, timetables and goals; and resolve ambiguous or conflicting information.

Watchfulness
It's easy to be alert and aware when the activity is exciting. And it's easy to be inattentive when the work is routine or unevent-

through "what if" scenarios and habitually develop contingency plans. Watchful outdoor leaders should think through what-if scenarios even when traveling over easy terrain or calm water. What if someone got sick here? What if a hiking group became lost? What are my evacuation options? Where is my co-leader? Who has the portable phone? Simple mental exercises like this during calm times help leaders be better prepared and focused during anxious times.

Like pilots, astronauts and ship captains, outdoor leaders also have rituals to focus their attention. These rituals can be simple sayings like this pre-climbing check: "helmet, harness backed-up, neat knot, and on-belay." They can be a mnemonics like this one for treating a sprained ankle: RICE (Rest, Ice, Compression, Elevation). They can be a checklist of things to go over with participants before they travel on their own. These rituals can be helpful in remembering key tasks or decision-making criteria, when memory alone might fail.

Rituals, however, are only effective if they are used. There are tragic tales of aircraft crashes happening because a crew ignored checklist tasks.[x] Checklists and rituals won't work for every situation and they are not replacements for a leader's analytical judgment, but they can keep you focused and ensure crucial details aren't forgotten.

Self-Awareness

Situational awareness should be augmented with accurate self-awareness. Leaders who are self-aware have learned from experience what their abilities and limitations are. They seek feedback and strive to understand how they lead, make decisions and interact with others. They know themselves well enough to recognize their bad habits, as well as their strengths.

Fostering self-awareness in participants is important too. Help them know themselves better and make sense of their experiences through feedback, evaluation and coaching. Suggest they keep journals to better reflect and develop self-awareness.

Reflection is a valuable tool toward developing self-awareness. Reflection helps us recognize what we learned from our experience. When we analyze an incident, we often first focus on what happened, an injury or the conditions — the objective factors. Reflection — through dialogue, debriefing, journals or feedback — can help us understand the human factors at play.

Strong teams make a habit of giving and receiving performance feedback objectively and without creating defensive responses. For feedback to be effective it should be given honestly yet skillfully. Don't color your descriptions. Use specific, objective, observable details — and present them politely and respectfully. That helps the listener receive the information. Self-aware leaders have the strength of character to be honest with themselves and to accept and act upon feedback.

A simple self-awareness exercise is to ask participants to list attributes or behaviors that help them stay safe. A list of adjectives might include being careful, cautious, observant, attentive and deliberate. A discussion of how well the leaders have modeled these behaviors can bring these concepts into focus for the group.

Another exercise: Read accounts of famous outdoor mishaps or tragedies (failed summits of Mt. Everest, accidents at sea, whiteouts on treks). You can benefit from the experience of others. Try placing yourself in the situations. Aim to honestly evaluate how you would perform under similar conditions. Some of our favorites follow.

Suggested reading for incident accounts:
- *Deep Trouble: True Stories and Their Lessons from Sea Kayaker Magazine* (1997). Matt Broze and George Gronseth, edited by Christopher Cunningham. Ragged Mountain Press. McGraw Hill. Camden, Maine.
- The Snowy Torrents—Avalanche Accidents in the U.S., 1980-86. Nick Logan, Dale Atkins. Colorado Geological Survey Dept. of Natural Resources. Publication #39.
- American Caving Accidents. The National Speleological Society. This is an annual issue of the NSS News devoted to caving incidents.
- River Safety Report. The American Canoe Association.
- Accidents in North American Mountaineering. Edited by Jed Williamson. This is an annual publication of the American Alpine Club.
- Adventure Program Risk Management Reports volumes I, II & III. This is a compendium of adventure program incident data compiled by the Wilderness Risk Manager's Committee and published by the Association for Experiential Education.
- *Death in Yellowstone: Accidents and Foolhardiness in the First National Park* (1995), Lee Whittlesey. Roberts Rhinehart, Boulder, Colorado.
- *Over the Edge: Death in the Grand Canyon* (2001) Michael Ghiglieri and Thomas M. Myers. Puma Press. Flagstaff. Az.
- *Deep Waters*. (2002) James Raffan. Harper. Canada. An account of a canoeing tragedy in 1978.
- *Close Calls*. (1999) John Long. Falcon Press. Colorado. Rock climbing incident accounts.
- *Total Loss* (1992) Jack Coote. Sherman House publications. Accounts of sailing incidents.
- *Epic*. (1997) edited by Clint Willis. Thunder Mountain Press. New York. A compilation of climbing epics.
- *Surviving Denali* (1991) Jonathan Waterman. American Alpine Club press. Golden, CO.
- *Dragonfly* (1998) Bryan Burrough. Harper Collins, New York
- *The Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA* (1996) Diane Vaughn. University of Chicago Press. Chicago.
- *The Perfect Storm* (1997) Sebastian Junger. HarperCollins. New York.
- *Into Thin Air* (1997) Jon Krakauer. Random House, New York.

Leaders as Role Models

It's not what you say, it's what you do that students remember and emulate. Role models are people who have qualities that we value and would like to have in ourselves. Good role models are people who portray good values, attitudes and behaviors in their actions. Participants often admire and imitate their guides, instructors or leaders. They closely observe them and do what they do. If a leader is cautious near a cliff edge, the participants likely will do the same. "Modeling" is a very effective tool to help participants adopt positive habits.

Even if they don't want to be, outdoor leaders are role models. It comes with the territory. There is no training program, review panel, or certificate that says you're a good role model. Yet modeling is an important responsibility. You are on duty and modeling behavior even at rest. Leaders are always under a microscope. Peers and participants are always watching a leader's reaction to a situation. As a leader, your behavior and habits toward risk management directly affect your participants' health and well-being.

Unlike people in other professions, adventure leaders usually climb, ski, and paddle both professionally and personally. They do the same thing for a living that they do for fun. Personal tolerances for risk may be higher when you're pursuing an activity for your own enjoyment. Effective outdoor leaders who are good role models understand this and adjust their behavior accordingly on educational trips they're in charge of.

Tolerance for Adversity and Uncertainty

We're intrigued and inspired by people who find themselves in situations that threaten their lives, and yet survive. Lance Armstrong survived cancer and went on to win seven Tours de France. Joe Simpson broke his leg high in the Peruvian Andes, was left for dead by his climbing partner, and eventually made it down. Hiker Aaron Ralston did the unthinkable when he cut off his own arm after it became hopelessly pinned by a large boulder. There is an endless supply of books, articles, television docudramas and movies devoted to survival stories. While each story is unique, the survivors share common personality traits worth noting.

Dr. Al Siebert calls these traits "survivor style." Survivor style involves curiosity, playfulness, empathy, a need to have things work well, feeling responsible for having things work out, and believing that you can influence a good outcome. Survivors exhibit these traits in their everyday life, so if and when they are faced with a crisis their natural personality or habits help them cope.

Lawrence Gonzales, author of *Deep Survival*, developed a list of habitual thoughts and behavior from his interviews with people who survived challenging situations.

Survivors:
- believe what they see, not what they hope to see.
- stay calm.
- think, analyze and plan.
- do something.
- celebrate success, even small accomplishments.
- count their blessings.
- play, have fun, have a sense of humor.
- are optimistic.
- appreciate the beauty in their world.
- do what they have to, and don't give up.

Modern education theory captures this under the concept of resiliency, or the ability to effectively respond to problems, issues and circumstances that face an individual in everyday life.

At NOLS, students who thrive have good fundamental skills and good expedition behavior. They turn challenging situations into opportunities. They see problems as having many workable options or solutions. On his NOLS course, space shuttle pilot Jeff Ashby said, "We have to discern what part of any problem is physical and what part of the problem is just in our head." [xi] Students who thrive learn to endure, even enjoy, hard work and challenge. They live in rhythm with things they cannot control and learn to control what they can. They use humor and keep things in perspective.

Expedition Culture and Risk Management

Outdoor expeditions have their own culture. The culture is characterized by participants' shared values and practices. There is a common language with unique terms like "gnar gnar" (steep and scary) "hucking" (jumping) and "sick" (good). There's even a "uniform" of sorts — sandals, shorts and a fleece vest or Gortex jacket (some of us remember leather boots and wool pants). There is often an indoctrination or bonding into the culture through training or trips.

An outdoor program's culture can have positive qualities like creative teaching, devotion to students and strong environmental ethics. And it can have a dark side where pride and confidence become hubris and a pressure to have "the right stuff" crops up.

Within a group's culture, there can be tension between adhering to practices, protocols and manuals and making independent or situational decisions. Organizational culture determines the atmosphere for how well group practices and protocols are followed. For example, program managers may expect teams to use manuals and checklists, while the culture and attitudes of veteran leaders and staff deem them only necessary for less experienced staff. A pervasive attitude of this sort can influence less experienced staff who, feeling pressure to fit in with the ranks of veteran staff, discount the valuable guidance in the manuals. On the other hand, problems can arise if staff are unwilling or unable to make decisions, based on the situation

at hand, that are contrary to a protocol or practice.

It's important for you to be aware of the influence of your expedition or program's culture but not to blindly follow its norms. Always balance your own good judgment (discussed at length in the next chapter) with institutional practices.

Flying was once an extremely dangerous undertaking for pioneer military pilots, mail carriers, and barnstormers and later astronauts and test pilots. They had to work alone, be competent and perform under stress. It is easy to see how the impressive yet arrogant culture of having the "right stuff" evolved. Not unlike that culture, many adventure leaders and guides work without direct supervision. They must rely on their own competence, fitness and ability to make decisions by themselves. It is easy to adopt an arrogant (and dangerous) culture in which staff don't look out for each other or ask for help. Always be sensitive to these influences in your profession, organization and expedition.

International Culture

When you travel outside your home country or culture, you are exposed to different norms, attitudes and values. You may find yourself in a culture where providence, not practicality determines outcomes. There may be a resigned attitude toward risk rather than a belief that actions can prevent incidents. Considering this, you may want to turn around in weather that your local guide considers inconsequential. You may seek out a level of hygiene that your cook rolls his eyes at. You may want seatbelts in your rented van, only to see the vendor shrug his shoulders at the suggestion. It's wise to respect foreign cultures but not abdicate your common sense.

People Assessment: Looking for Leaders

Understanding the wide range of human emotions and personalities and how they might come to bear in managing risk really comes down to a leader's ability to assess people. As a leader, you should discern: Who is reliable and focused? Who is inconsistent and distracted? Who has stamina and balance? Who is prone to sickness and injury? Assessing participants (and even co-leaders) is a continual process. Astute leaders adjust their assessments over time and after seeing people in action. People with obvious competencies or charisma are easy to spot, but don't overlook the quietly competent or slow learners who shine by the end of the trip while others wither.

It is difficult to predict who will be successful on an adventure expedition. There have been a few studies done on participants' medical conditions and organization's screening processes. These

studies have not proven useful. [xii xiii xiv] Using medical history or fitness level to predict who will be evacuated doesn't work; it fails to account for motivation, personal character and habits. At NOLS, we have identified some traits that are consistent with successful participants — traits that leaders should look for.

Positive Traits In Expedition Participants	Traits To Be Concerned About
• Overall good health/fitness	• Persistent/chronic illness/injury
• Athleticism–moves well over terrain	• Lacks coordination/balance
• Has energy at the end of the day	• Tired at the end of the day
• Alert and engaged	• Distracted and bored
• Eager to participate	• Obsessed with end of trip
• Competent in taking care of herself	• Complains about conditions
• Comfortable in the situation	• Wishes he were somewhere else
• Accepts expectations for safety	• Thinks safety is not her concern
• Adapts readily to changes	• Thinks he knows everything
	• Doesn't respect your leadership
	• Lets others do her work
	• Doesn't try

You should be aware of the participant who complains in a wet summer snowstorm, skips dinner, goes to bed in wet socks and leaves his boots strewn in the snow. Likewise, you should recognize the person who takes the time to tighten her camp, change her socks, cook a hot meal, and make sure others have eaten — and does it all with a smile. People who handle adversity well don't mind occasionally being wet, cold or hungry. Cultivate these people as leaders. You may need them.

Summary Points:
• Human factors cause incidents more than environmental ones.
• Subjective factors are our attitudes, habits and states of mind. We bring them with us on every trip.
• Objective factors are environmental conditions, and include things we can see, describe or measure like weather or rockfall.
• The interaction of human (or subjective) and environmental (or objective) factors can either result in incidents or in the avoidance of hazards and injuries.
• Negative human factors that can lead to incidents and that you should watch out for include: complacency, overconfidence, distraction, differing perceptions of risk, ignorance of "risk homeostasis," peer pressure, goal pressure, and fatigue or stress.
• Positive human factors that can help you avoid incidents and that you should foster include: situational awareness, watchfulness, self-awareness, role modeling, and tolerance for adversity.
• Be aware of your expedition's culture. Be watchful that the culture has not grown arrogant. Be sure to follow expedition guidelines but not to a fault.

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xiv Medical Contraindications to Wilderness Travel. Howard Backer, MD FACEP. Proceedings Wilderness Medical Society Winter Meeting 1992. Colorado Springs, CO.

xv Berner G, Froelicher VF, and West JB: Treking in Nepal: Safety after coronary artery bypass. JAMA 3 June 1988; 259:3184.

xvi Houston CS. Who will you take on a high mountain expedition? Wilderness Medicine Letter 1990; 7(3):11-12.

xvii Paton BC. Health, safety and risk in Outward Bound. Journal of Wilderness Medicine 3, 128-144 (1992)

Navigational obstacles require careful consideration: a leader and a participant discuss their run on the rapid.

Chapter Four: **Decision Making and Judgement**

"Judgment in my estimation is the greatest safety factor you can have. Not only while the students are taking your course but for their safety after they leave your school and might do some of these things on their own."
Paul Petzoldt[i]

Among the many competencies outdoor leaders need, perhaps the most important is the ability to make good decisions. Effective decision making, by both leaders and participants, is a cornerstone of adventure program risk management.

Outdoor leaders make decisions all the time. The types of decisions you make can be loosely categorized as: 1) simple decisions, such as when to hold a class or a meeting; 2) decisions in response to an obvious hazard, like canceling a peak ascent because it's snowing; and 3) decisions made when the danger is uncertain, such as deciding whether or not to launch boats in variable weather.

Simple decisions are made frequently with little or no consequence. Decisions in the second category, when risk is obvious, tend to be infrequent but easy to make. Decisions in the third category, when danger is possible but not certain, are the most difficult to make; good responses rely heavily on sound judgment.

The ability to make good decisions is based on how completely and accurately you identify and evaluate a situation. In the previous chapter on behaviors and attitudes, we mentioned awareness and watchfulness as two good habits to foster; they help you identify and evaluate situations. But it does you no good if you collect information about your situation — dark clouds moving quickly, wind picking up — and then misinterpret the signs — we can paddle across that lake. It is possible to collect information thoroughly but selectively ignore or misinterpret it. It's also possible to be less than thorough in gathering data to help with a decision, yet still make a good decision.

Good decisions are also rooted in your risk perception. In the previous chapter, we described how a situation that is voluntary, familiar, pleasant or predictable is perceived as less risky, while a new, dramatic, catastrophic, or difficult situation is perceived as riskier. NOLS instructor Ian McCammon has studied how outdoor leaders make decisions. He says, "One thing is certain: the way people make decisions in the face of a hazard has as much to do with their perceptions of the risk as it does with numerical probabilities."[ii]

In other words, one's perception of a risk influences — correctly or incorrectly — his or her ability to assess risk. If you over

or underestimate a threat, you increase the likelihood of making the wrong decision.

Making good decisions, which is at the core of sound outdoor risk management, is based on the most complex human factors. Being able to recognize local weather patterns is an important skill. But being able to make decisions in relation to the weather patterns is more important — and more complicated.

Decision making, judgment, risk perceptions and other human factors are all very closely linked. This chapter digs deeper into the complexities of decision making and judgment in risk management.
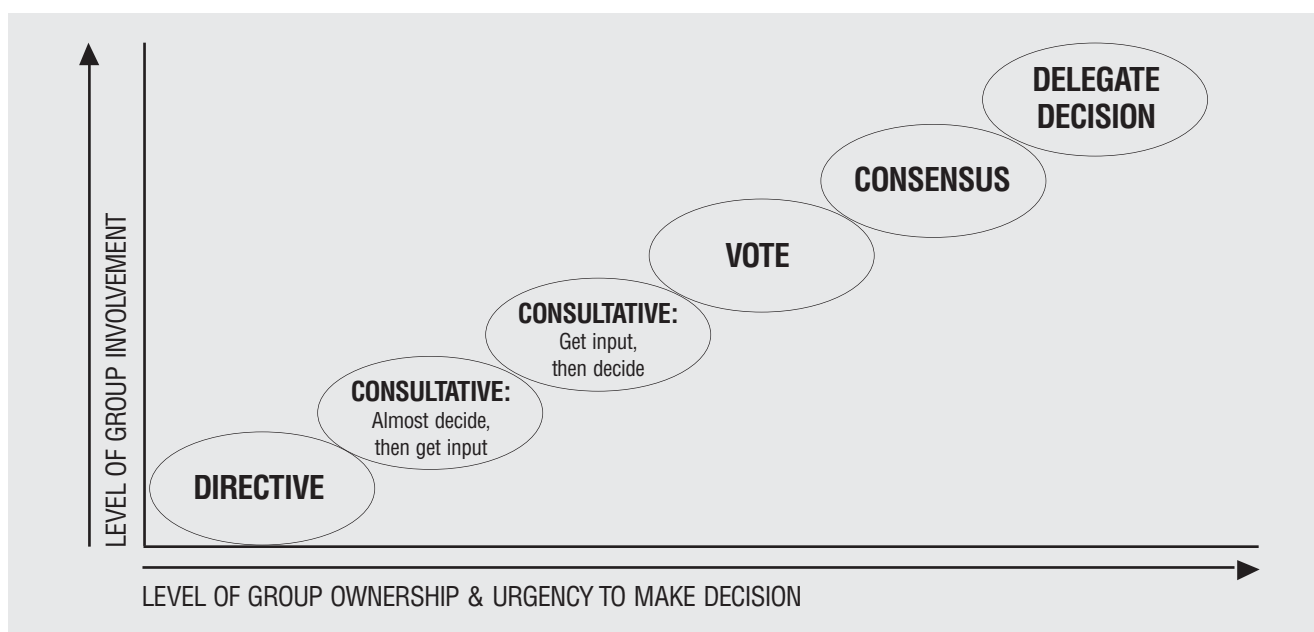
How Teams Make Decisions

Effective teams use an assortment of decision-making styles. The leader can make the decision or delegate it to the group. The leader can consult with the team, put the question to a vote or try to find consensus. Effective teams choose a decision-making process that is appropriate for the situation, their group, their leader and their group culture.

You may want to choose a decision-making process that is suitable to how urgent the situation is and how capable your group is. If the circumstances are urgent (snow is falling) or the group is inexperienced at decision making (high school students), the leader decides the course of action. If there is more time to make the decision, and the group is capable and willing, then the leader can delegate more of the decision process to the group.

Here are some decision-making choices:
- Directive: The leader decides and informs the group.
- Consultative: The leader solicits group input before making a final decision himself. The input from the group may be to comment on a decision recommended by the leader, or it may be input without knowledge of the leader's preference. In either case, the decision is made by the leader.
- Vote: The group decides by voting. Before the vote, make it clear if the decision will be by simple majority, two-thirds majority or another tally method. If the leader has any qualifications for the group decision, such as a right to veto if safety is compromised, these parameters should be made clear to the group beforehand.
- Consensus: The group makes a decision without voting. A clear definition of consensus – typically defined as a decision everyone can implement and support — should be agreed on beforehand.
- Delegate: The leader allows the group or an individual to make the decision, often within limits such as safety requirements.

A diagram showing an upward-sloping progression of overlapping ellipses labeled from lower-left to upper-right: DIRECTIVE; CONSULTATIVE: Almost decide, then get input; CONSULTATIVE: Get input, then decide; VOTE; CONSENSUS; DELEGATE DECISION. The vertical axis is labeled "LEVEL OF GROUP INVOLVEMENT" and the horizontal axis is labeled "LEVEL OF GROUP OWNERSHIP & URGENCY TO MAKE DECISION".

Every leader has a preferred process. Each process has strengths and weaknesses, and needs to be used fittingly. Regardless of the style chosen, you and your group should be clear on how a decision is being made, who is making it, and what will be the fallback if a decision isn't reached.

Consensus

There is a myth that consensus is time consuming and leads to watered-down decisions where everyone compromises. A sea-kayaking group developed a travel plan using consensus for several key decisions. The leader-of-the-day sketched an overall vision and plan, then carefully listened to observations, questions and suggestions. As the plan evolved, the group made decisions and checked with each participant. If someone was uncomfortable, they actively sought a different approach until the concern was addressed. Ultimately, they devised a travel plan everyone embraced. This process was especially interesting because it challenged stereotypes of this group: the people involved were military fighter pilots.

Outdoor or adventure education is a form of "experiential" learning. One of the fundamental elements of experiential education is that it is student-centered. The students or participants help direct their own learning. Naturally, students are then involved (to varying degrees) in course decisions. So participants too need to learn to be comfortable with various decision-making processes. By practicing different decision-making styles, you can challenge yourself and your group to step outside the box. This creates a team that is adept at different styles. If a decision is not urgent, and you tend to be directive or consultative, try consensus or voting. If you're normally passive, try participating in a medical scenario or emergency drill and be directive.

How People Make Decisions

When groups make decision, we've shown that there are a variety of processes to choose from. When individuals make decisions, they also have a variety of methods before them. Humans have developed fascinating and complex ways reach decisions. Over the past 30 years, there has been extensive research into human judgment and decision making. When coupled with new research on how the human brain works, light is being shed on our mysterious methods of decision making.

"Rules of Thumb" or Heuristics

One of the most common ways to make decisions is to rely on simple "rules of thumb," also known as heuristics. Heuristics are problem-solving aids that you adopt from your experience. You use heuristics in everyday decisions, often without thinking.

You come to some heuristics because they've been proven over time — measure twice, cut once. Others are supported by statistics — the advice that small samples do not accurately represent general populations.

There are two types of heuristics: "domain heuristics" and "generalized heuristics." Domain heuristics are learned rules that work for specific activities like carpentry, climbing or skiing. Domain heuristics can be taught, such as bending your knees slightly and holding your poles up in front of you while skiing downhill. In science, Occam's razor is a domain heuristic that advises choosing the simplest hypothesis that explains a set

of observations. Sutton's Law is another that recommends trying a common explanation first to clarify something before resorting to an uncommon one. (Sutton was a bank robber who explained that he robbed banks because "that's where the money is.")

Sometimes domain heuristics are remembered by a pneumonic like SERENE. This heuristic is used when evaluating a rock climbing anchor. SERENE stands for Solid and Simple, Equalized, REdundant and Non-Extending — all elements of a good anchor.

Seven Heuristics for Avoiding Avalanche Hazard

1. Avoid steep slopes when the forecast hazard is high.
2. Avoid terrain traps.
3. Avoid obvious avalanche paths.
4. Avoid steep slopes during periods of natural avalanching.
5. Avoid steep slopes if you hear collapsing or whumphing.
6. Avoid recently wind-loaded slopes.
7. Avoid steep slopes during periods of sudden warming.

Adapted from McCammon. Teaching Decision Making in Avalanche Terrain. NOLS Newsletter. December 2000.

Someone who responds to a call of "rock" by immediately dropping into a defensive tuck position without knowing whether rocks are sliding, or someone who automatically brakes a rope when a climber calls "falling" without seeing the climber actually fall, are employing domain heuristics.

Generalized heuristics are learned from your own experience and are based on recognizing patterns. For example, having information "just pop into your head" and believing that because you did this before it was the correct choice are general heuristics.

Extrapolation, or the use of known facts to draw inferences about an unknown, is a heuristic. Medicine often relies on this — assuming that because a medication reduced symptoms in a set of patients, it will do so in others and save lives. Outdoor leaders extrapolate on weather trends all the time when making decisions.

Heuristic decisions are not always accurate, but they're right most of the time so we come to rely on them to make quick decisions.[iii] They can be effective for many decisions. Typically, heuristics are used at the threshold of our consciousness, and there is little time spent weighing alternatives or facts. As with any decision method, heuristics have pitfalls. They may not lead to the right outcome for the situation at hand, or you may misinterpret a sign that triggers the heuristic decision. These flaws are discussed in more detail later.

Fact, Myth or Educated Guess?

Finding the information we need to make a decision is not easy. There are facts we cull from science. But these facts can be elusive when trying to predict natural phenomena like weather, avalanches or illness.

There are things we think we know but they are really only based on good, not great science, logic that is sound but not solid, or experience with little depth. Our "facts" really may be educated guesses.

At the bottom of the pile of information we draw from is urban legend, folklore and myth — often masquerading as fact. To protect against mistaking folklore for fact, you should develop a bit of skepticism, a habit of questioning assumptions. Don't be a cynic. Skeptics question; cynics distrust.

An example of this is our practice of disinfecting wilderness water. The biased warnings of the water-filter manufacturers and the dramatic statements on trailhead kiosks give the impression that the protozoa Giardia and Cryptosporidium are prevalent in the water and that illness is common. Outdoor texts and wilderness medicine courses repeat this advice. However, the facts are elusive.

The few biological studies on wilderness water give us mixed results. Some argue contamination is prevalent, others that it's uncommon. We can't separate illness from poor camp hygiene with illness from drinking untreated water.

There is good science that our methods for disinfecting water, boiling, chemically treating or filtering, have a low risk of making us sick.

There is folklore that clear, fast moving alpine water is clean, that protozoa sink and thus surface water is safer to drink, or conversely, that protozoa float and are disinfected by ultra-violet radiation.

We need to identify and discard the unclear scientific evidence on the risk of becoming ill from drinking untreated wilderness water and balance this with the consequences of not disinfecting our water, a nasty case of diarrhea. We take some sound but inconclusive science, mull the risk of becoming ill from how we disinfect water, and come up with a practice of habitually disinfecting water that is more than folklore, but less than clear science-based advice, it's our best educated guess.

Expertise

Beyond heuristics, outdoor leaders — as well as pilots, physicians, paramedics, firefighters and other professionals — rely on expertise to make decisions. Research shows that experts forced to make decisions in difficult situations without much information turn to experience to arrive at a course of action. Gary Klein, author of "How People Make Decisions," has developed a recognition-primed model, which describes this form of decision making.[IV]

Research suggests that when a leader comes to a decision with relative ease his brain has recognized specific patterns, finds clues within those patterns, and then quickly comes to a decision by sorting through the clues. He can intuitively recognize a situation and evaluate his choices, accepting or rejecting them without lengthy side-by-side comparisons.

The breadth of our experience therefore comes into play. An experienced medic can look at a patient's appearance, see subtle clues, and come up with a hunch as to what is wrong —"This guy is having a heart attack!" An experienced rescuer can look at a map, terrain, a patient and the rescue team and know whether a litter-carry will be over shortly or take all night.

Using our experience and proficiency to make decisions can be expeditious. The decision happens quickly, and we move on, perhaps not even realizing we made it. But this can leave us vulnerable to errors, and leave the novice quickly behind. If you're helping your team learn to make decisions, stop and explain what you have decided and how you came to the decision (assuming, of course, you have the time to do so). As with heuristics, there are pitfalls or traps with expert decision-making. These are detailed below.

Analytical Decision Making

The more we learn about how people think and how the human brain works, the more we realize that people tend to make decisions with unscientific methods. We recognize patterns, use mental shortcuts like heuristics and other subconscious thought processes far more commonly than an analytical process. An analytical decision-making process appears complex and laborious — the tool of the Star Trek character Spock, the logical Vulcan, not the human Captain Kirk. The flow and spontaneity of heuristics or intuitive expertise to manage time-sensitive situations might be more appealing. However, many decisions in the wilderness are less urgent, and you have the time for an analytical approach.

If you are teaching novices how to make decisions, you need to consider that their experience may be low. They haven't developed heuristics yet and need guidance in their decisions. At the same time, an experienced leader may find herself with an unusual or especially difficult problem. In this case a systematic approach of gathering information, weighing alternatives and deciding what is best can be a valuable tool. An analytical approach can be thorough and well reasoned. It can help you organize and survey factors that will go into the decision.

Here are some approaches to making an analytical decision:

1. Describe the decision that needs to be made, or the problem that needs to be solved.
Keep it simple. Try to say it from as many viewpoints as possible. This can illuminate the problem and point the way to alternative decisions.

2. Identify parameters for the decision.
Are there clear boundaries on this decision such as limits to your resources or route options. For example, there are no helicopters available for an evacuation, or there is a river you cannot cross.

Consider guidance from your expedition's mission and goals. NOLS has three field priorities which guide our decisions: safety of the person, care of the environment, care of the equipment.

3. Gather information.
Environmental:
• What are the hazards?
• Can they be avoided?
• If not, can exposure be mitigated?
Human:
• Do we have the experience to make this decision?
• Is the group fresh or fatigued, strong or weak?
• Do we have the people and skills to manage the problem?
• What is driving us to make the decision? Hidden agendas? Haste? Schedule?
Resources:
• What information do we need?
• What gear do we need?
Time:
• Do we have time to make this decision? What is the urgency for this decision?

4. Identify options or choices.
• Are there alternatives?

5. Compare the options. What are the consequences?
• What could go wrong? Imagine alternative scenarios, solutions and outcomes?

6. Decide, implement and evaluate
• What style will you use for your decision: delegate, consensus, vote, or the leader decides?
• Once you implement a decision, gain more information and consider new options.
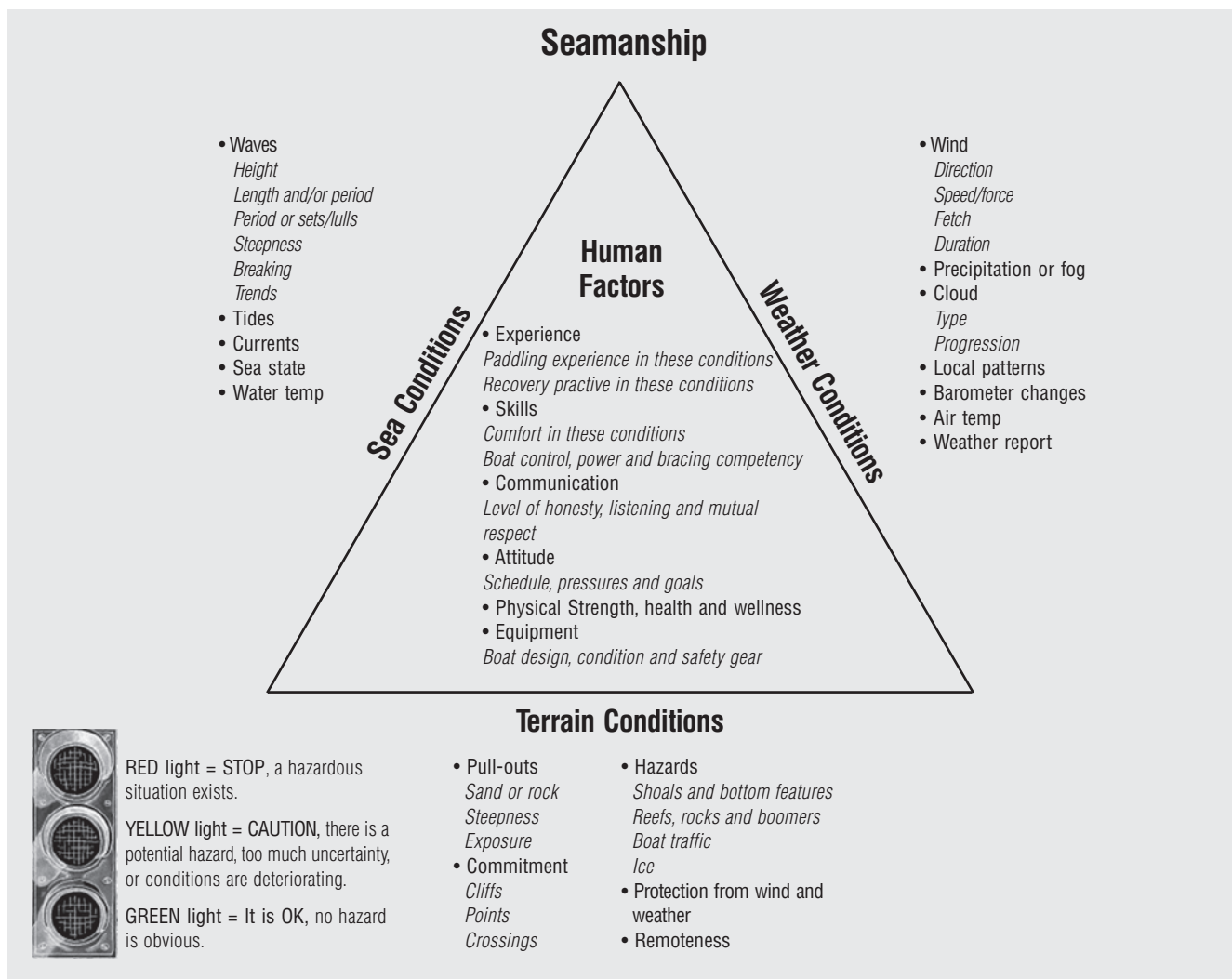
An analytical process works well when the situation can be supported by research, as in figuring out whether you have enough stove fuel to make it to the end of the trip or determining if a travel plan is reasonable if you leave at 6:00 a.m. These decisions are a matter of correct formulas, data and calculations.[v]

While sound analytical processes can reveal more options, poor analytical skills can leave you vulnerable to a number of traps. A common trap is failing to notice the biases you bring to your analysis. Tendencies, developed over time from experience, are a lens thorough which we view every problem. While they can be powerful assets in thinking, they can also keep our minds closed to new information and alternative solutions. Morgan Jones, in the Thinker's Toolkit[vi], calls these tendencies "mindsets." We detail how to avoid this pitfall below.

Analytical processes only work well if we collect data and ponder alternatives well before making a decision. In Chapter 1 on planning and preparations, we spoke of "what if" plans. In Chapter 3, we emphasized the importance of watchfulness, among other human factors. These habits can also help you make sound decisions. An astute outdoor leader is always gathering data: Who are the strong group members? Who are the weak ones? Who has been injured or ill? Are they recovering? What are the weather patterns? Is the expedition ahead of, behind or on schedule? What are the upcoming risks — a river crossing, exposed coastline, high pass, summit attempt? Continually gathering this data over time can speed up the analysis when it's time to make a decision.

Situational awareness, as we discussed in the previous chapter, provides a means for keeping tabs on the factor we may need when making a decision. Here is the NOLS Seamanship Triangle again, but with more information about the variables and some guidance for making a decision. The use of red, yellow or green to denote the seriousness of conditions or terrain may seem simplistic, but it can be effective. If after weighing the objective and subjective factors of a situation, the leader or the group determines the conditions are red, then the decision is to stop. If the conditions are determined to be green, they go forward. And if conditions are yellow, they may go forward but with special attention to risk.

Seamanship

Sea Conditions

- Waves
  Height
  Length and/or period
  Period or sets/lulls
  Steepness
  Breaking
  Trends
- Tides
- Currents
- Sea state
- Water temp

Human Factors

- Experience
  Paddling experience in these conditions
  Recovery practive in these conditions
- Skills
  Comfort in these conditions
  Boat control, power and bracing competency
- Communication
  Level of honesty, listening and mutual respect
- Attitude
  Schedule, pressures and goals
- Physical Strength, health and wellness
- Equipment
  Boat design, condition and safety gear

Weather Conditions

- Wind
  Direction
  Speed/force
  Fetch
  Duration
- Precipitation or fog
- Cloud
  Type
  Progression
- Local patterns
- Barometer changes
- Air temp
- Weather report

Terrain Conditions

RED light = STOP, a hazardous situation exists.

YELLOW light = CAUTION, there is a potential hazard, too much uncertainty, or conditions are deteriorating.

GREEN light = It is OK, no hazard is obvious.

- Pull-outs
  Sand or rock
  Steepness
  Exposure
- Commitment
  Cliffs
  Points
  Crossings

- Hazards
  Shoals and bottom features
  Reefs, rocks and boomers
  Boat traffic
  Ice
- Protection from wind and weather
- Remoteness

Random Choice

It may be surprising, but random choice is not necessarily an abdication of decision-making. There are times when it is the wise choice. If you don't have the experience, information or expertise to decide between alternatives, and if the consequences are not serious, then taking a guess rather than wasting time on deliberation may be a good choice. According to NOLS' Ian McCammon, the added bonus is simply calling the process what it is and getting away from the expectation that a formal process must underlay all decisions. You'll also learn that sometimes action, which gives you experience and information, is better than endless discussion.[vii]

The decision-making methods we've detailed are not listed in a hierarchy from simple to complex or novice to expert, but are a menu of choices. We have used all of these decision-making tactics, sometimes consciously, sometimes unconsciously. Sometimes our decision is a random choice; sometimes it's based on a rule-of-thumb, an expert pattern of recognition or an analytical process. As with group decision-making processes, each of these has strengths and weaknesses. If we are aware of the process we are using, we might be able to decide if it's the most appropriate for this particular situation — and we might become more aware of the hazards that lie within each method.

Hazards in Decision Making

There is risk in everything we do, including making decisions. There are perils, sometimes called decision-traps, in every decision-making method that can lead us to make the wrong choice. But you can gain an awareness of these traps, and help avoid falling victim to them.

Pitfalls in Individual Decisions

After every decision, it is vital to receive feedback and take it to heart. It is possible to make a decision that achieves the intended outcome — yet in reality it was a poor decision with a lucky outcome. If someone never receives feedback that in fact the decision was poor, he won't have a reason to change his judgment. For example, a group of hikers wading across a river chooses a spot with a strong current, thigh-deep water and a poor run out, rather than taking more time to search for a better spot. They make it across… this time. The positive outcome, getting across the river, may mislead the team into thinking they made a good decision. But next time, they may not be so lucky.

Our memory is shaped by events associated with strong emotions. If something gives you great pleasure, you'll want to do it again. The hikers in our example may feel a strong sense of accomplishment from "tackling" their formidable obstacle. But they would be unwise to believe they should do it again and again.

Heuristic Traps

In his research, McCammon highlights six common heuristic (or rule-of-thumb) decision-making traps. A theme running throughout them is a heavy reliance on a heuristic despite contrary information.

In the **familiarity** trap, we believe that familiar situations are safe or controllable, when they may need to be evaluated as a unique scenario. We have a tendency to fall into a pattern of making the same decision, despite evidence that this situation has changed.[viii]

In the **acceptance** trap, we want to make a decision that others will like. It's natural to want to be accepted by others, especially those whom we respect or want to impress. Peer pressure plays a role in this trap, and we may ignore or not recognize factors because we want the decision to be accepted.

The **consistency** trap is a tendency to be consistent with an earlier decision. This can make for quicker decisions and can be effective, except if we overlook clues that could lead to a better decision.

The trap of **social proof** trips us up when we assume that because others have done it, it must be acceptable. For example, we can be influenced by the lore that a particular route is safe. In reality, this route may have the same hazards as any other, and our good experience has just been good fortune and not indicative of the normal pattern.

Just as the brain fills in a visual blind spot in an image with the surrounding color and pattern to produce the illusion of a complete image, we have a predisposition to **validate** expectations about what correlates with what, and to see relationships that are not in the evidence.[ix, x]

Newer can be assumed to be better. We've seen this recently with the second generation of non-steroidal anti-inflammatory drugs such as Vioxx – rushed to the market, widely embraced, then dramatically withdrawn as unwanted side effects became apparent. This **newness effect** is our tendency to give importance to recent information or events - days of beautiful weather instead of the normal afternoon thunderstorm. This is a subtle trap in the Rocky Mountains where periods of beautiful summer weather can lure a climber to linger too long on exposed peaks, making him vulnerable to afternoon thunderstorms which are a norm.

Expertise Traps

An **overconfident expert** can make a mistake when she tries to use her expertise where it doesn't fit — trying to use pattern and clue recognition from one area to a completely new area. For example, an expert whitewater kayaker using her river paddling skills to perform a sea-kayak surf landing, even if she has

never sea kayaked before. Situations may be similar, but they may require different skills.

A variation of this hazard is the **expert halo trap** or the expectation that someone knowledgeable in one area is able to make a decision in a new and different area. For example, the practiced outdoor leader may be assumed to have medical expertise despite limited first aid experience. Conversely, the hospital-based physician may be assumed to know how to manage a wilderness crisis, when in reality they are limited by the lack of equipment and the environment.

Analytical Traps

In addition to being time consuming, an inherent hazard in analytical decision-making is the challenge of identifying, comparing and evaluating all of the pertinent variables, especially if some are unknown (often the case in wilderness settings). For example, we may choose to go over a pass after careful and thorough review of the map, the weather and the group's abilities, yet we really don't know what the other side of the pass will be like until we get there.

Pragmatically, we need to make decisions based on incomplete information. The necessary information may be inaccessible or lacking important details. In the medical field, for example, researchers tend to report only positive results, leaving critical gaps in our understanding of a problem.

We are prone to accept too readily something based on wishful thinking. A recent example: the embracing of suction devices for snakebite treatment. The devices were developed from a theory that venom could be extracted from tissue before it caused damage. Many embraced the concept — and the devices — before research showed that removing venom, in fact, does not happen.

An analysis is only as thorough and accurate as the information we choose to include, and the rigor with which we interpret it. The outcome may look like science but can be biased by our choices or a desired alternative. Many of us have made the mistake of ignoring what the terrain is telling us in favor of what we expected to see from a map.

When using analytical decision making, consider adding a "humility factor" that takes into account that your information may be weak.

One incident is not a trend

The **probability estimation or availability** trap is a tendency to overestimate the probability of an event which is easily and vividly imagined or to believe that one dramatic event represents a class of such events.

John Ross, writing in the Polar Bear Strategy[xi], notes how

experts assess risk with data while the public assesses risk through theories and assumptions. If someone sees something frequently because it is disproportionately visible (let's say repeated television images of a kidnapping in a foreign country), they'll assume it happens frequently when in fact it may be extremely uncommon. At the turn of the 20th century, William Osler, a distinguished physician and medical educator, remarked, "We are ever beset with the common failing of reaching conclusions from superficial observations and misled when our minds fall into the ruts of one or two experiences." This is a trap that outdoor program administrators should be aware of when the urge arises to create policy in response to a single dramatic event that is really an isolated incident.

Outdoor leaders can fall into this trap too, for instance, if they see one or two cases of an illness and then assume it is widespread when in fact they saw only the isolated cases. The trap is correlation equaling causation — the tendency to perceive that two events are related when in fact their connection is coincidental or even non-existent. Falling prey to this **illusory correlation** can lead to suboptimal practices

Pitfalls in Group Decisions

Group decisions have hazards and "group-think traps" of their own, such as pressured agreement, risk polarization, support and attribution theory. Be aware that members of small groups affect each other more than members in larger groups. In a smaller group, a single member's impact is direct and immediate. A smaller group's decisions can be more impulsive.

In larger groups it's more difficult to voice a question or a contrary opinion, so the tendency is to agree with the group.[xii] Peer pressure can be a real problem in hasty decisions made by large groups.

Peer pressure is also cited as a cause of **risk polarization**, which is an inclination for groups to take significantly more (or less) risks than individuals. In a big group, participants will compare their opinion to others, and be swayed by how they believe their group is thinking. It stems in part from a desire to be a good team member, and in part from believing that a majority's ideas must be more correct than their own.[xiii]

Attribution theory says groups make riskier decisions because the consequences of a decision are borne by the group, not an individual.[xiv]

Support theory proposes that the probability of an event or the weight of evidence is inappropriately influenced by how detailed a particular description or discussion is. Greater detail can be misinterpreted as being more credible or accurate. In a similar vein, decisions can be influenced by the order in which things are discussed. Information presented later might be given more weight than information presented earlier.

In the "information cascade model," everyone starts with similar information, which then evolves over time. Some people may get good information, which they share with the group, or they may unwittingly get bad information, which is also shared. The group then makes a poor decision based on this misinformation. This isn't a case of mindless following. It's a case of people thinking they are getting good information, when in reality it's poor information that is woven into a cascade of decisions. Instead of pooling and looking at all the information, the cascade becomes a sequence with a poor choice or poor information imbedded in the decision chain.

How do you avoid the group-think trap? First, if you've carefully built a team that can speak up and question, you should have a tool to avoid group think. You need to be careful that the order of a discussion or the time spent on an individual point does not unduly influence the final decision. Consider having the leader or expert speak last. This lessens their influence on the contributions of earlier speakers.

You need to be sensitive to the tone of your group and the subtle clues, such as body language, that alert you to individuals who are silent but not in agreement. Consider it a red flag if there are no dissenting or diverse opinions. You may have the illusion of correctness, while the group rationalizes away counterarguments, suppresses dissent and assumes consensus.
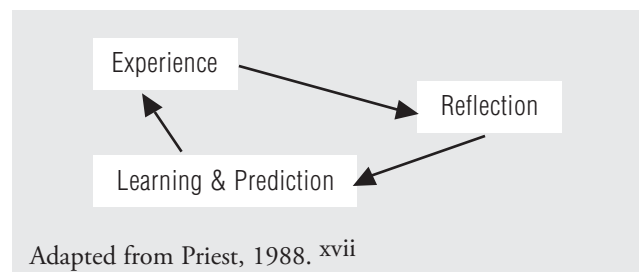
Judgment

Paul Petzoldt, the founder of NOLS, is also the father of outdoor-leadership education. Petzoldt's advocacy for the use of judgment by outdoor leaders was passionate and infectious. His insistence on the importance of developing good judgment in leaders, combined with his charismatic personality and his ability to communicate and connect with young people, has had a profound influence on adventure education today.

Good judgment is not choosing the perfect answer. It's choosing a correct answer within the limits of your experience, knowledge and abilities. Judgment is not reserved for experts with years of experience. Novices can make thoughtful, sensible and prudent choices with simple practical wisdom — common sense.

In the dictionary, judgment and decision making are essentially the same: a process of forming an assessment, analyzing and comparing the information and options, and then laying down an opinion.[xv] In the adventure-education culture, we define a subtle but important difference. Decision making is more clear and straightforward than judgment. A situation calling for judgment can imply you don't have all the information or the circumstances are complex, fluid and at the edge of your experience. It requires creative thought. In outdoor education, we place judgment on a higher plane than simple decisions.

Experience alone does not give us good judgment. And regardless of the off quoted "Judgment comes from experience and experience comes from bad judgment," you don't need bad judgment to gain wisdom from experience. Judgment only comes after reflecting on the experience. It's a never-ending cycle of experience, reflection, learning and prediction of subsequent experience, then reflection and the cycle starts anew.[xvi]

Adapted from Priest, 1988. [xvii]

Educators can assist their students in developing judgment when they give context to the students' experiences by explaining why and how decisions are made, suggesting alternatives to their decisions, probing how they came to a decision, and asking what factors they used. Through reflection, students and leaders can continually refine their judgment. Mentors and coaches, trusted counselors or guides are invaluable for this. Seek people who give honest feedback, and learn from them.

There was a time in adventure education when instructors took pride in the fact that there were few guidelines, protocols or rules. They routinely made independent decisions. There was very little written information for leaders. Knowledge and wisdom was communicated by word-of-mouth and experience. The famous Petzoldt quote, "Rules are for fools," was, and still is, a slogan for adventure educators who value using their judgment over following a list of rules.

In reality, Paul was not adverse to standard practices. When Paul coined "Rules are for fools," his intent was along a heuristic approach, that is, rules are for inexperienced folks. He thought novices needed rules to support their decisions while they gain the experience to build their judgment. He knew a rules-based approach can be useful in conveying the expectations of the organization, adding consistency to programming, or compensating for a lack of staff training opportunities or resources.

Petzoldt also said: "A leader with limited knowledge and superior judgment is better than one with vast knowledge and little judgment." Today, there exists a cornucopia of information to feast upon — books (including this one), articles, journals, manuals, conferences, seminars and videos. But don't confuse this wealth of information with judgment or experience. The complex decisions outdoor leaders have to make are difficult to capture in a book (believe us we've tried!) Despite the increase of information and know-how in adventure education, there is no parallel decline in the demand for instructors with good judgment.

Storytelling

Stories have a particularly powerful impact, especially when presented as dramas that ignite the moral imagination and invite us all to be drawn into the action. A good story will trump a good fact any day of the week. Many instructors have experienced the feeling of helplessness as their well researched facts and logical teaching progression crumple in the face of a student's influential, but inaccurate story.

What makes these stories so powerful? There are strong links between our emotional and cognitive centers in our brain. Our brains seem built to process stories better than other forms of input. It's not just awful things that happened in these stories, it's that they happened to the person telling the story, or a close friend, cousin, acquaintance. It has an empathetic hook.

Stories are memorable, and trigger our bias towards what is easy to recall. They can frame evidence in a particular context that can be manipulated rhetorically by the teller. They can be especially powerful if they present things outside the control of the main character and generate sympathy for the victim.

You can find a sense of what the culture values by listening to an epic tale told around the fire or the stove. Often these stories have heroic elements; overcoming weather, pioneering a new route, overcoming adversity, demonstrating strength and stamina. They often tell of a long and strenuous outdoor trip that pushes people's limits, or the natural event (rockfall, lightning, avalanche, flashflood) that places people at the edge of what they can control. They are memorable, sometimes frightening learning experiences that afterwards are glamorized in the epic tale.[xviii]

We need to listen carefully to our stories. They can influence the novice who does not yet understand that epics tend to award the bold rather than the prudent, the unprepared rather than the prepared. Vilhjalmur Stefansson, Canadian arctic explorer, said that 'adventure was a sign of incompetence.'[xix] Whenever someone came back telling a story of adventure, he was thinking that they screwed up.

There is a role for learning the lessons of history and for following standard practices and protocols. Ideally, our practices and protocols are the history of learning from those who came before us. They represent the accumulated good judgment of our peers.

And there is a role for independent judgment and decision making in leadership. Life is too complex to be predicted in an operating procedure, accepted practice, policy, rule, guideline or textbook. Leaders need decision-making skills and the judgment to make good decisions when choices are unclear and the situation is unique. It's crucial we nurture, celebrate and teach judgment. It promotes self-responsibility. It's realistic and practical. It's a gift we can give our students.

Summary Points

- The ability to make good decisions is a cornerstone of adventure program risk management.
- Outdoor leaders make simple decisions of low consequence, decisions in response to clear hazards, and decisions when the danger is not clear, or present.
- Decision-making, judgment, risk perceptions and other human factors are all very closely linked.
- Teams use a variety of decision-making styles including directive, consultative, voting, consensus and delegating.
- Individuals make decisions in a variety of ways as well, using heuristics, expertise or an analytical process.
- Experts use observations, context and experience to arrive at a course of action. They recognize patterns and can quickly evaluate choices.
- An analytical approach of gathering information, weighing alternatives and then deciding what is best can help you organize and survey factors in the decision.
- Heuristics are simple rules-of-thumb, aids to problem solving that are used every day.
- There are numerous traps that can lead to poor decisions. Among them are consistency, social proof, proximity traps, an appearance of objectivity, the influence of emotions, inaccurate probability assessments and group think errors.
- Wise leaders know when to rely on standard practices and protocols and when independent judgment and decision-making is needed.

Decision-Making Traps

Familiarity	Believing a familiar situation is safe or controllable and ignoring evidence that this situation is different.
Acceptance	A tendency to make a decision that others will like.
Consistency	Making choices consistent with an earlier decision, despite evidence suggesting a different choice might be better.
Social proof	Assuming that because others did it, it's a good choice.
Confirmatory bias	Ignoring observations because they don't fit a known pattern or desired result.
Recency effect	A tendency to give importance to recent information or events.
Expert halo	The expectation that someone knowledgeable in one situation can make a good decision in a new or different situation.
Mind-set	A decision that may look analytical but is biased by our personal choices or desired alternative.
Unproven assumptions	Accepting plausible but unproven information as the basis of a decision.
Probability estimation	A tendency to overestimate the likelihood of an event because it is dramatic.
Illusory correlation	Assuming an isolated event is representative of a pattern or class of events.
Risk polarization	A tendency for groups to become risk-prone or risk-adverse and then take significantly more or less risk than individuals would.
Attribution Theory	A tendency for groups to make riskier decisions than an individual.
Support Theory	Because of greater detail in a particular presentation, placing emphasis on that evidence and allowing it to influence a decision.
Information Cascade	Bad information, imbedded in a thought process, influencing ideas without correction over time.

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[xv] Reference Websters Collegiate.

[xvi] Adapted from Priest. S. (1988). The role of judgment, decision making and problem solving for outdoor leaders. Journal of Experiential education, 11(3), 19-26. (1988)

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Clear and concise instruction develops team competency and self-awareness: an instructor gives a class on top rope anchors.

Chapter Five: **Risk Management Curriculum in the Field**

So how do we transfer these lessons borrowed from the airline industry's crew-resource management and drawn from our own wilderness experience into an effective risk-management program in the field? How do we instill risk-management tools in teams?

Coaches routinely advise players: how you practice is how you play. The same is true in adventure education. As a leader, you must model the practices for your team in routine operations so that they will be second-nature in a crisis. Effective planning and briefings help keep risk-management priorities in the forefront. Expedition behavior and communication set the tone and culture that bolster effective teams. Fostering situational awareness, sound decision-making skills, and good judgment creates a team alert to hazards and mistakes and one that can self-correct.

At NOLS, we believe in active "follower-ship" as a form of leadership. As a follower-leader, students participate actively on their team by questioning information and clarifying ambiguous instructions. The follower-leader adopts good expedition behavior, communication skills and decision-making techniques; accepts feedback; and tries to recognize when their fatigue, stress and workload need to be managed.

These practices of effective teams can't be done occasionally. They should be the culture of your team. Just as environmental and human factors are part of a web of events that can lead to an incident, effective habits and behaviors can weave a risk management net that catches hazards and mistakes before they become incidents. These habits and behaviors are themes that should be woven into the fabric of your team. How you practice is how you play.

It is possible to manage risk outdoors, in a complex and changing environment, by taking this material and cultivating leadership and teamwork. Much of this is already part of the NOLS curriculum. We believe framing it as a risk management tool can focus its potential and make it a more consistent theme in on our programs and in any outdoor program.

Your Risk Management Toolbox

The crew-resource management literature calls the habits of effective teams "behavior markers." Some of these markers are relevant to adventure education. We've taken them and combined them with "behavior markers" drawn from our wilderness experience to come up with a list of practices that can make up your "risk management toolbox."

Brief on Your Risk Management Mission

Articulate your mission and vision to your team; both what you want to do and how you want to do it. Intentionally and consistently speak to risk management expectations. There are a number of tools that can reiterate this, including marketing materials, program orientations and activity briefings. Always be as concise and clear, as well as consistent and interesting, as possible when briefing to better keep risk management and the expedition plan at the front of everyone's minds without it becoming tedious.

Plan Effectively

Use contingency and emergency plans, travel plans, activity briefings and debriefings as opportunities to revisit team roles and how hazards will be managed. Every time you do so, you are making your team better prepared for an emergency.

Foster Expedition Behavior and Teamwork

However you introduce your group to the concept of expedition behavior — through discussions or a team building exercises — make sure you describe it clearly and model it from the start. Set the tone early. Tell your students your risk management expectations and how they will fit in with the program. Give your students explicit permission to speak up on safety concerns. Emphasize that hazardous incidents are avoided through supportive, engaged teams.

Wilderness Skill Training

Competency in fundamental wilderness skills is a foundation for sound risk management outdoors. All the risk matrix charts and tables of incident causes are of little help if someone can't keep himself warm and dry, navigate, build a fire — and for leaders, to do so with a reserve left to lead. Paul Petzoldt believed acquiring skills was a key to people enjoying outdoor expeditions, staying safe, and leaving the environment unharmed.

As you teach skills, know that you are enhancing your risk management skills. Address the fundamentals of keeping warm and dry, setting up camp, and navigating in the wild. Teach the skills that will prepare participants for adversity — knowing how to camp overnight, signal for help, handle basic medical problems.

Some of these skills seem rudimentary in the friendly confines of our homes or while on carefree camping trips. Don't let that slacken your commitment to them. Expertise in core skills leads to the best performance in stressful times. Selecting a

good camp, setting up shelter quickly in driving rain, staying warm and dry on the trail, cooking a nutritious meal in the dark (and doing it all when you're tired) is the kind of competency needed to thrive as wilderness leaders.

Develop Team Competency

Ideally, the critical points in a technical system are backed up. This may be a knot reinforced with an extra half-hitch or an anchor made with multiple points. Likewise, good teams have backup human resources.

Effective leaders build extra competency within their team. They use the knowledge and experience of team members. They know who has specific skills, such as in medicine, navigation, technical rope systems or rough water paddling. They sow respect and trust in their teams, empowering members to use their talents.

Good teams are always learning. They take time to share knowledge and help each other develop skills. They figure out which team members fill which role. Good teams have depth; people can assist or cover for one another. Leaders then can do what leaders must do: step back and see the situation broadly.

Develop Self-Awareness of Human Factors

Develop an awareness in yourself and your participants of your habits and tendencies. This will help you and your team recognize the role human factors play in incidents. Take tales of disaster with you into the field, read these to your group, and talk about them. Address the human factors when you brief and debrief your group. Do this consistently and your team will develop self-awareness.

Insist on Effective Communication

There are a number of different exercises and classes to develop communication skills. Bring the tools culled from these — telling stories, using concrete examples — to your discussions on risk management. Remind people to use clear communication when they brief for a travel day and to use the climbing and paddle signals when appropriate. Model those practices. In order to foster a team that openly communicates — asks questions and gives feedback — model this behavior and make room for it. Find examples of students' good communication to compliment and reinforce.

Thrive with Adversity

Weather and wilderness often serve adversity up for us on a platter. All we have to do is frame our response to it in terms of resiliency, survival and risk management.

Understand How You Make Decisions and Learn From Your Experience

A class on decision-making styles (from consensus to heuristics) will get your students thinking about how they make decisions and provide them with a vocabulary for discussion. Include a review of how various decisions were made when you debrief. Tell stories about decisions. All of this will keep the concept educationally alive and woven into your course — and be an aid when a decision must be made under duress. Challenge your team to try out different styles. This will build their experience, give them more options, make them flexible.

It's All About Leadership, Teamwork and Communication

The fundamental tools for risk management in adventure education are an effective team, well thought-out plans, good expedition behavior, clear communication, strong self-awareness and refined decision-making tools. Anyone can do something risky. In adventure education we do risky things — but with caution, care and forethought — maximizing the positive experience and minimizing harm.

The careful, thoughtful, conservative decisions that successful outdoors leaders make everyday do not result in drama. They don't trigger incident reports. They don't make good material for an epic tale told around the fire or for a splashy magazine cover. However, we believe there are plenty of epics in the wilderness; they're just titled: "An accident avoided. How a timely retreat and good judgment saved the day!"