Alpinism and Avalanches

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A few years ago I was climbing in the Alaska Range. My partner and I were stuck 26 pitches up the first ascent of a mixed face five days into a seven-day storm. As I looked down the face covered with rockbands, couloirs and pockets of snow, all my 10 years of avalanche experience was screaming out not to descend. Guess what? We descended and got the hell out of there even as avalanches cascaded around us. How can someone with so much snow and avalanche knowledge do something so seemingly stupid? Well, we were out of food and fuel, our sleeping bags had the insulation value of a wet t-shirt and our tent was slowly being pushed off the ledge from the storm. Sometimes even the risk of avalanches looks pretty good when faced with some rotten alternatives.

The Dilemma

For years I've been struggling with my dual life as a snow nerd and climber. During one season I study the snow daily, notice and document subtle changes, dig snowpits, and talk about the snow endlessly. Before I ski a slope I have a large reservoir of information from these daily observations in order to make a decision.

Climbing in the big mountains is a different story. I find myself in avalanche terrain for long periods of time, I don't have the time or tools to assess the snow, and I am sometimes forced to cross a slope mid-path. I'm information starved, travelling light and attempting to move fast. The magnitude of the route makes digging pits unrealistic in terms of time and information gathered. We do almost nothing to measure the snow stability. Huge storm events, wild, fierce winds, slopes thousands of feet high all make the typical way I do business as an avalanche specialist very impractical. There are times when snow stability takes a back seat to finding anchors, staying on route, not falling and staying alive. Avalanches are only one of the many objective dangers that mountaineers face.

Most articles say dig a pit, call the advisories, check with locals and be conservative. All great ideas for backcountry skiing, but let's get real. In the big mountains there's more unknown, the terrain is huge and the consequences are serious. Yet we go anyway. We play by different rules and assume more risk. We openly venture into the terrain that produces avalanches and sometimes we face the consequences of these actions. But I always try and stack the deck in my favor. Always.

Stacking the Deck

After 22 expeditions I've seen a lot of things go right and wrong. I've talked to climbers about how they assess and minimize avalanche danger. As long as we climb, avalanches will always be a hazard, therefore we've got to consciously maximize our safety margin any way we can. Even then very good and famous climbers die, and sometimes these people are our friends.

The biggest player in avalanche formation is weather. Although it's difficult to get any reliable weather history much less current data, any piece of information comes in handy. Ice routes may be covered with snow depositions in big years, differing from dry years where new ice is exposed creating bed surfaces for the next storm. In general we're concerned with the most recent storm cycles. Since we're not digging pits to investigate the history of the snowpack we focus on direct action slides and those immediately following storms.

One of the first things to realize is that the easiest routes up the high peaks are objectively the most dangerous. Snow climbs requiring minimal technical experience are also the routes that have thousands of feet of 30-60 degree unbroken snow slopes. With starting zones high above and routes ascending major avalanche paths it's pretty difficult to gauge what's happening with the snow. Even simple forecasting tools like trying to predict wind loading can be a joke, because on the high peaks the winds swirl around loading absolutely everything. What you can do however is dig numerous hand pits as you ascend checking out the old/new snow interface. This only works with smaller storms and with a threat of the unknown looming above the information can be marginal at best. Years ago talking with Kitty Calhoun she said that in the big mountains she'll only do steep technical routes because they less prone to slab avalanches and thus safer. And she's right. But many people attracted to the mountains lack the proficiency or desire to do these difficult routes. And to be honest, even on these technical climbs there are usually lower angled slopes where avalanches suddenly become a real possibility.

While sluffs usually don't pose much of a threat, on steep terrain it's very possible for one to knock you off balance causing a serious fall. In 1995 I was hit by a large sluff while belaying my partner up an ice pitch on the Cassin Ridge on Denali. Luckily I was anchored, because the force was substantial. After it tapered off and I gathered my wits I looked over to the side to find that my pack, which was clipped to the anchors, was gone! The sluff ripped the webbing and cartwheeled my pack 600 feet to the bottom of the slope finally coming to a rest near the lip of a crevasse. Thankfully the damage was minimal and I was able to retrieve it, thereby avoiding a huge epic, but it definitely illustrated the power of sluffs!

On peaks where the climbing route is predominantly in avalanche terrain a cautious approach must be taken. With big storms avalanches can be enormous and have large runout zones, so it's important to make camps in safe areas. This frequently means digging in away from everyone else even though the herd mentality can lure us into occupying established sites. Force yourself to look at the terrain with a critical eye and put camp in the safest spot possible. Most times you're choosing between the lesser of two evils since it's unlikely to find something 100% safe. The 14,000-foot camp on Denali is about as flat and wide as Kansas, yet as the season progresses more and more people migrate to its edges because it involves less walking and puts them closer to the main trail. Unfortunately it's also located in the runout zone of a 2,500-3,500 foot avalanche path, yet many climbers are oblivious to this reality.

After the inevitable storm it's I always wait a bit before moving if the route is exposed to avalanches. Certainly the size of the storm and specifics of the route are factors to be considered, but since we're dealing with the threat of direct action slides, time is our friend. Waiting isn't always an option as we're descending, but usually it's a choice when we climb up. By waiting 24 hours after a storm the snowpack can often adjust to the new load that was just added. On Denali in 1992 it stormed for 9 days at 14,000 feet. The storm broke with clear, clam and sunny skies. As the clouds lifted a 10-foot fracture line appeared 1000 feet above. There was still significant hangfire, several square kilometers worth, but climbers were so anxious to move up they disregarded any waiting period for the snow to stabilize. The fixed lines through the crown became a feeding frenzy and luckily the hangfire didn't slide. But it was luck that saved these 60 people on the line. As Brian Okenek said, " Just because it worked doesn't mean it's right". We all need a little patience and experience since the snow doesn't care you've been tent bound and are amped to climb.

Descending

Descending poses an extra special problem for climbers because sometimes you MUST get down NOW as you may be out of food, fuel, physically extended or injured. Here the game ramps up a notch and takes on a whole new level of seriousness and risk. This is where the rubber meets the road.

Imagine needing to get down freshly loaded slopes in a storm. The best option, although not relatively easy, is to try and trigger the slope by collapsing a cornice or trundling boulders and then walking down the bed surface. Another way to descend if it's not too steep is to unrope and walk down very carefully staying on small ridges and minute terrain features. This requires an astute ability to read the terrain, carefully avoiding rollovers or other points of increased stress in the slope. This is best done one at a time with others following in the exact footprints of the first. Although tedious and dubious if the slope is very large, it's safer than punching down the middle in reckless fashion. Depending on the snow fluting or ridges, you may also opt to descend totally separate lines exposing only one of you to a given path. But be aware that if any of these techniques fail the consequences are deadly. Steeper slopes sluff regularly, but all this loose snow loads the lower slopes creating potential problems. On more than one occasion I've descended steep couloirs only to be scared out of mind on the less steep slopes below.

If you have to rappel in couloirs or gullies hug the rock walls as you go and try not to cross the slope mid-path. If you need to get over to the other side, plan ahead and do it from the top of the slope or rollover. Many times you can connect rock islands as you descend moving from safe spot to safe spot, and remember to always try and tuck yourself away, anchor in, and have your partner descend exactly as you did. Many climbers have died failing this simple routine. Be aware that the rope adds a false sense of security. If there are acres of snow above you and the slope avalanches the climbing rope won't do much good because it'll either snap you in half or pull out the anchor. The rope will only help in an avalanche if you're near the fracture line.

Another option with rope and hardware is to descend something more technical, like a steep, rocky section of the peak, instead of snow. In Pakistan my partner and I ascended a 6000m peak that was mostly steep snow. With the snow an unconsolidated mess we sought out a steep rock buttresses for our descent. New snow over the next 2 days made the slopes even more dangerous so we decided not to descend the way we climbed up even though it would've been much quicker. Instead we did 20 rappels to the glacier that posed its own special problems, but ones that were solvable and not based on luck. In essence, always be on the lookout for alternatives.

Good News/Bad News

Wet slides pose a very different type of forecasting problem in the mountains. They're not always confined to lower elevations; a few inches of new snow followed by sunny, warm weather can create avalanches rapidly. The good news with wet slides is that they're weather dependent and easy to predict. The bad news is that they can form rapidly; sometimes within 20 minutes to ½ an hour as the sun shines from behind a cloud or peak. If you're in an exposed location you can go from a relatively safe situation to one totally out of control in moments. Sometimes waiting until freezing nighttime conditions is the obvious solution. My partner and I waited 6 nights before we got freezing conditions to climb Mt. Hunter in Alaska. This paid off with easy cramponing vs. wet postholing, but unfortunately conditions changed unexpectedly on the descent. We were half way down a 2000-foot couloir when everything unglued turning the couloir into a Class V rapid of wet snow. Our only alternative was to hug the rock wall on rappel which was quite awkward, but safe. Towards the bottom the rappelling became unnecessary, but traveling on the snow was hateful since we sank to our hips or started a new slide with every step. The only place where there was firm snow was inside the runnel created by the numerous slides. Using this to our advantage one of us would jump in the runnel and downclimb as fast as possible while the

other acted as a lookout. When a slide would come the lookout would yell and the descending climber would jump out to safety. Not exactly something you'd read about in "Freedom of the Hills", but it was fast, effective and the safest option we could think of. In mountaineering, however, sometimes the safest options aren't all that safe.

Ice Avalanches

Most big peaks require navigating around icefalls and seracs. Contrary to popular belief, these ice towers and cliffs do not respond to daily fluctuations in air temperature, which makes predicting their collapse difficult, although fresh debris can give you an idea of how frequently they calve. As much as we don't want to admit it, exposing ourselves to them is a form of Russian roulette, with survival based more on luck than skill. The only advice I can offer is to look at your route carefully and then move as fast as you can, minimizing your exposure. This means stripping down, getting a drink and taking care of your personal needs before you embark on your sprint through the danger zone. Obviously, longer exposure means a greater chance that you'll get the chop, so make sure you fully understand the objective danger that your putting yourself in.

Accepting the Risk

Mountaineering and avalanches are inseparable. Although falls from human error account for most fatalities in climbing, avalanches are the number one cause of fatalities in Himalayan mountaineering. In North America 135 climbers have died in avalanches since 1950, which is more than any other sport. This isn't exactly a heart-warming statistic.

Non-mountaineers always question why we don't bring transceivers and shovels with us. While shovels and transceivers are great tools in the backcountry where runout zones are easily identified and debris is usually only a few feet deep, this is not the case on big peaks. Mountaineers are also obsessed with minimizing weight and since these tools are not essential to the climb, they're often left behind. The real danger is being swept off a cliff or into a crevasse, not necessarily being buried. Shovels and beacons won't help, as you'll most likely die from the fall, not the avalanche.

Mountaineers will always face the danger of avalanches. While many other sports only expose their participants to possible injury, the stakes in mountaineering are often much higher. Avalanches are just one part of the risk involved. Thus, many climbing avalanche accidents, which are seeminly stupid, may simply be a situation in which the climbers were minimizing their risk from other objective hazards. The bottom line is that climbers have to be willing to accept a set of risks that includes avalanches. The final goal, however, is to minimize those risks.

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