

BEING DIFFICULT: STRATEGIES FOR ENCOURAGING DISSENT FROM COLLEAGUES AND STAFF IN THE A.M. FORECAST MEETING

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ABSTRACT: Cognitive science and psychology have long explored how individuals can ignore or reinterpret crucial information to reinforce their existing beliefs. Research into confirmation bias shows that experts are more likely to adjust conflicting evidence to fit their views. Notable tragedies, including the Space Shuttle Challenger disaster, Everest fatalities in 1996, and numerous avalanche accidents reveal that survivors frequently regret not speaking up about leadership decisions (Higginbotham 2024, Kayes 2006). Amy Edmondson of Harvard Business School describes a widespread reluctance to speak up within organizations, calling it a “culture of silence.” Swiss researchers Bienefeld and Grote, in a 2012 Aviation Psychology and Applied Human Factors article, observed that despite decades of Crew Resource Management initiatives to improve communication and reduce errors, air crew members still hesitated to challenge established practices.

Dissent, however, should be lauded in high stakes decision making. Colin Powell, former U.S. Secretary of State, famously encouraged junior officers to voice disagreements, asserting that agreeable advice is of little value. Following the Vietnam War, the U.S. State Department introduced a “Dissent Channel” to foster honest reporting from the field. In the 1600s, the Roman Catholic Church appointed a “Devil’s advocate” to scrutinize candidates for sainthood.

Annie Duke, former poker champion and behavioral author, advises leaders to actively “farm” for dissent, create “truth-seeking groups,” and conduct premortems to reveal hidden risks. Challenging hierarchy strengthens teams’ capacity to be candid, even amid disagreement.

While artificial intelligence increasingly contributes to avalanche forecasting, humans remain better at questioning assumptions and the status quo. A 2026 Stanford study in Science found that AI, particularly Large Language Models, affirmed users’ actions 49% more than humans—even when those actions involved criminal behavior.

This project investigates how forecasters in Utah’s Central Wasatch Mountains in ski area, backcountry, highway, and helicopter ski guiding operations encourage dissent and skepticism among staff. Strategies include structured crowdsourcing at meetings, forecasters openly sharing uncertainty and intentionally demonstrating vulnerability. Ultimately, the ability to dissent may be the greatest asset humans bring to avalanche forecasting’s inherent uncertainty. This paper outlines some operational methods for cultivating workplace cultures that value critical thinking and healthy skepticism and explores the importance of disagreement.

KEYWORDS: dissent, psychological safety, avalanche forecasting, decision-making, crew resource management, groupthink

1. INTRODUCTION

Humans are flawed decision makers. Social and cognitive scientists have shown that we tend to form beliefs quickly and then cling to them, despite facts to the contrary, using confirmation bias or motivated reasoning. Multiple studies of cults who believed the world would end, then didn’t, examined believers’ subsequent cognitive dissonance and sustained loyalty (Festinger, Riecken & Schachter, 1956). Annie Duke, cognitive psychologist, poker champion and decision-making strategist, notes that in an ambiguous world, we long for certainty, and we have a strong, self-serving desire to be right. Duke notes that, “evolutionarily, we’re wired to protect our beliefs even when our stated goal is to seek the truth.” In *Being Wrong: Adventures in the Margin of Error*, Katherine Schulz points out that a principal challenge with being wrong is that it *feels* the same as being right, making self-awareness of error difficult. We rarely use language for being wrong

in the present tense: we say “I made the wrong call” instead of “I’m making the wrong call,” or “I chose poorly” rather than “I am choosing poorly.”

2. LEADERSHIP, EXPERTISE, AND BIAS

Avalanche forecasters make critical decisions daily: opening a highway, sending mitigators into avalanche terrain to open a resort, closing or opening runs in a guiding operation’s tenure, or messaging a powder hungry public. While no published study appears to quantify time-to-forecaster promotion in the avalanche industry, data from respondents in this study shows an average gap of nine years between entering the profession and taking on a forecasting role. In addition to operational experience, respondents credited formal education and mentorship for their advancement. Unfortunately, more training, expertise, or even a higher intellect won’t necessarily protect us from twisting contradictory facts to support our beliefs. A trio of psychologists found that the better we are at our jobs, the more prone to bias we may be, a finding described in their 2012 paper, *Cognitive Sophistication Does Not Attenuate the Bias Blind Spot* (West, Meserve and Stanovich, 2012). This led to the amusing headlines, “Why Smart People Are Stupid,” (Lehrer, 2012) and “New Study Shows Why Most People Think They’re Better Than Everyone Else” (Groth, 2012).

Awareness of the bias blind spot does not protect against it (Pronin and Kugler, 2007) — a problem potentially worsened by AI: large language models, trained to keep users happy, will even affirm proposed criminal action to appear compliant (Cheng, Jurafsky et al., 2026).

3. PROPENSITY TOWARD SILENCE

In their paper on CRM (Crew Resource Management) and hierarchy in aviation, researchers identified fear of damaging relationships, feelings of futility, and fear of being labeled negatively as the most common reasons First Officers’ cited for remaining silent when they disagreed with their Captain. “Speaking up in high-risk contexts is defined as an upward voice directed from lower to higher status individuals within and across teams, that challenges the status quo, to avert or mitigate errors.” (Bienefeld and Grote, 2012). In a review of hierarchy and medical error, hierarchy is identified as a barrier to speaking up, and communication identified as a trainable skill but not an innate trait (Peadon, Hurley and Hutchinson, 2020).

This has the potential to hinder a forecast from two angles: both from the perspective of the forecaster, wired to hold firm to her beliefs, and from that of the guide/patroller/mitigator, to stay silent and support the group.

Existing avalanche literature has examined group decision-making amongst recreationalists and professionals. Ian McCammon’s foundational work on heuristic traps identified the “expert halo” effect as one of several decision-making shortcuts that can lead recreational groups astray — the tendency to defer to whomever is perceived as most experienced (McCammon, 2002). Among professional forecasters, Frank Techel and colleagues at the WSL Institute for Snow and Avalanche Research (SLF) have studied inter-forecaster agreement and consensus-building tools such as the EAWS (European Avalanche Warning System) Matrix, finding that combining input from forecasters — a “wisdom of crowds” approach — can improve overall forecast reliability but also that genuine disagreement among experts persists (Techel and Schweizer, 2017; Techel et al., 2018; Müller, Techel and Mitterer, 2024). What remains largely unstudied is the space between these two bodies of work: the specific hierarchical relationship between forecasters, who hold formal decision-making authority, and the guides, patrollers, and mitigators who operate according to that authority day to day. Given that this relationship combines steep hierarchy, high-stakes outcomes, and the power imbalance proven in medicine and aviation to suppress speaking up (Bienefeld and Grote, 2012; Peadon, Hurley and Hutchinson, 2020), it warrants direct study. This paper examines exactly that relationship: how forecasters across Utah’s Central Wasatch — in ski area, backcountry, highway, and helicopter guiding operations — encourage dissent and skepticism among colleagues and staff.

4. LOCATION / PROGRAM DESCRIPTION

Avalanche forecasters from seven operations in the Central Wasatch Mountains of Utah, U.S., were surveyed. These included a backcountry ski guiding operation, two ski resorts, a highway forecasting crew, a helicopter ski guiding operation, an avalanche education provider, and a public backcountry forecasting center. Multiple respondents have worked in other forecasting regions in addition to the Central Wasatch.

5. METHODS

The same four open ended questions were emailed to 31 forecasters total (29 responded, 93.5% response rate, 8 female, 21 male), involving ski area patrol, public forecasting, highway forecasting, backcountry ski and split board guiding, and helicopter ski and snowboard guiding operations. Responses were collected as written email submissions, transcribed verbal interviews, and anonymous Google Form entries, then cleaned into consistent first-person prose and anonymized by respondent number. Qualitative thematic analysis was conducted by coding each response against the other 28 and grouping recurring ideas into named themes, which was aided by inputting responses into an AI large language model (Claude by Anthropic). Raw written responses were each independently read and reviewed by the researcher, with follow up phone calls and texts for clarification. The researcher independently reviewed, refined, and verified the AI thematic output.

The four interview/survey questions posed to all respondents were as follows.

1. How long have you been an avalanche forecaster? An avalanche professional?
2. What thoughts do you have on dissent/ skepticism/ open dialogue from our colleagues on mornings when you're the forecaster? Do you worry about a balance between open dialogue and efficiency?
3. Can you think of any conscious or subconscious methods you've used to encourage dissent or dialogue from your colleagues?
4. Has your opinion on the value of dissent changed with experience/ time?

Table 1: Respondent experience and gender (years; n=29 total; 8 female [27.6%], 21 male [72.4%]).

Statistic	Years as Avalanche Professional	Years as Avalanche Forecaster
n	27	27
Minimum	7	1
Median	16	7
Maximum	35	27

Two respondents gave a single undifferentiated figure rather than distinguishing forecaster from professional years and are excluded here.

6. FINDINGS

Interviews and written responses yielded 29 respondents across ski area patrol, public/backcountry forecasting, highway forecasting, and helicopter ski guiding operations, from which 12 overlapping themes emerged.

6.1 1. The efficiency/dialogue tension is nearly universal — and mostly resolved through timing

Question 2 asked respondents about the balance between dialogue and efficiency, so this theme was researcher prompted. Every respondent acknowledged this core conflict: open dialogue takes time, and morning meetings run on a clock. Attention is short with ski guides knowing they need to fight Wasatch traffic to trailheads, patrollers who anticipate lift openings, and helicopter ski guides knowing their daylight is limited. The dominant solution isn't cutting dialogue, it's relocating it. Many programs push deeper discussion to the evening before or to a separate scheduled meeting outside the AM flow, reserving the morning meeting itself for confirming the plan and flagging only critical disagreements. One operation skips AM meetings entirely in favor of an evening handoff between forecasters, which several describe as removing the time pressure altogether and making dissent easier to raise. A highway forecasting team member noted that an inaccurate overnight forecast can force a drastic operational shift the following morning. A large guiding operation describes the same evening-before strategy at scale: on busy days, tour plans are locked in and scrutinized the evening before so the actual morning meeting can move fast, while quieter midweek days are where genuine, unhurried small-group dissent actually happens. This outfit had multiple forecasters

independently describe reaching out to their staff via text or phone in the days prior to their individual forecasting period, asking junior guides to share their impressions of the avalanche hazard before the forecaster shared her thoughts as the senior staff member. Some forecasters described a standing rule that if agreement can't be reached, the group defaults to the more conservative call (opening or closing terrain). One highway forecaster noted, "There are times when open dialogue can seemingly start to impinge on efficiency. ... if we're getting to that point it's typically because there's greater uncertainty, and... while our team will still have the morning meeting and can move fast..., the level of caution reflected within that decision will generally increase." A common expectation was that with greater uncertainty, more dialogue was expected.

6.2 2. Trust and psychological safety are the real prerequisites for dissent

This was the most common theme to emerge organically from respondents. Several explicitly frame dissent as dependent on an underlying culture of trust and respect rather than any specific technique. One notes trust breaks down as group size grows past 2-4 people, tipping toward groupthink; another argues that tools and meeting formats only work if "the right culture" already exists. A small highway-forecasting team states this in its most direct form: being able to disagree with any teammate and "face no ill will or repercussions" is what lets the team adjust operations dynamically in the first place. One respondent flags a related cost of small, stable teams that isn't purely positive: familiarity can mean the group has quietly converged on shared assumptions. One forecaster called dissent "one step shy of revolution" and said that the morning meeting isn't the place for it. Ironically, he also had the clearest examples of farming for dissent, noting that "it's an important skill to let... (the patrollers) know their opinions matter." A patroller caught in an avalanche approached him the following day to share his reluctance to go out on route, and the forecaster was so happy that "that worker felt he could confide in me."

6.3 3. Authenticity is key as forecasters use deliberate, small moves to invite dissent

A recurring, concrete practice is simply asking at the end of a briefing: "comments, questions, or concerns?" Some forecasters intentionally model uncertainty by voicing self-doubt about their own forecast to lower the barrier for others to speak up. Several make a point of directly soliciting input from quieter or less experienced team members, including naming a specific colleague to draw out institutional knowledge, or anticipating pushback ahead of the meeting as a kind of private pre-mortem. Authenticity emerges as the foundation underneath all of these techniques — a forced or performative version of dissent reads as fake and actively degrades trust. One forecaster described forming a private opinion but deliberately withholding it, presenting only the data, and waiting to hear everyone else's read first; another described pulling field data from people who aren't avalanche professionals, like asking a helicopter pilot what she noticed about conditions on a reconnaissance flight.

6.4 4. Structured products and tools establish a shared baseline

Rather than just allotting more time, several respondents point to specific tools that make collaboration efficient: using InfoEx to update problems in real time in the meeting, viewing a shared editable run-list system, having a visual CMAH (Conceptual Model of Avalanche Hazard) likelihood- destructive size scale on a large screen for the group to view, or a pre-meeting group text where colleagues can react asynchronously (Statham et al., 2018). These shift dialogue outside the time-constrained morning window without eliminating it. Educating junior staff by providing professional avalanche education provides the language for less experienced team members to understand the use of these tools (CMAH, InfoEx) and builds confidence to speak up.

6.5 5. Experience consistently makes dissent feel less personal and more valuable

This is one of the most consistent findings across respondents. A clear majority report that dissent felt like a personal or professional threat early in their careers, and that with time they've learned to separate "my forecast was wrong" from "I am a bad forecaster." Several describe actively seeking out the perspective of less experienced colleagues to get a "beginner's mind" or "fresh eyes" on the problem. One forecaster frames this around actively hunting for blind spots. Another notes that she's grown more comfortable speaking up with experience. The most veteran forecaster describes sharing dissent as an explicit skill he's had

to build rather than something innate. Another noted that early in his career, he feared, as a patroller, that questioning the forecaster would appear disrespectful, and now that he's a forecaster, he seeks out such dissent in junior staff. A small number said their opinion on dissent has not changed with experience.

6.6 6. A minority view: not all dissent is helpful

Not every respondent views dissent as universally good. Several argue it needs to be well-formed to be useful — grounded in objective information rather than “vibes,” concise, or explicitly structured. One forecaster notes his tolerance for “dissent without facts” has dropped over time, and that dissent for its own sake is worth addressing privately with the person outside the meeting if it becomes a pattern. A few assign less value to dissent from people without recent field time. Another frames the deeper obstacle as ego — both the forecaster's own, and that of habitual dissenters who aren't adding value.

6.7 7. Silence is agreement, not just absence of objection

One forecaster observes that anyone present at a morning meeting shares responsibility for its outcome. Staying silent is a vote of agreement, and voicing disagreement is a responsibility rather than an option. This reframes dissent less as something to be sought by the forecaster and more as an obligation of all staff in the meeting.

6.8 8. Dissent's impact may vary by forecasting application

Disagreement on opening a ski run, either in a guiding context or at a ski resort, can have direct impact on public and personnel. Other examples of dissent could be a discussion on low vs moderate hazard rating or prioritizing wind slab over storm slab. Some dissent is practical and actionable; other dissent may be more theoretic.

6.9 9. Safety-motivated dissent is treated differently from strategy-motivated dissent

Dissent raised because of a safety concern is categorically different from dissent raised because of a strategic opinion or goal. The former is viewed as close to obligatory —even at a cost to efficiency, illustrated with the Toyota Andon-cord analogy of a line worker who can stop production the instant they spot a defect. The latter is valuable too, but can be where the “farming dissent for its own sake” can weigh teams down unnecessarily.

6.10 10. Without dissent, teams either take on excess risk or stop thinking for themselves

Avoidable avalanche incidents can often be traced back to unheard voices. One forecaster names two failures that can occur if a team is unable to express disagreement. First, because every forecast is inherently biased toward its author, a team with no mechanism for pushback simply inherits their leader's bias unfiltered. Second, a team that's never allowed to disagree can get “worn down” to the point where they stop forecasting for themselves altogether and defer entirely to the leader. Another forecaster offers a direct, personal echo: one of his closest calls as a rookie patroller ended well only because he spoke up for himself instead of ski cutting where his senior route partner had directed him.

6.11 11. At larger operational scale, resolving disagreement shifts from dialogue to field verification

At a smaller operation, the team shares a good enough picture of conditions that disagreement can usually be talked through and resolved at the table. In operations covering larger, more remote terrain with higher uncertainty, dissent expressed purely as “we're not sure about this” stops being something a meeting can resolve. The only way to gather useful information is to get out into the field with that uncertainty in mind.

7. OPERATIONAL STRATEGIES / POTENTIAL SOLUTIONS

7.1 Timing / structural fixes

- Forecaster handoff the night before so the actual AM meeting confirms a plan rather than debating one from scratch
- Small group arriving hour(s) before the rest of the team specifically to reach consensus, with a standing rule to default to the more conservative call if agreement isn't reached
- Weekly or monthly open discussion meetings outside of daily AM meetings, removing the daily time crunch entirely (example: a state of the snowpack discussion for all guides)

7.2 Meeting-facilitation techniques

- A standard closing prompt such as “comments, questions, or concerns?” as a deliberate, repeatable cue that invites dissent rather than assuming it will surface unprompted. “This is the crowd sourcing part of the meeting; what thoughts do people have?”
- Prompting longer-tenured crew members specifically for memories of similar past conditions
- Directly inviting an experienced colleague to share institutional knowledge: “You've been here forever, what do you think?”
- Keeping the meeting tone casual but professional, to lower the barrier for less experienced team members to contribute

7.3 Individual habits forecasters can adopt

- Modeling uncertainty or vulnerability out loud, even when confident, to lower the barrier for others to disagree
- Forming a private opinion but withholding it until after hearing from others
- Anticipating pushback ahead of time as a private pre-mortem, thinking through who's likely to dissent and how you'd defend your reasoning, before the meeting even starts
- “Defending your line” by debriefing at the end of the day, and explaining your reasoning for the terrain/plan chosen as an accountability habit that also empowers others

7.4 Structured tools/products

- A shared, editable run-list system (InfoEx) that requires group input to finalize
- A written hazard assessment product (CMAH) circulated before the meeting so people can process it and form a view in advance
- A pre-meeting group text where colleagues react asynchronously with a thumbs-up or a reply with concerns
- Professional avalanche education for less experienced team members to create a shared baseline and provide the confidence and technical language for dissent

7.5 Pulling in outside perspectives

- Deliberately drawing out patrollers or visitors who aren't normally in the room since they bring a unique view
- Asking pilots what they noticed (wind, snow conditions) as an informal but valuable data source regardless of whether or not they are credentialed avalanche professionals
- “Snooping around the top shack” — informally checking the vibe of the crew before writing the next day's forecast, rather than waiting for people to volunteer concerns

7.6 Communication framing/skill-building

- Practicing good team communication skills during lower stress moments
- Using judgment free language: “I have questions about this” rather than “Your plan is bad, you're wrong.” Owning your own emotional or mental state before voicing disagreement, rather than projecting it onto someone else's plan

8. LIMITATIONS

Respondents were selected from the researcher's own professional and social network and were informed that the subject of the paper was the importance of dissent, increasing a skew in favor of dissent. Other than the six Google Form entries, responses were not blinded but directly identifiable. Responses were self-reporting only and rely on retrospection. Data collection methods varied and prioritized responder convenience with email vs phone call. Responses were informal reflections on occupational practice and not representative of industry standards. Responses heavily favored one location in the Wasatch Mountains of Utah.

9. FUTURE WORK

Forecasters in a broader area could be surveyed to identify more widespread opinions on dissent and other strategies for encouraging open dialogue. Additionally, team members who are not forecasters could be widely surveyed regarding workplace culture and experiences regarding speaking up and their perception of dissent in their workplace. Accident review or near miss debriefings with OFI (opportunity for improvement) could be implemented and reviewed, similar to peer review presentations in medicine.

Future work could extend this study to other regions and operation types, and track forecast accuracy or near-miss rates against dissent-friendly culture over time. Finally, as AI decision-support tools become more common in forecasting, it's worth studying how LLM sycophancy interacts with the same hierarchical dynamics examined here.

10. CONCLUSIONS

A clear hierarchy exists within the avalanche industry between forecasters and the guides, patrollers, and mitigators who work alongside them, with a nine-year gap from snow professional to forecaster in this small study. Human factor and decision-making research have shown that a perceived expertise and respect of superiors in an organization can cause less experienced group members to remain silent even when they believe critical mistakes are being made. Hierarchy breeds silence. Techel and colleagues' review of the EAWS shows that even with a shared, standardized tool, genuine expert disagreement persists, proving that dissent reflects the underlying uncertainty inherent in avalanche forecasting (Müller, Techel and Mitterer, 2024). Roger Atkins, in his 2014 ISSW paper "Yin, Yang, and You," argues against the instinct to treat emotion and subjectivity as flaws to be engineered out of avalanche decision-making. He reframes the question away from "how do we avoid problems posed by human behavior?" toward "how do we benefit most from human behavior?"

Forecasters surveyed in this study acknowledged many benefits of dissent in the daily operational meeting. A majority have become more comfortable with disagreement from team members over the course of their careers, and they recognize that open dialogue, particularly without time constraints, improves team safety and can lead to a more accurate forecast. Multiple strategies for promoting dissent were identified. The most common theme was recognition of the importance of a culture of trust and respect to encourage constructive dissent. Human capacity for dissent may be avalanche forecasting's greatest benefit, but only if organizations create cultures that promote and embrace it.

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