The Harrowing Story of Virgin Flight 024

Some disasters don’t start with explosions. They begin with something subtle. A small hesitation inside a machine designed for trust. Aviation is built on layers of protection, but sometimes a single part, no bigger than your hand, can fail and set off a chain of events.

In 1997, one Virgin Atlantic flight carried such a flaw across the ocean, not knowing what awaited when it landed in London. How does a routine journey turn into a life-or-death trial of engineering, judgment, and time?

Let’s go back to where it all began, on a clear November night in Los Angeles.

Chapter 1: A Routine Flight Across the Atlantic

On the evening of November 5, 1997, Virgin Atlantic Flight 024 prepared for departure from Los Angeles International Airport. It was one of the airline’s twice-daily runs to London Heathrow, a long but familiar stretch over the North Atlantic. The aircraft assigned was an Airbus A3 40 dash 300, registered as G-VSKY and nicknamed ***China Girl***. At just under four years old, it was considered a young airframe in commercial service.

On board were 98 passengers and 16 crew. In the cockpit sat three crew members whose training and judgment would soon be tested to their limits. **Captain Tim Barnby**, 40 years old, had logged over 14,000 total flight hours, including more than 3,000 specifically on the Airbus A3 40.

At his side was **First Officer Andrew Morley**, age 32, with around 4,500 hours on the Airbus A320 and BAC 1-11 and 301 hours on the A340. Also present was **Senior First Officer Craig Matheson**, 28, who had amassed 4,400 total hours, and about 300 on the A340.

Between them, they represented a depth of experience and a collective familiarity with the A340 that made them exactly the kind of crew passengers would want for a long-haul crossing. For the cabin crew, this was another transatlantic night shift; long hours, but routine. For the passengers, a quiet overnight flight promised a morning arrival in London.

At 2109 hrs local time, the aircraft lifted from runway 24L. Everything appeared ordinary. The lights of Los Angeles stretched behind, the Pacific night sky ahead. Inside the cockpit, the crew settled into their initial climb sequence: gear up, systems checks, smooth acceleration.

But in that moment, a subtle hesitation appeared. The landing gear, which normally tucks neatly into the aircraft's belly, retracted slowly. Not alarmingly slow, just off enough to catch the crew's attention. Seconds later, a minor fault appeared on the monitoring panel: a brake temperature sensor for the left main landing gear had failed.

Neither detail seemed critical. Aircraft sensors misreport often enough, and landing gear hydraulics can behave sluggishly without consequence. The Airbus systems gave no further warnings. Within minutes, the jet leveled into cruise and pointed northeast toward the Arctic routes.

For everyone on board, the flight returned to routine. Meals were served, lights dimmed, passengers settled to sleep. Yet in those early minutes, a clock had quietly started ticking. What looked like an ordinary climb was in fact the beginning of a chain of events that would not reveal itself until the aircraft reached the skies over London.

Chapter 2: The Hidden Failure at Liftoff

To understand what went wrong, investigators would later piece together a sequence that began the moment the wheels left the ground in Los Angeles. The anomaly wasn't just sluggish hydraulics or a temperamental sensor. It was mechanical.

Inside the left landing gear assembly sat a component called a **torque pin**: a short metal rod, no larger than a hand, that connects the brake's torque rod to the wheel axle. Its purpose is simple: keep the torque rod restrained so that when brakes are applied, the forces stay aligned. Without the pin, the rod can swing free like an unmoored lever.

During takeoff, that pin disengaged. Investigators eventually found it lying abandoned on the runway at LAX. With it gone, the brake torque rod became unrestrained. As the gear retracted, the rod pivoted upward into the wheel well. There it lodged itself against the keel beam, the central structural spine of the aircraft. The effect was invisible to the pilots, but devastating: the left gear was now trapped in a position where, once deployed again, it could never fully extend.

The slow retraction was the first hint of resistance. The failed brake sensor was the second: its wiring had been damaged by the misaligned torque rod. These were symptoms of the same underlying fault, but the signals were faint and ambiguous.

From the cockpit, they seemed like routine quirks; issues to be logged for maintenance after arrival. The A340 was a redundant, highly monitored machine. With four engines running smoothly and no major warnings, there was no reason to suspect that one small piece of metal had compromised the entire landing system.

So the aircraft pressed on, hour after hour, across the dark Atlantic. Passengers slept. Crew moved quietly between cabins. But sealed inside the left wheel bay, the torque rod waited, jammed in place, a hidden saboteur that would reveal itself only when the flight tried to land.

Chapter 3: Approach to London: The Warning Comes Alive

After nearly ten hours of uneventful flight, the Airbus A340 began its descent toward London Heathrow. For passengers, the long night was behind them. The city lay ahead, the weather was clear, and the landing was just minutes away. Nothing in the cabin suggested danger.

At 3:04 pm GMT, just 2.5 nautical miles from the threshold of Heathrow's Runway 27L, a sharp tone cut through the cockpit. An aural alert: **"Gear unsafe."** The message meant that one or more landing gear assemblies had failed to lock into the down position. Without a locked gear, the aircraft risked collapsing on touchdown.

The First Officer, who was flying the approach, reacted instantly. He pushed the thrust levers forward and initiated a go-around, climbing the A340 away from the runway. At such a low altitude, this was a critical, split-second decision. Attempting to land with gear uncertainty could have been catastrophic.

Air traffic control quickly vectored the flight into a holding pattern. But as the crew leveled off, a new layer of tension emerged: **fuel.** The A340 had enough to circle, but not indefinitely. Transatlantic flights carry reserves, yet holding consumes precious minutes, and every decision from this point onward had to balance troubleshooting against a shrinking fuel margin.

In the cabin, passengers felt only the climb. They were told the approach was being delayed, a routine occurrence over London's congested skies. Few would have realized that beneath their feet, the aircraft's most basic promise, safe landing gear, was in question.

Inside the cockpit, urgency had arrived. What had begun with a slow retraction hours earlier was now a red warning light and an aural chime. The crew's challenge was stark: diagnose the fault, secure the gear, and prepare for a landing. But none of the indicators revealed the full story: that a torque rod was wedged deep inside the gear bay, mechanically blocking the gear from locking into place.

And so the go-around was not the end of the problem, but only the opening beat of the emergency. As the jet circled northwest of Heathrow, the crew turned to the next step: working through the playbook.

Chapter 4: Holding Above Bovingdon: Running the Playbook

The aircraft took up a holding pattern near the Bovingdon VOR, a navigation beacon northwest of London long used as a safe "waiting room" for incoming traffic. At this point, Flight 024 was alone in the sky, deliberately separated so the crew could focus. What unfolded next was a methodical attempt to force the landing gear into place, guided by procedure, training, and the aircraft's manuals.

First came the **checklists.** The Airbus Quick Reference Handbook laid out a series of actions for "Gear Unsafe" indications: recycle the gear lever, reset electrical components, monitor hydraulic pressures. Each step was attempted, each one failed. The left main gear stubbornly remained in limbo, neither fully stowed nor locked down.

The crew then attempted what is known as a **gravity extension.** On Airbus aircraft, this system bypasses hydraulics and allows the gear to fall into place using its own weight, assisted by airflow. It's the aviation equivalent of releasing a jammed latch and letting gravity do the work. But when the handle was pulled, only the right gear and nose gear dropped cleanly. The left gear stayed jammed, "hanging in the bay."

Attention turned to the **LGCIU, the Landing Gear Control and Interface Unit.** This is the electronic brain that monitors and controls the gear. By resetting its circuit breakers, crews can sometimes clear false warnings or restore function if the issue is electrical. But this wasn't electrical. The computer couldn't overcome a solid piece of metal wedged against the keel beam. The resets had no effect.

With each failed attempt, fuel continued to tick down. The holding pattern bought time, but not unlimited time. The flight deck was quiet, disciplined. Each pilot called out steps, confirmed actions, and recorded results. Calm professionalism replaced what might otherwise have been panic.

Yet beneath that composure was the creeping realization: every standard remedy had failed. The Airbus systems were intact; the crew's training was precise. But no checklist, no gravity drop, no reset could free the jammed gear.

From the cabin, nothing appeared unusual. But above Bovingdon, the situation had hardened. The flight was now committed to improvisation. If the manuals could not solve the problem, the next move would have to come from human judgment alone.

Chapter 5: Eyes on the Ground: The Flypast Diagnosis

By now, the cockpit had exhausted everything the manuals prescribed. The left main gear refused to cooperate, and with fuel burning away, the crew needed confirmation: was the gear even partially extended, or still trapped inside?

The solution was old-fashioned, eyes on the ground. Air traffic control cleared Flight 024 for a low flypast over Heathrow itself. At just 300 feet above the runway, the aircraft swept past the control tower, angled slightly to the right so the left gear bay was visible. Below, a team of Virgin Atlantic engineers, alerted and assembled in haste, peered upward through binoculars.

What they saw confirmed the worst. The left gear leg had moved, but not locked. It was hanging crookedly in the bay, visibly jammed. To land like this meant touching down on only two right main legs and the nose wheel. It was possible, but dangerous.

The flypast handed the crew clarity, but also sharpened the dilemma. Options were quickly discussed. One was a **touch-and-go**, landing briefly on the right side gear in the hope that the jolt would shake the left leg loose, then climbing away to attempt a second approach. It was imaginative, but also risky: the maneuver had never been practiced in an A340 simulator. Failure would mean collapsing onto the runway at high speed.

Another option was to divert. Manston Airport in Kent, with its long military runway, was raised. A diversion would free up Heathrow and allow a wide, clear landing space. But the crew knew they had little fuel left, and more importantly, Manston lacked the specialized emergency crews Heathrow could field within seconds. In an incident like this, seconds mattered.

And so, the flypast answered one question; what state the gear was in, but opened others. No solution was perfect. Each carried risk, each consumed time and fuel. As the aircraft climbed away from Heathrow, passengers still unaware of the true stakes, the pilots weighed choices that all felt like compromises.

The clock was moving. The next decision had to be final.

Chapter 6: Decisions Under Constraint: Time, Fuel, Runways

By the one-hour mark of holding and circling, the reality was inescapable: fuel was running critically low. Airbus procedures allow for generous reserves, but the transatlantic crossing had already eaten most of that margin. Every minute of debate was another gallon gone.

In the cockpit, Captain Tim Barnby gathered his crew. Their options were narrowing. The touch-and-go had been discarded as too dangerous. A diversion was off the table, unfamiliar fields, fewer fire crews, more flying time. That left only one choice: land at Heathrow, gear jammed, with every emergency team on site ready.

At 1608hrs GMT, Barnby made it official. The radio call went out: **“Mayday, Mayday, Mayday.”** Declaring Mayday is not symbolic; it triggers the highest level of emergency response. Fire units took position along Heathrow’s Runway 27L. Ambulances stood by. Controllers cleared the skies, giving the A3 40 exclusive use of the airspace.

Now the crew focused on execution. They would attempt to land the jet asymmetrically, right side gear down, left side jammed. To prepare, Barnby briefed his team on a departure from standard Airbus practice. Instead of shutting all engines simultaneously on touchdown, they would do it step by step. Engines 1 and 4 would be cut first, then 2, then finally 3 as the aircraft slowed. The aim was to maintain power long enough for hydraulics and electrics, while minimizing fire risk from engines scraping the ground.

The decision illustrated the razor’s edge they walked: not following the book for the sake of survival. Every tradeoff was explicit. Heathrow was chosen because of its resources, not its convenience. The asymmetric shutdown was chosen because fire control mattered as much as lift. Each move was calculated, not improvised in panic.

Passengers were told only that an “abnormal landing” was coming. Crew in the cabin quietly rehearsed evacuation commands, bracing themselves for impact. Fuel was nearly exhausted. The holding patterns were over. The next approach would be the last.

Chapter 7: The Final Approach: Improvisation in Real Time

Runway 27L was cleared and lined with emergency vehicles. The airspace was theirs alone. Inside the cockpit, the plan shifted from diagnosis to execution. Captain Tim Barnby briefed his crew on a landing that would not follow the book. The A340 would touch down with the right main gear and nose gear taking the load, the left side hanging. Then, crucially, engines would not be shut down all at once.

They would be shut down in sequence as I explained before: 1 and 4 first on touchdown, then 2, and finally 3 as the aircraft slowed. In plain terms, this **asymmetric engine shutdown** meant keeping just enough power alive to preserve hydraulics and electrics while reducing the chance of a fuel-fed fire if nacelles scraped the ground. It was a calculated deviation from standard procedure, chosen for survival.

The approach was hand-flown. A “stabilized approach” in airline language is simple: on speed, on path, with the aircraft configured and no surprises below a set altitude. Here, it was more than doctrine. Stability would buy precious control once rubber met runway.

The captain planned to track slightly right of centerline, leaving pavement on the left for any uncommanded swing when the crippled gear met asymmetrical forces. The cabin crew rehearsed commands under their breath. Passengers heard only the words “abnormal landing” and the routine cadence of a crew keeping order.

Every checklist that could be run had been run. Gravity extension and resets had been tried. The flypast had given the answer no one wanted: the left main leg was crooked and could not lock. Now the aircraft was configured for the single outcome that remained. Flaps set. Speed nailed.

Fire crews in place. The runway ahead presented as a straight line, but the decisions braided into this approach were anything but straight: use of power versus fire risk; keeping systems online versus shutting them down; track right to buy space for the expected leftward pull. Each choice carried its own failure mode, and each had been weighed.

The glidepath steadied. The radio was quiet. The plan was clear. Now, it was down to one landing.

Chapter 8: Impact and Fire: Holding the Line

Main wheels kissed asphalt, on the right side first, just as briefed. In the same heartbeat, the right-outboard engine, Number 4, struck the runway. A burst of sparks stitched the concrete in a short, bright seam. The right main tires blew under the asymmetric load, and the aircraft began to drift left, the dead leg dragging the jet toward the side it could not support. The shutdown calls came exactly as planned. Engines 1 and 4 first. Then 2. Number 3 held longest to keep the hydraulics and electrics alive a few moments more.

The scrape reached the left wing. Engines 1 and 2 met the runway and tore. Fire followed; brief, violent, and expected. Airport fire crews were already moving, arcs of suppressant jetting under the wings. The A340 slid, slowed, and finally settled. Inside, the cabin became action instead of anticipation: slides armed, doors opened, commands projected over the shock of arrival. The evacuation moved in practiced beats, brace released, belts off, leave everything, go.

Numbers matter here because they measure what training can deliver under stress. All 114 people on board made it out. The evacuation finished in about three minutes. Seven suffered minor injuries, and there were no fatalities. The runway bore the scars: burst tire marks, metal scrapes, extinguished pools, but the aircraft was intact enough to tell its story.

The choreography that began in a quiet holding pattern ended with slides flaring on the concrete and fire crews washing down the engines. The plan had worked because it matched physics to priorities: keep control, keep systems, kill fire risk, get everyone out.

When the last slide deflated and the last headcount was confirmed, the scene looked like aftermath. In the investigation that followed, it would be read as evidence: a line-by-line validation of decisions made in seconds that shaped minutes and saved lives. The ordeal was over; the explanation was about to begin.

Chapter 9: The Investigation: Finding the Jammed Truth

When the dust settled, investigators from the UK Air Accidents Investigation Branch (AAIB) began the slow, methodical work of asking not just *what* happened, but *why*. The charred Airbus on Runway 27L gave them evidence to examine, but the most critical clue lay thousands of miles away, back at Los Angeles.

Within days, inspectors at LAX found a small metal pin on the departure runway. It was the **torque pin**, the piece designed to hold one of the brake rods in place inside the left landing gear. About the size of a hand, its job was straightforward: keep the brake rod from moving where it shouldn't. When that pin fell out during takeoff, the rod became free to pivot upward into the wheel bay. There it jammed itself against the central structure of the aircraft, effectively locking the gear in a half-deployed state.

The slow retraction that the crew noticed that was the rod already interfering. The failed brake temperature sensor? Damaged by the rod's misalignment. What had looked like two unrelated quirks at the start of the flight were, in fact, symptoms of the same hidden failure.

The AAIB report made clear: this was **not pilot error**. The crew had done everything they could: checklists, resets, gravity drop, coordination with engineers. No amount of cockpit skill could have forced that gear leg down once the pin had disengaged. The fault was mechanical, baked in from the start of the flight.

More worrying was what the investigation uncovered about design testing. The torque pin and its assembly had passed certification years earlier. But the tests had never recreated the way an axle actually flexes under the stress of braking during real service. In other words, the design was proven against the lab's assumptions, but not against reality. That gap allowed hidden loads to build on the pin until failure became inevitable.

The conclusion was sobering. A single overlooked detail in testing had produced a flaw that revealed itself only in service. Flight 024 had not just exposed a jammed landing gear. It had exposed a blind spot in the way aircraft components were cleared for use.

Chapter 10: Lessons That Changed Aviation

The official report did not stop at assigning cause. It laid out changes, practical, immediate, and lasting, that would shape aviation safety. First came recognition of the crew. Captain Barnby's decision to land slightly right of centerline, his asymmetric engine shutdown plan, and the calm execution of his team were all praised in the final AAIB report as "commendable" and "skillful."

Airbus went further: they added his improvised shutdown sequence into the Airbus Quick Reference Handbook for the A340, turning a one-time judgment call into a formalized emergency procedure. What had been invented under duress became part of future training.

Next came engineering reform. Airbus, together with the landing gear manufacturer Messier-Dowty, redesigned the torque pin and its retaining system. The new design accounted for the real-world bending and twisting loads that axles undergo during braking. Certification standards were tightened so that lab tests had to simulate those stresses. The aim was simple: never again let a part pass testing that could fail in ordinary service.

The aircraft itself, G-VSKY, was eventually repaired and returned to the skies. It flew passengers for years afterward before being retired in twenty 16. But its real legacy was not in the hours it logged, but in the policies and designs reshaped because of it.

At a broader level, Flight 024 reinforced a cultural truth within aviation: safety is built on the willingness to learn from near-disasters. Procedures are written, revised, and sometimes rewritten in blood, or in this case, in sparks on a runway. Every detail of the event, from the slow retraction after takeoff to the evacuation time on landing, was folded into a system designed to prevent repeats.

For passengers, those changes are invisible. For crews and engineers, they are daily practice. The torque pin that once failed now stands as a case study in humility: no component is too small to matter. Flight 024 left behind a simple but vital reminder: in aviation, small parts can carry heavy consequences. But when training, discipline, and learning are layered together, even a hidden flaw can be turned into progress.

The sparks on Runway 27L marked the end of one crisis and the beginning of safer flights for all who came after. If this story held your attention, it’s because aviation is one of the few human endeavors where tiny details can decide the fate of hundreds. Stories like Flight 024 show us not only how close things can come to disaster, but also how expertise and calm judgment can turn the outcome.

If you value this kind of storytelling, where the focus is on the human decisions, the engineering lessons, and the history that makes flight safer, consider subscribing to the channel. It helps bring more of these detailed investigations to life.

And if you know someone who flies often, or someone who simply loves aviation, share this video with them. The more we remember stories like this, the more we understand the discipline and resilience that make flying one of the safest ways to travel.