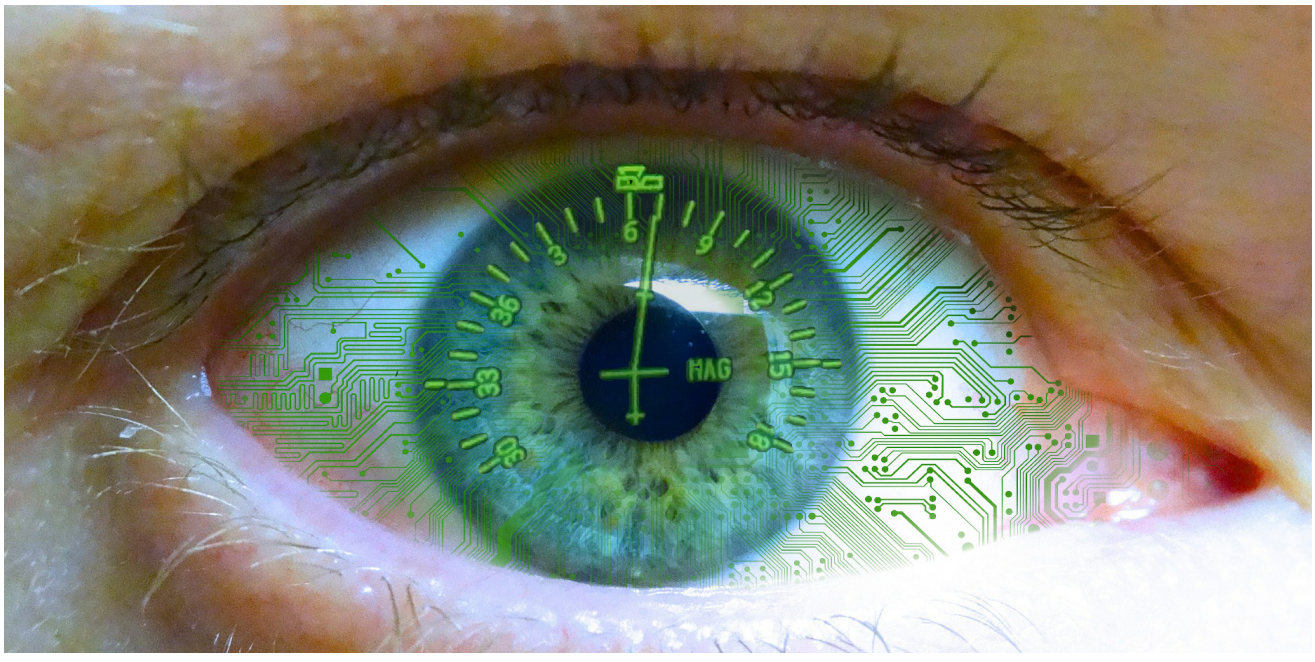

Composite graphic by Chris Gardner, Army University Press; original photos courtesy of pixabay.com

Through the Bird's Eye View

Maj. Heather Robinson

"Stevie, autopilot on! Hold 5,800 feet, heading one-two-zero." Rhi preferred giving her artificial intelligence devices human names. It made her feel more connected to them. Stevie responded with a single melodic chime to indicate compliance. Rhi turned to face me in the seat next to her. "Ready to test your upgrades, Mick."

"Not sure how you talked me into this, Rhi. Lindsey could have done this test."

"You are better company," she quipped.

I was on the helicopter flight to calibrate the 3D light detection and ranging (LIDAR) system. The nano interface had just been fitted into pilots' eye contacts. It digitally replicated the topography relative to the pilots' altitude and airspeed in real time when clouds blocked their view; "flying blind" was the unsettling term. I'm not a pilot; at six and one half feet, I was too tall to fit in confined spaces comfortably. Size was one thing, but the uncertainty of flying terrified me. I'd known Rhi from when she flew helicopters in the Army; now we conducted aviation research and development together. I found her alluring and precarious. Rhi was short for Rhiannon. She knew loss, not love; sometimes it showed. She found the ground suffocating and restrictive. Flying was her freedom, and she loved rubbing up against the boundaries of aerodynamics.

In Rhi's mind, "real flying," as she called it, was elegant, like writing a passionate love letter to the life of risk. Our friendship developed out of opposition; she found my risk aversion intriguing, and I lived vicariously through her adventures. On occasion, such as today, I hesitantly participated in them.

"Stevie, LIDAR on, transmit to head's up displays." Stevie chimed. A digital layout of every terrain feature and man-made obstacle within ten miles began to appear in real time in front of my eyes. I pulled out my diagnostic screen.

AI interfacing had made the majority of flights autonomous or semiautonomous; it included everything except passenger flights. The world was comfortable with AI, but it had vulnerabilities and was susceptible to hacking. The risk of flights transporting humans without a human pilot wasn't palatable to the public, even in 2050.

Screen capture courtesy of U.S. Army AMRDEC

"Must have been a different world when flying was innocuous," I said, thinking of simpler times.

"Weather has always been able to kill you. It's just more lethal and more precise now." I could sense her smirk without looking at her, "And so am I." She knew the cost. Rhi had plenty of reminders that one way or another, man was born to be on the ground, or in it. She was the only surviving pilot from her Army flight school class. The losses didn't end there. In these times, everyone had a story that could make your heart bleed, but some stories could bring you to your knees. Yet she kept flying; that was the unimaginable part.

"Stevie, MAC on." Another solitary chime. MAC was short for magnetohydronomics computing. It was my molecular formation prediction program; it used magnetic data to anticipate the weather.

We lived in the time of the weather wars, the Anemoi Era. Wars weren't declared anymore; they just constantly existed. It had been predicted for decades. The patterns were there. Controlling the weather had been in the works by governments all the way back to the 1960s. Project Storm Fury had been created to try to control tropical cyclones by seeding the clouds with silver iodine and supercooling the water molecules to disrupt the inner structure. And weather manipulation was the secret purpose behind designing the Saint Louis Gateway Arch; one of the few surviving post-climate change artifacts. When the climate shifted, the politically polarized globe had failed to do enough to curb climate change effects. The atmosphere heated up, Artic ice caps melted, extreme weather events caused floods, hurricanes, heat waves, and blizzards. Global efforts were made to develop weather technology to reduce natural disasters, create climates for agriculture, and preserve human life. It didn't take long for the weather to become a weapon for people to use against each other. Governments collapsed. In a world of civil unrest and resource shortages, everyone was both a soldier and a civilian. Synthetic weather patterns, called "synths," were used to redirect aircraft to a desired airspace, and then drone swarms forced the aircraft to land. The cargo would be taken hostage, critical resources were distributed for resupply, and the rest was used for political or economic demands. It was modern day piracy.

A yellow warning light illuminated on the dashboard. Rhi examined a digital display emitting what looked like an aurora borealis. "Synth incoming, air temperature dropping rapidly, sensors indicating cumulonimbus cloud formation zero-eight-zero heading, seven miles out."

Thunderstorms. I hated thunderstorms.

Rhi knew the physics as well as I did. The turbulence would be severe and unpredictable. I tightened my seatbelt and looked at the data. "These readings are abnormal. This is sophisticated tech; fog and ice are one thing, but storms are complex to create. The magnetic density is really high," I pointed out.

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"That's mildly interesting. Weather is a chess game. Playing the game is an art not science. It's the strategy that matters; better tech doesn't guarantee a checkmate."

"Nuances matter, Rhi. If this is an emerging capability, we don't want to be surprised."

Another yellow warning light illuminated. Hundreds of tiny dots appeared digitally in my eyesight from my contacts. Rhi was quick to explain. "Swarm detection zero-three-zero, and another metastasizing due south. Looks like they are trying to direct us toward the coastline." Rhi had two choices: avoid the synth and outfly the swarm, or accept fate and land. I didn't like either.

"Stevie, Anti-Ice on. Climb and maintain 9,000. Slow airspeed to 200 knots." A chime. "Altitude is our friend today. The closer we are to the ground the less maneuver space there is."

I monitored the drone swarm movement trying to reduce my building anxiety. "The swarms are really close to the synth. It looks like they are ebbing and flowing with it. Almost like they are moving it. That doesn't make sense."

Rhi's eyes were rapidly scanning her displays, piecing together the inputs. She began thinking out loud in a soft, slow voice. "Synths are complex … complex systems create … it's a network … THE DRONES ARE CREATING THE STORM!" She paused, and followed with, "We have to go inside the synth. Stevie, left turn zero-nine-zero. Change transponder code to emergency. Send position report on all channels." Stevie replied in kind.

"WHAT? Rhi, that's ludicrous! It's suicide and homicide in your case!"

"The drones are ancillary. All this time we've thought the swarms and the synths were separate. So, we avoid the synth and try to fight the swarm. But we are looking at it wrong. We need to use the synth to our advantage instead of flying away from it."

"You're a great pilot, but nature always wins, Rhi. You don't know what's inside that synth. That kind of turbulence can invert us. We're better off taking our chances with mystery pirates."

"It's not real nature, it's molecular, it has a magnetic field. Which means it can be manipulated with magnets. We are one giant rotating magnet!" She was talking about magnetic braking. It made sense; it was how high-performance trains were stopped. If the magnetic field dissipated, the synth would lose its momentum to grow.

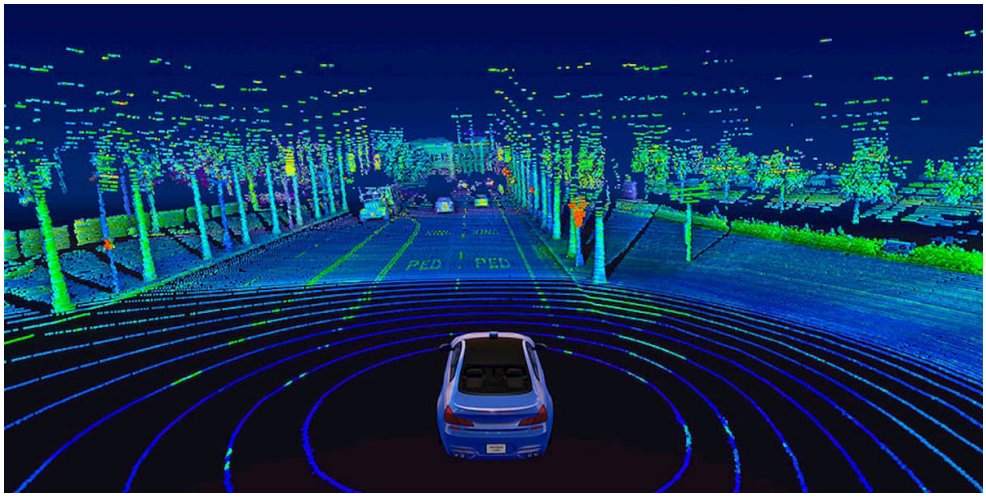

Image courtesy of darpa.mil

"Rhi, think about this for a minute. Even if you stop the synth you are still left with the swarms."

"Magnetism and electricity go hand in hand; you know this. Without the magnetic field, the swarm has to connect itself through some other means. We just have to interrupt the reconnection with an eddy current and the drones will fall out of the airspace."

My voice strained, "And then what? What's going to happen when hundreds of drones hit the ground? The unintended consequences are infinite. You could kill a lot of innocent people!"

"That's an acceptable risk we have to take," Rhi countered deadpan.

I tried to hide the concern in my voice, "You don't know who is controlling the swarm or what they want. The tech is easy and inexpensive to build; a child could do it. It could be a refugee camp that's just trying to survive. This is a science research flight; we can be diplomatic, de-escalate, and negotiate."

"OR it could be a revanchist paramilitary who's trying to acquire helicopters and spread a narrative that

we are spies who violated their self-declared airspace. Those drones could be controlled from another country through cyber and space. It's hard to know who the enemy is these days. I don't plan on being a political bargaining chip today."

When we entered the outside layer, the view was pure white. My rapid heartbeat was the only noise I could hear, my eyesight narrowed, I recognized the familiar specks, I was seeing stars.

I came to at the sound of Rhi's voice.

> At the end of the day, either we try to take out the synth or the swarm takes us. It might anyway, so we might as well go down fighting.

"That's a bit hyperbolic," I said.

She stopped and looked at me. "Look, there's no way to know what happens if I land. At the end of the day, either we try to take out the synth or the swarm takes us. It might anyway, so we might as well go down fighting." She spoke calmly, and controlled, but she couldn't hide it in her eyes. She was longing for the moment pilots chased so avidly. The place where she found faith. Rhi was required to fly analog in weather with passengers on board; no autopilot and no Stevie, just her against nature. I held her gaze for several moments. Those damn blue sunflower eyes dipped in chaos. Sometimes I wondered if she could separate miracles from martyrdom. I let out a soft sigh and nodded gently in submission.

Image courtesy of U.S. Army

"Stevie, auto pilot off. I have controls." A chime. It seemed softer this time, as though even Stevie understood what was at risk.

"I have to time this right to achieve the full effect. But if this works it will change the game."

"Entering autorotation!" We were dropping toward the ground at three thousand feet per minute. The seatbelt straps dug deep into my muscles, holding me to my seat; no doubt I would have bruises. Time slowed in my head; I closed my eyes. When Rhi recovered the helicopter, it was equally as awful feeling the opposing gravitational forces pressing me deep into my seat. She came to a hover at ninety feet.

"Now that was interesting. Stevie, autopilot on." I had never been happier to hear that solo chime. We stayed quiet for several minutes. Rhi ran diagnostics on the helicopter with Stevie while I absorbed the shock of the last several horrific moments of my life.

"Stevie, send all data logs and recordings to Fleetwood HQ." Another chime. "Let's head back to Silver Springs. This will be a long debrief." Slyly, she added, "I'm going into the stratosphere tomorrow Mick. Care to join?"

The incredulity in my facial expression said my answer for me. ■

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