SOARING Rx

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Cognitive Impairment in Pilots

Late in the afternoon, the day's nice cu dissipating, Brad stood by the Field Officer's cart at the side of the grassy glider-club strip, and thought, *pilots will be starting to land pretty soon.* The wind had picked up during the afternoon, shifting from a gentle southwesterly breeze to something a bit more brisk from the northwest.

He heard a radio call. "Timbuck traffic, glider 28 x-ray, left downwind 18." Jeff was back. He'd see the windsock and change his pattern. Brad focused on his clipboard and continued calculating the day's aerotow charges.

A minute later, he heard a shout, and looked up to see a glider touch down, moving fast, halfway down the runway southbound. With alarm, Brad thought, *He's gonna hit the fence!* It was Jeff. Why hadn't he changed his pattern?

As the unofficial Landing Scores Committee watched, Jeff rolled fast toward the brush at the runway's end. Just at the end of the runway, he touched a wingtip and spun in a ground loop on the grass. A small cloud of dust drifted south. Charlie was already speeding toward him in the tow cart.

He watched Charlie talk to Jeff, pondered the discussion, and watched them hook up. He wondered what he, as the day's Field Safety Officer, should say. Jeff had seemed to him to be a bit thin-skinned in the past.

He slowly walked over to Jeff's trailer, and as Charlie and Jeff rolled to a stop, he approached Jeff at the wingtip. He said quietly, "Can I help you put it away? We should talk about that landing."

"Yeah, I was a little surprised I landed so hot!" said Jeff. "Maybe I lost track of the airspeed. I did a pretty good ground loop to save my bacon." He grinned proudly.

"You landed downwind," said Brad.

"I did not!" said Jeff warmly. "The wind's southwest."

"Look at the wind sock," replied Brad. Together, they turned toward it.

Jeff gave it a glance and quickly turned away. "That's just a thermal gust," he said.

Suddenly, Brad felt tired. Jeff apparently preferred an argument about the wind to a review of his decisions. Now Brad had three tasks: turning their conversation back to the approach and landing, mitigating Jeff's annoyance, and avoiding a futile argument over which windsock indication was a thermal gust and which the prevailing gradient wind.

Jeff was a banker in his mid-fifties, who'd joined the club about three years ago, and had seemed like a normal guy. Not a lot of hours, but only minor incidents. He'd bought a used Libelle and loved it. Fortunately, Brad thought, he had a half-hour to get over these hurdles during disassembly if others didn't show up to help and carry the conversation away.

A poor decision reflects cognitive impairment.

What if you were Brad? He is caught in the tension between being a friend in the club with Jeff and being an authority, as Field Officer. Even if he weren't FO, perhaps *being* a friend gives us some responsibility; as the Proverb says, "Faithful are the wounds of a friend." For here's the thing: we need to deal with poor judgment among ourselves – it's how we take care of each other, how we protect the sport, and how we honor our standards of excellence.

Point 1: It doesn't matter why the poor judgment occurred. That is, Brad, or we, owe it to our fellow pilot, his family, the public, and our peers, to *talk about* an incident of poor judgment with the pilot (not just among the spectators), in a way that makes a future incident less likely. Ideally, this involves a kind, empathic review of the decision-making process with a cooperative, interested erring pilot. (Ideally...)

This is, for Brad or for us, a challenge: Going into the conversation, we wonder whether he may disagree that he made an error, may disagree on the standards, may be crabby or blindly defensive. Does Brad, or might we, rank lower than Jeff in the Pilot Pecking Order, or the Off-Field Pecking Order, and either be reluctant to speak up, or fear being blown off?

What if Jeff is Brad's AME? Brad's estranged wife's new crush? What if he were a revered pilot such as Tom Knauff or Karl Striediek? The social milieu can make beginning the talk hard or impossible.

On the other hand, suppose Jeff is really not all that good; he overestimates himself, or seems arrogant. Then Brad, or we, may be much more willing to have a reason to tell him "what he needs to know," more likely to be harsh, un-empathic, unkind or derogatory. Sometimes we, or Brad, may actually be wrong about standards, procedures, or the situation. These things inspire negativity and argument when we had intended to be constructive – and can erode friendships.

Still, this is a challenge that grownups are expected to handle competently; even children are expected to play well in the sandbox. And part of our assessment of a pilot's cognitive impairment should include the way he handles well-intended criticism.

Point 2: It *does* matter why the poor judgment occurred.

In deciding how to handle Jeff, it does matter to Brad (or to us) what led up to the error. Brad, and we, need to be

conscious of the fact that *we really don't know*, no matter what the appearances. Besides this, if Brad (or we) failed to ask Jeff for an explanation, whatever is said about the incident will seem prejudicial and un-empathic, and may precipitate an uncooperative response.

So Brad led off by saying, "Jeff, I stood on the runway all afternoon. The wind had truly shifted to favor 36. Explain your thinking."

Jeff said, "The wind was southwest when I left, and on the way back I checked the AWOS at Arborville, and it was southerly. Everything looked about right until I came to flare." Brad paused to think about what to say next. Jeff added, "You some kind of pansy? I handled everything OK! No blood, no foul."

Let's give Brad time to cool down here. Jeff did something stupid, and now is acting stupidly.

Brad has come to a fork in the road. Does he respond to Jeff's inadequate assessment of wind direction, his risky presumptuousness and overconfidence that no change could have happened? Or does he respond to the irrational insult?

We normally feel frustrated or angry at such a response. At the same time, it's a clue that not all is well with Jeff. A neurologist once said to me, "If you discover during an exam that you're angry with the patient, they're demented." This is not exactly correct, but as an aphorism, it tells us to look past our emotions for an unexpected abnormality; to ask, "Is there something about the *pilot* that made an error more likely?"

This matters because it governs our response. If there was nothing wrong with the pilot physiologically, we can focus on education or priorities. If there might be, then education might not be the best response.

Thus, there are two sides to "why." One is the erring pilot's *thinking*, known only through drawing out from him an explanation of his own perceptions and thinking. We must ask about this, for in an error of judgment, there will always be an error of perception or thinking, of which the pilot may remain confidently unaware.

The other side of "why" is whether some *underlying abnormality* – medical or physiological – predisposed wrong thinking. The list is long, and it's impossible for Brad, even if he's an aviation physician specializing in the physiology of cognitive impairment, to know the answer while standing on the field. Most important, a pilot may have a temporary or a permanent abnormality, and it's *impossible* to be sure which is true in the moment.

How to Recognize Cognitive Impairment.

These principles apply whether the underlying problem is temporary or permanent:

The first sign is *subtle inappropriateness*. Often mistaken for clumsy humor, especially from a person who's witty, we tend to ignore this as an accidental mistake. In fact, most inappropriateness *is* due to hearing wrong, simple misunderstanding, or mental slips. Human beings – you and me, Brad and Jeff – are mistake factories. However, we also have an editor – called "executive functioning" – that makes us self-correcting within the limits of our knowledge and perception.

The most important, and the most subtle loss, is of this executive functioning. Some keys to recognizing it are: *Was the mistake caught?; was it corrected when pointed out?; are the mistakes uncharacteristic?;* and *does the person have some insight that he's made a mistake?* Our sensitivity to humiliation may cause us to deny our vivid awareness of the error to the critic while blushing and hanging our head. The face is more important than the tongue in judging whether the pilot knows he made a mistake.

Brad just said quietly, "Jeff, are you OK?" "Yeah, I feel fine."

"How high did you go?" "12,000"

"Did you use oxygen?" "Don't need to."

"What's the dew point today?" "28."

"Was it cold at cloud base?" "Yes, sort of."

"Did you shiver?" "After awhile."

"Did you have to use your relief system?" "Yeah, several times."

"Did you rehydrate on the way down?" "What for? I felt fine."

Now Brad knows that Jeff has experienced hypoxia (mild), hypothermia (mild), and volume depletion (probably moderate, from re-warming after cold diuresis). But the only reason Brad knows this is that he understands a good bit about pilot physiology. Most field safety officers don't have any medical or physiology training. Jeff might also be fatigued, and he may have been distracted by something during the approach or pattern.

Brad also knows that Jeff has no clue to the obvious things that might have impaired him, itself a proof of impairment! He now has reason to *suspect* that Jeff's cognitive impairment, that led to his mistake in judgment, was temporary and self-correcting though it's persisting. The appropriate intervention is to discuss the need to verify one's assumptions and first impressions while flying – and to discuss the physical changes

Some tests of cognitive function.

Screening:

+ Mini-Mental Status Exam (MMSE) (commonly used, least accurate)
+ Montreal Cognitive Assessment (MoCA) (slightly better)
+ St. Louis University Mental Status (SLUMS) Exam (better, and not as embarrassing to take)

Specialized brief tests:

+ For aviators: CogScreen
+ For general people: MicroCog

Complex assessment: See your friendly Ph.D. clinical psychologist and ask for formal *psychometric assessment* of cognitive function. It will be thorough, time-consuming, and expensive. And it gives the best answers.

that impaired him.

However, Brad cannot know whether there are other temporary influences as well: illness, social stress, psychological problems, substance intoxication or withdrawal, use of prescription drugs that Jeff has incorrectly assumed to be innocuous, or any of a very long list of things.

Since he has known Jeff only for a short time, and has interacted with him minimally and within a small range of situations, Brad cannot judge whether the inappropriate judgment, and especially the gratuitous insult, might be due to some permanent brain change. If he could see Jeff's work, watch his behavior at home, observe his navigation and math skills, observe his capacity for abstract thinking – and monitor these over time – he might be able to *guess* whether Jeff is having long-term gradual or sporadic cognitive loss. Still, he cannot know the reason without neurological evaluation.

It's important also to realize that cognitive *loss* does not automatically mean incompetence. That may come in the end, and typically accompanies severe temporary loss, such as drunkenness or delirium. Nevertheless, early on, the importance is to recognize diminished capacity and adapt to it.

Brad is in his mid-fifties. This is the time when classic Alzheimer's Disease begins. Brain tumors and other physical or immunologic brain diseases can occur at any age, and usually cause very subtle abnormalities at first. No one is too young to suffer dementia.

Even so, how can we know about these things? Well, we *can't*, on the field. Even in the doctor's office, it's hard merely to suspect them. A big barrier is that it's very risky to begin a conversation about someone else's suspected intellectual decline! (When was the last time you successfully had a constructive conversation with an obviously alcoholic friend about his drinking?)

Suppose Brad is a Saint. The glider slides into the box, the lid is closed. He says gently, "Jeff, I'm not wanting to beat you up. I like and respect you. This isn't like you. Is there anything worrying you?"

They're alone. Jeff colors. He pauses, inspects the grass, downcast, glances at Brad out of the corner of his eye. "Y'know, sometimes I wonder if something's wrong with my brain. Sometimes I embarrass myself. What do you think?"

"Jeff, I can't possibly tell. Have you talked to your doc?"

"I don't dare," said Jeff. "I can't afford anyone at work thinking I'm a head case."

"Let's ask Doc Reibestein after he lands if can help us. I'm sure he'll keep it on the QT."

Before they went home, they buttonholed Doc Reibestein, and asked him how to tell if a person has brain rot. He explained that if you really want to know, the only definitive way is to see a clinical psychologist and get formal psychometric testing. And even that won't tell whether a person has *changed.* It's a snapshot; only time will tell.

We suspect impairment, in general, only after multiple subtle errors that are uncharacteristic for the person, or when the impairment is so gross that it's obvious – the "falling-down drunk" sort of thing.

Our responsibility to each other is to speak diplomatically to each colleague about observed errors, and assist him or her in figuring out contributing factors that can be remedied. We will be successful in doing this if we first praise what we can, and then ask sincerely for their thinking, ask whether they are comfortable with what just happened, and *listen.*

Once they know they won't be humiliated, that we're on their side in their own interest in excellence, we will be able to have a conversation about how to evaluate. If there's any concern that a medical or psychological factor might be involved, both medical and psychological consultation may be helpful.

Our responsibility to ourselves is to listen to attempts by others to correct, trying to remember that even the clumsy or undiplomatic critic actually means well.

Our responsibility to the sport and to the public is to be as realistic and wise as possible regarding safe decision-making and our capacity for skill and good judgment. This does sometimes means actually risking friendship for the sake of safety and wisdom. We must be brave sometimes to do good.

Types of Cognitive Impairments

Temporary: we expect the pilot to recover, and if the cause can be discovered, we can talk about how to avoid repeats. Temporary cognitive impairments are caused by such things as these:

Stress (bad news, conflict, loss, competition, anger, glee)

Intoxication (alcohol, cocaine, narcotic use or withdrawal, caffeine excess or withdrawal)

Physical deficiency (Dehydration, hypothermia, hypoxia, volume depletion, hyperthermia, fatigue)

Permanent: we expect the pilot not to recover, and if some permanent condition can be shown to exist, we must ask whether the present incident is a result, and whether the condition makes future incidents of poor judgment more likely, or whether it can be safely compensated.

Personality (impulsivity, perfectionism, narcissism, autism, etc.)

Dullness (some people are not blessed intellectually)

Aging (the brain does not get better with time)

Degeneration (Dementia; Parkinson Disease; ALS; microvascular disease of smoking)

Disease (infections, slow and fast; brain tumors; immune disease such as multiple sclerosis; strokes)