Normalization of Deviance

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Maj George Michelogiannakis, CAP
What speed would you drive?

- Speed limit 65 mph but traffic flows at 75 mph
What if the road then becomes empty?

- Traffic disappears after ten minutes
  - Do you slow down?
A flying scenario (outside of Civil Air Patrol)

- Pilot lands a 182T with 20 knots of crosswind
  - POH says demonstrated is 15 knots

- What will the pilot say to himself/herself after that?

Maximum demonstrated crosswind velocity is 15 knots (not a limitation).
1). Phew, I was lucky this time but that was too risky. I’m not doing that again.

2). Huh, I guess the 15-knot number is too conservative. I can do 20 from now on.

Would your answer change if the pilot did this a second time?

Maximum demonstrated crosswind velocity is 15 knots (not a limitation).
Pilots have egos. If they pull something like this off, they think they are becoming top gun

- Therefore they conclude it was skill, not luck

How about equipment? Maybe that airplane was at full weight and had vortex generators

Would the pilot still carry over his/her success to another less capable airplane?
Humans are good at rationalizing
  • We do it every time we cut corners

Rationalizing can change our behavior
  • What used to feel wrong is now normal

Normalization of deviance:
“The gradual process through which unacceptable practice of standards become acceptable. As the deviant behavior is repeated without catastrophic results it becomes the social norm for the organization”

Dr. Diane Vaughan
Pilot speak

- There is a tendency to rationalize shortcuts under pressure
- Pilots are usually under some kind of pressure
- Rationalization makes shortcuts ok

- **SOP**: Sump the tanks before each flight
- **Rationalization**: I sumped the right one. I’m sure the other one is fine
- **SOP**: Check the oil before each flight
- **Rationalization**: I just changed the oil last week and I haven’t flown it since
More pilot speak

- **SOP**: Calculate fuel burn for today’s weather
- **Rationalization**: It always takes me 20 gallons for this trip

- **SOP**: Perform weight and balance
- **Rationalization**: I wasn’t out of CG last time so why do it again?
Checklist discipline

- Checklist discipline is lost when pilots blow past items that appear unnecessary.
- In 2014 a Gulfstream overran a runway.
- They attempted takeoff with control gust lock on.
- This item is in the checklist **four times**.
- They were used to checklists from memory.

Runway overrun
Shuttle Challenger disaster

- NASA repeatedly flew the space shuttle despite knowing of a design flaw involving the booster rocket’s O-rings in cold weather.

- It never caused a problem until a launch in weather too cold was attempted.
It happened again!

Shuttle Columbia

- After 22 years, it was well known when foam blocks broke off the shuttle’s external tanks they would damage thermal shielding on the main shuttle
- Never any consequence
- Therefore it was viewed as a maintenance issue

Debris on weather radar
Columbia
- RJ-85 ran out of fuel
- Flight plan showed total flight time was the same as fuel endurance
- Dispatcher argued that the flight will take less time as it has always done before

71 fatalities
Military too

- Came up with procedure together with rest of crew:
  - Nose dive from 5000 feet for 10 seconds while selecting gear up
  - They would have to use Vne which requires special approval
    - They felt justified to approve it themselves
  - Talked about it with other pilots and engineers. Seemed reasonable

- Next morning: 4000 ft overcast
  - Recovered by 2000 ft

- Kept doing this. Convinced local tower that it is normal

- Last day: had to leave exercise and 1000 ft overcast
  - VFR into IMC, broke off cloud at 40 degree nose down, recovered at 200 feet only because of flaps

Tornado GR4

- Rule: pilots were assigned jets and couldn’t swap
- Pilot’s jet’s gear would not lock retracted unless subjected to 0g
  - Unfixable
  - Pilot was missing training opportunities

Costa Concordia

- The ship deviated from approved paths in order to give a better view of the coast to passengers.
- It was common practice.
- Collided with a rock.

2012
“Normalization of Deviance: when non-compliance becomes the “new normal”, December 2016
The deviation spiral

The “Deviation Spiral”
How to protect ourselves?

- Prove that you are safe, rather than look for (and not find) proof that you are not
- Check your rationalization
- Listen to skeptics/experts. Don’t ignore voices of doubt
- Self-censor based on regulations and personal minimums
- Silence is not agreement. Have you actually checked or are you assuming?
- Beware of hazardous attitudes
- How would you explain to NTSB?
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<thead>
<tr>
<th>Hazardous Attitude</th>
<th>Antidote</th>
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<tbody>
<tr>
<td>Anti-authority: Don’t tell me.</td>
<td>Follow the rules. They are usually right.</td>
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<td>Impulsivity: Do something quicky.</td>
<td>Not so fast. Think first.</td>
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<td>Invulnerability: It won’t happen to me.</td>
<td>It could happen to me.</td>
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<td>Macho: I can do it.</td>
<td>Taking chances is foolish.</td>
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<td>Resignation: What's the use?</td>
<td>I’m not helpless. I can make a difference.</td>
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Other considerations

- Sometimes we learn normalization of deviation without knowing it
- Such as what we learn from others
- Often the justification is “the good of the group” or that “the rule or SOP is unproductive”
- The last step of normalization of devianace is silence!
  - Someone is uncomfortable but doesn’t say anything
Learning normalization of deviance

- Pilot lost a magneto in flight in a newly purchased airplane
  - Made it back safely
- After landing, his A&P (not present) asked him to do a runup check
  - Was normal
- A&P drove over, did runup himself, and discovered significant RPM drop and backfiring during runup
- What do you think happened?
- Pilot was doing runups at 1700 RPM instead of checklist’s 2300 RPM (which the A&P followed)
- The previous owner recommended 1700 RPM because the engine backfired at 2300 RPM
Could normalization of deviance be a reason?

- Also complacency

FAA, “Predicting accident rates from general aviation pilot total flight hours”, February 2015
Murphy’s law is wrong!

- What can go wrong will go wrong
- Corollary: What goes well couldn’t have gone wrong
- What can go wrong *usually* will go well

But this makes us reach wrong conclusions!
- If what I did led to a positive outcome, my actions must had been good
- If it went well before it will go well again

Prof. Sidney Dekker
Do you have stories to share?