

10 COMMON MISSTEPS OF AVALANCHE PRACTITIONERS  
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**ABSTRACT:** Avalanche practitioners work in a hazardous environment, characterized by a large degree of uncertainty. While extensive operational efforts are undertaken to minimize uncertainty, it cannot be eliminated. As a consequence, accidents and incidents will continue to befall this challenging workplace. There are often many different contributing factors to any avalanche incident, but the one constant is the presence of man.

The purpose of this presentation is to outline and discuss 10 common missteps or errors avalanche practitioners and winter mountain travelers make in the course of their career or life.

To identify the most common missteps, a short questionnaire was distributed among 70 IFMGA mountain guides or ACMG ski guides with 10 or more years working in a production Helicopter skiing company in a team environment. The company averages 6000-7000 guests in a guided wilderness skiing setting per season spread over 11 different operations. It has been operating 52 years with an annual guiding staff of 125 certified guides. None of the factors discussed fall exclusively within the snow science area, but are rather the results of the interaction between the avalanche hazard and the people working and traveling in the mountain environment. Although the discussion of bias is not new in the social science realm of the avalanche world, it is insightful to review and reflect on observations of the seasoned practitioners themselves.

**KEYWORDS:** Avalanche, Awareness, Patience

## 1. INTRODUCTION

Working with a large group of mountain guides for the past 21 years has provided valuable insight to the day to day operations of an occupation in an uncertain and high risk environment. For the last 5 years, I have been the mountain safety manager for 12 operations, with the main focus being on snow science, hazard and risk.

This has given me the opportunity to discuss the hazards and risk with some of the most experienced guides in the world. The paper began with an interview request from Wagner skis to highlight "Mistakes Even Experienced Backcountry Skiers Make". It was written by Krista Crabtree and can be found in Wagner skis journal.

It was a worthwhile piece and I felt it could be expanded to be directed at operating professionals in the avalanche industry.

The intent of the paper is for practitioners to stop and give thought to some common human factors we all face and all have within us, regardless of experience.

## 2. SETTING AND METHODOLOGY

Canadian Mountain Holidays (CMH) is one of the oldest adventure travel companies in North America and the most experienced and biggest Heli-Skiing operator in the world.

CMH operates in the Purcell, Selkirk, Monashee and Cariboo mountains of eastern British Columbia from 8 backcountry lodges and three town-based hotels including the Adamants, Bobbie Burns, Bugaboos, Cariboos, Galena, Valemount, McBride, Revelstoke, K2 Nakusp, Gothics and Monashees. We have recently added a Nomads package which operates from Halcyon Lodge. Our operating area encompasses approximately 15,000 square kilometres of terrain, granted under Licenses of

Occupation from the British Columbia government

CMH hosts between 4500 and 6500 heli-ski guests on mainly week - long trips every year, which also makes it the largest heli-ski operator world-wide in terms of guest skier days.

CMH has a winter guiding staff of 125 guides all certified and qualified with the following

- ACMG or other IFMGA member associations, including CAA level two certification
- Annual CMH pre-season guides training (3 days)
- Annual CPR and AED recertification (4 hrs)
- Annual CMH area training / set up (5 days)
- Professional CPD requirements for ACMG / IFMGA and CAA members
- Advanced first aid recertification (40 hrs every 3 years)
- WSBC Avalanche Blasting Recertification, if applicable

The Mountain Safety Manager (MSM) role was first incorporated into CMH in 1991. The role was established to; focus solely on all aspects of snow stability evaluation, hazard assessment, and risk management procedures for CMH skiing operations.

During the winters of 2012/13, 2015/16 questionnaires were sent out to all the guiding staff with 10 years or more of heliskiing experience. The total number of guides replying has about 70 -80 combining the 2 surveys. The results were compiled and sent to all the winter guiding staff. The positive feedback indicated it was a interesting and successful project for the guides

### 3. 10 COMMON MISSTEPS OF AVALANCHE PRACTITIONERS

#### 3.1 MISAPPLICATION OF TERRAIN

There are constants in the formulation of avalanche hazard on any given day and one of the main elements is the terrain itself. It changes little over time and before decisions are made it can be studied and interpreted. As competent

professionals we all know the physical factors involved in identifying avalanche terrain but we continue to falter in our mitigation of the risk by not adjusting location to meet the hazard at the time. The Snowpack lies over the terrain but it is not a constant and can be unpredictable and therefore uncertain; leading to the importance of interpretation of physical terrain. You can solve most avalanche hazard issues by choosing the right terrain for specific conditions. Competent practitioners often underestimate the complex uncontrolled nature of the environment. The cultural trend of our society and industry often views our terrain as an amusement park. This can have an influence on our respect and caution towards mountain travel and terrain interpretation. We cannot change the snowpack, the terrain or the weather but we can change where we are and how we travel in the mountain environment. To quote one of the guides,

*“Even more fundamental than hazard assessment, decision making, and safety equipment, our most effective tool to manage the inherent hazards we encounter is how we manage our movement through the terrain.”*

Bigger margins of safety in terms of terrain have made a difference too many experienced guides. Remember the basics: size, angle and shape. Respect the terrain.

#### 3.2 BEING IMPATIENT WITH CONDITIONS

Humans are not particularly patient. How many people have switched lanes in traffic or flipped through the TV channels only to get back to exactly where you started or worse. When we have goals we are trying to reach; be it guest satisfaction or opening unskied terrain we often view time as a hurdle to achieve those goals. This naturally leads to impatience. What has cost you more in your life being patient or impatience? A common comment from the guides was doing too much too fast with a given avalanche problem.

*“One of the continued things I see is too much trust in a surface hoar layer gaining strength. Time and time again, I see and hear that “blank layer is now not a problem or that it is no longer*

*a concern. I will make decisions on a SH layer after some weeks or longer until I justify to myself the layer is no longer a concern with direct observations of tests to back up my actions. If I think about it the more time I give a layer the better I feel and that can be months later."*

It has also been noted, sometimes not acting on short term feedback, ie ski cutting but deliberate slowing down, letting time pass and eventually opportunities presented themselves  
Practicing patience and waiting out conditions was viewed as a positive trait amongst the guides and in the end lead to a less stressful work environment and a higher level of certainty about prediction of avalanches.  
The key to everything is patience.

*"You get the chicken by hatching the egg, not by smashing it open."* – Arnold Glasow, American humorist

### 3.3 TRYING TOO HARD TO OUTWIT THE AVALANCHE HAZARD

As a general rule thinking is a good thing. Having a logical and methodical approach in your decision making is something highly valued. Although quite often avalanche professionals try to seek a way around a problem using analytical skills when the problem is just too widespread or uncertain in nature. We do our damndest to get to the solution using our conscience analytical brain, unfortunately due to our cognitive bias we fail to see the blind spots we missed along the way. Quite often we just try too hard, when waiting out the problem is the best solution.

"For every complex problem, there is a solution that is simple, neat and wrong" H.L. Mencken

### 3.4 ACTING TOO MUCH ON EMOTION

Understanding how your brain works in decision making is an important element for a safe and successful career in a high risk workplace. Your brain works in two ways: the rational part that gathers information to help you make an informed decision and the emotional part (the feeling) that's trying to have a good time. But

you really have to keep yourself in check and balance between the feeling and the rational process. You need the emotion to have a fulfilling life but we must not be controlled by it. Just because you want to have a good time and ski the slope, conditions might not be right. The rational part needs to say, "All the info says it's bad, I'm not going to ski it."

### 3.5 INFORMATION OVERLOAD

These days the excuse for not being informed is usually not valid. With the technical age we live in, having access to current conditions is easier than ever. One of the issues facing the avalanche professional is the sheer volume of information available and the time and resources required to process that information in a meaningful way. It is important to understand what is essential to your decision making towards a said problem and remove what is not. Getting more information is not always the correct answer. The challenge lies in getting the data that is most relevant to your issue..We need to ask - Is more really better?

*"Most of what exists in the universe – our actions and all other forces, resources and ideas- has little result; on the other hand, a few things work fantastically well and have tremendous impact"*

*Richard Kock*

### 3.6 NOT BEING VIGILANT TO CHANGES IN THE ENVIRONMENT

"The weather and the snowpack are closely related. It is highly valued to be aware of changes in both these elements. These changes can be quite subtle in nature, but amongst the guides it was noted a failure to recognize these environmental changes lead to a inconsistency predicting avalanche behavior . Making a conscious effort to ask oneself "What I am missing out here?" is worth adding to your internal dialogue.

### 3.7 LETTING FAMILIARITY INFLUENCE YOUR MINDSET

The familiarity heuristic is one of the most cognitive imbedded biases we carry in our decision making process and for a lot of the time it serves us well. We generally equate the

familiar with safety and knowns. Although the “gut feel” we have about a familiar piece of terrain can be quite misleading and may lead to an underestimation of risk. When we return to the same areas often, we usually get in a positive reinforcement loop, get complacent and often lose the perspective of potential risk. The duality of working in familiar terrain and snowpack’s remains a challenge. Keeping an open mindset and fresh eyes was something to be remembered and strived for.

### 3.8 UNDERESTIMATING CONSEQUENCE

We are constantly surprised by the magnitude of avalanches. We underestimate the destructive size the terrain and snowpack can produce. The failure to make necessary adjustments in terrain choice can be based on the lack of understanding of the magnitude and intensity of an event. Making this a human error. Because events may not be everyday occurrences people diminish the relevance’s of past experiences.

### 3.9 LACK OF COMMUNICATIONS

The main misstep noted by the guides had to do with a lack of communication. It was the single biggest factor involving events of consequence. It could be on a larger scale amongst teams or person to person giving directions. It also came in many forms including not being transparent, choosing the wrong communication style, not knowing your audience, incorrect tone, and not speaking up when doubt lingered. There are many reasons why it is an issue, but the bottom line is a lack of information in one form or another. If we have a workplace where we work with other people we must continue to seek ways to facilitate open and meaningful dialog toward the essential tasks at hand.

### 3.10 UNDERPLAYING OF UNCERTAINTY

The current definition of uncertainty in the Canadian avalanche industry is: The state (even partial) of the deficiency of information related to the understanding or knowledge of an event, its consequence or likelihood (ISO, 2009)

Due to the spacial variability and the physical environment of the mountains we often work in a highly uncertain state. It is important to recognize this element in our entire decision

making. We often overestimate what we know or what we think we know due to past success in our field which can lead to overconfidence. Overconfidence and a failure to recognize the level of uncertainty in the physical environment we work in leads to faulty decisions based on incorrect premises.

More targeted information gathering, understanding the uncertainty and differentiating between what we actually know and what we think we know can help reduce the uncertainty and in the end our overall risk in our field

*It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so. Mark Twain*

## 4. CONCLUSION

As science slowly grinds away explaining the uncertainties in nature, we are left to live and work within an environment which carries risk. Although all the points fit into some heuristic bias or other the interesting point is not the box or name of the bias but how they are actually manifested and communicated by real practitioners. There is nothing new in our failings, they seem very common and familiar to all of us but perhaps being cognitive of others mistakes we can see them in ourselves.

Remember these common mistakes the next time you head into the backcountry, and remember to stay safe out there!

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## REFERENCE LIST

- Adams, Micheal ; Chira, Inga ; Thornton, Barry, 2008: Behavioral Bias within the Decision Making Process
- CAA, 2016: Technical aspects of snow avalanche risk management Mckeown, Greg, 2014: Essentialism
- Gonzales, Laurence, 2003: Deep Survival

Kahneman , Tversky , 1986 :Rational Choice and Framing  
Decisions

LeDoux , Joseph,2002: The Synaptic Self