SOARING RX

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Embarrass Yourself *Naturally*

We call it an 'accident' because "we thought it wasn't gonna happen."

Everything we do, as a pilot, is based on our own perception. Our senses (mostly vision and touch) send messages to our brain. Our brain organizes these in patterns that depend on its design and on what we expect. Expectations are based on training and experience. These perceptions are continuously translated into action (or restraint), from before takeoff until after landing. They result in admirable skill, or humiliating incidents, depending on the accuracy of perception.

Our brains are able to create complex patterns out of scrips and scraps of incomplete information. For example, we can read print that is degraded amazingly. For example, we've all sent email links of news articles to friends. Many websites use the CAPTCHA program, which requires us to correctly interpret a highly degraded string of characters in order to validate that we are not a machine creating spam.

One risk, in flying, is that this pattern-forming system is not always right. Our perceptions are *not* reality; they are a cartoon. Sometimes the cartoon is very accurate, leading to the amazingly precise actions we see in sports. Sometimes the cartoon turns out to be wrong, causing Personal Embarrassment and Humiliation. This happens in three ways:

- **Inaccuracy:** imprecise measurement due to sensory limitations;
- **Error:** incorrect pattern-forming due to incomplete sensory data or filling in patterns incorrectly due to ingrained expectation,
- **Illusion:** incorrect pattern-forming due to the design limitations of our perceptual apparatus.

The most important thing about this is to understand that we *cannot be aware* of perceptual error until conflicting information of some sort reaches our consciousness (or near-consciousness). Normally we feel confident in our understanding of a situation. Our brains are very good at pattern-forming, and subconsciously do an amazing job of putting things together. German physicians a hundred years ago called this *blinkreit*, making a diagnosis in a flash. One of my mentors, when asked how he recognized a disease so quickly said, "How do I recognize my grandmother?"

This idea inspired Malcolm Gladwell's book, *Blink.* He shows many examples of the power and accuracy of perception. But it's a mistake to be utterly confident in this power, because it's sometimes sabotaged by illusion, error, or inaccuracy. Therefore, we must be also utterly confident that we *could* be wrong. One of my colleagues, a brilliant physician, likes to say, with a laugh, "As soon as I *know* I'm right, then I'm going to be wrong."

So we must continually do what the psychiatrists call *reality checking.* We must deliberately and continually seek redundant perceptual data to refine our impressions. In medicine, this is a very complex process called "differential diagnosis." We force ourselves to say, "Even though it's obvious what's wrong with this patient, what could I be missing? What else could possibly cause this?" Most of my own mistakes have been due to not being able to complete this process.

Haste and confidence are hindrances to this. The basketball player cannot line up his shot like a golfer; the overwhelmed ER doc does not have hours to reconsider and second-guess, as the patient's attorney may do weeks later; and the pilot cannot hit *Pause* and reassess the situation when the aircraft is zooming through the bumpy air and the situation feels dangerous and confusing. Only training can prepare us to focus on the essentials and to react appropriately; even then, we may be wrong.

This column, while it exists, is aimed at showing that some perceptual error is *inevitable,* that it's a result of the design limitations and operating characteristics of our senses, and it's aimed at showing that changes in our physiologic state can imperceptibly make us prone to awkwardness.

For example: a high-time, skilled pilot, with thousands of winch launches, does something very stupid-looking and incompetent during a winch launch at a mountain launch site, 6000 ft MSL. Why?

Was it hypoxia? Could a guy who feels perfectly fit be hypoxic at such a low altitude? (We need to know the context: where he lives and works; what might hinder oxygen delivery from air to brain.) Unfortunately, he can't know this, because the brain has no hypoxia detector, and because hypoxia degrades reality-checking even faster than it degrades skill.

How could this happen? Could you be next? Stay tuned.