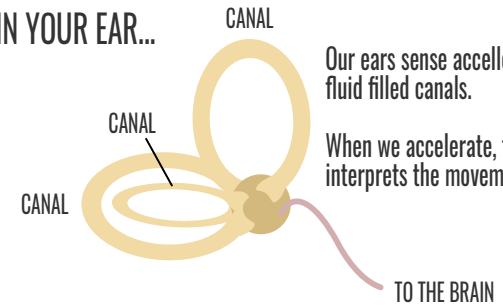
SPATIAL DISORIENTATION

GRAVEYARD SPIRAL

IF WE STAY IN TURN FOR A LONG TIME, THE ACCELERATION FROM ROLLOUT WILL FEEL LIKE A TURN IN THE OPPOSITE DIRECTION

The graveyard spiral is one of the most common examples of Spatial D. In it, the pilot is turning, while thinking they are in straight flight and descending. They try to pull out of a descent, which simply tightens the turn. Without trusting instruments, this results in a high-speed impact with terrain.

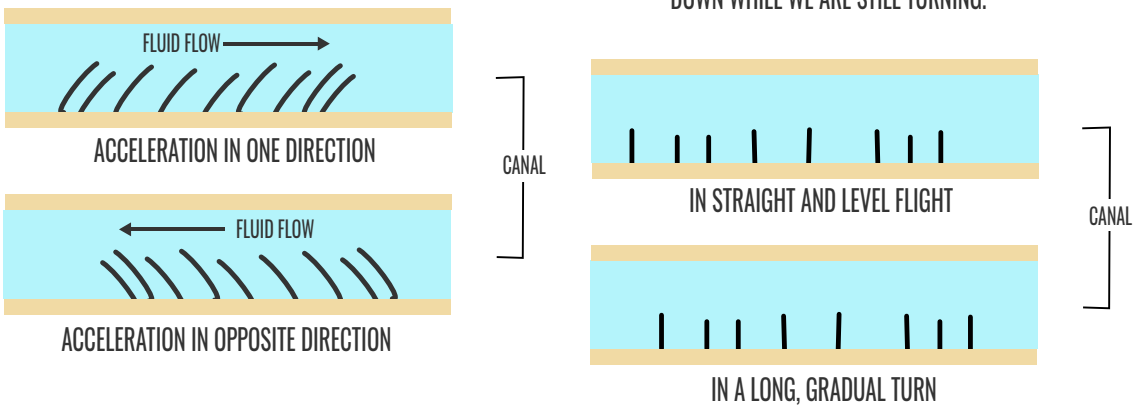
WAY DEEP IN YOUR EAR...



Our ears sense accelleration in three axes, using three different fluid filled canals.

When we accelerate, the fluid moves, which bends tiny hairs. our brain interprets the movement of these hairs to give us a sense of balance.

PROBLEMS ARISE WHEN THE FLUID SLOWS DOWN WHILE WE ARE STILL TURNING.



ACCELERATION ILLUSION

Acceleration can create visual illusions particularly in situations with limited outside visual reference. Increasing speed can feel very similar to pitching up, and decreasing speed can feel very similar to pitcing down.

This illusion is most commonly experienced while taking off into low clouds. During rotation, the pitch combined with increasing speed can lead the pilot to think they are over-rotating. A "correction" would result in pushing the nose down low to the ground potentially causing impact.

APPROACH ILLUSIONS

Conditions like ground lighting, visible moisture and terrain slope can create illusions on approach.

When we are unaware of the illusion, we may attempt to compensate to return to a sight picture that feels more normal. In doing so, we are unintentionally flying too high or low.

CONDITION	BRAIN THINKS	CORRECTION
DARK, FEATURELESS TERRAIN	TOO LOW	RECOGNZIE YOU MAY APPROACH TOO HIGH.
BRIGHTLY LIT TERRRAIN	TOO HIGH	RECOGNIZE YOU MAY APPROACH TOO LOW.
UP-SLOPING RUNWAY	TOO LOW	RECOGNIZE YOU MAY APPROACH TOO HIGH.
DOWN-SLOPING RUNWAY	TOO HIGH	RECOGNIZE YOU MAY APPROACH TOO LOW.