

Aviation Human Factors Industry News

Volume XI. Issue 10, May 17, 2015



From the sands of Kitty Hawk, the tradition lives on.

Hello all,

To subscribe send an email to: rhughes@humanfactorsedu.com

In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

★Aviation Africa: Emirates highlights why it focuses on human factors

★Why the Amtrak train crash in Philadelphia is like a plane crash

★EXCESSIVE FORCE

★FAA Proposes \$150,000 Civil Penalty Against Ameriflight, LLC

★The hazardous attitude of resignation

★Two Cessna Jets Used by Mumbai Flying School Destroyed in Accident

★New You Tube Video Available

★Ramp Accidents Involving Hand Propping Continue

★In Night Shift Workers, Insomnia Linked to Impaired Work Performance

Aviation Africa: Emirates highlights why it focuses on human factors

Dr. Nicklas Dahlstrom, director of human factors for Emirates Airline, addressing the Aviation Africa conference in Dubai recently, told the audience that **human factors training is essential**, especially when people from different cultures work together.

With an amusing and informative presentation with serious undertones, he described cultural traits and the importance of telling stories rather than just focusing on numbers. In order to address aviation safety in Africa, he suggested looking at the problem as one of comparative risk.



“Aviation will get safer as safety of the whole society gets safer,” he said.

“If we’re going to understand the risk in African aviation we’re going to have to put it in the context of society as a whole.”

Within an airline environment, others need to have training too, not just pilots – so **you need integration of human factor training for all parties.**

Discussing pilot error, he referred to the cockpit of the B17, where there were two big switches, one for the gear and one for flaps – “looking exactly the same and close to each other.”

Thus gear-up landings were common.

“Is it the pilot’s fault?” he asked. “No, it’s the signs... so [the industry] put a wheel on the undercarriage lever and a flap on the flap lever –and the problem [to a great extent] went away.”

Five Pillars

He said the pillars of crew resource management (CRM) are [Communications, Leadership, Decision Making, Situational Awareness and Workload Management](#). “CRM is for pilots as well as air traffic controllers and others – but does it work?” he asked.

“The answer is yes – but you have to keep doing it [or the errors creep back in](#),” he said.

And remember, he added, “Culture is reflected by everything beyond immediate physiological needs. But how does culture affect behavior?”

Turning back to Emirates, he said, “We’re a very multicultural company with 4,000 pilots from more than 120 countries.

“It’s a very big mix of people, so how do we make this work? We do CRM for flight crew, cabin crew, combined CRM, train the trainers, dispatchers and ATCOs all have CRM too.”

It’s not only about safety – [it’s about safety and efficiency](#) if you do it right, he said.

Dahlstrom showed an internal survey that illustrated that almost all of Emirates’ pilots said that professional culture (as a pilot) [overrides national culture](#), and that “I feel respected and valued by fellow crew members”.

He listed the Five Pillars of a Safety Culture as:

[Informed, Reporting, Just, Flexible and Learning](#)

Do Tell Stories

Dahlstrom then stressed how effective stories/anecdotes are, and how Africa has a great tradition of storytelling. “Too often when we train we only show numbers, and there is a fine tradition of stories in Africa,” he said.

“You have a fabulous effect from telling stories and they hold meaning. You can talk engine parameters, but story of an engine failure gives it context. We must use stories more.”

He also said that airlines and other stakeholders: [“Need to learn from things that go well](#) – we can scare people with the bad stories and yes that has a function, but we need to learn from what goes right.”

You also need to have warning signs for things. He gave the analogy of turkeys: all the data tells them it's safe, life is great, and then they get cooked!

"So don't ask 'should be fine, done it before', ask 'what might go wrong today' – that's a safety culture," said Dahlstrom.

"So the promise of aviation in Africa can be fulfilled but I think human factors training will be a very important component of that."

A Q&A session followed. Victoria Moores, air transport editor of "African Aerospace", asked why after the LAM Mozambique Embraer 195 accident there wasn't a response to ensure there were two pilots in the cockpit at all times, whereas EASA was quick to react after the Germanwings' accident.

Dahlstrom saw the point, but also said: "We have come to believe that accidents won't happen at all. But they will when you're dealing with complex systems."

"There is a risk that more risk is presented through acting in a certain way after one rare event."

"You can introduce another higher risk – so we need to see the limitations of what we do."

Why the Amtrak train crash in Philadelphia is like a plane crash

The crash of Amtrak Northeast Regional Train 188 in Philadelphia, PA on May 12, 2015 involved an Amtrak passenger train, but in many ways this train crash was like a plane crash, specifically in the ways that the major US media outlets responded to the event.

It is extremely rare for train crashes to generate intense media interest, but this kind of attention is routine for airline crashes. Upon closer review, the media response to the Amtrak crash is not so surprising.



Although it has only been a couple of days since the crash, the NTSB accident investigation team has revealed key details of the events that led to the crash. In short, it looks like the train was traveling just over 100 mph (161 kph), and derailed after entering a curve that had a 50 mph speed limit.

There were five crew members and about 240 passengers on board. Eight of those passengers were killed, and several dozen passengers and crew members were injured.

Amtrak accidents are common

While this accident has received the kind of attention usually given a major plane crash (for example, continuous coverage from major news networks that includes having news anchors at the crash site), Amtrak accidents are actually quite common. According to the Federal Railroad Administration, over the last decade, Amtrak has been involved with accidents and incidents that have resulted in over 1,000 deaths. In the last three years, Amtrak has been involved in over 50 accidents per year, with 21 in the first two months of 2015.

Why this crash stands out

The circumstances around the Philadelphia crash that have led to an intense amount of media attention include where it happened, who was on the train, and perhaps more importantly, who is likely to travel by train on that route.

The crash took place on not only the most heavily traveled route in the Amtrak system, with over 12 million riders in 2011, it is also a route that connects New York City with Washington, DC, two metropolitan areas where many members of the US financial, political, and media elite live and work.

Many of the elite members of US society, even if they don't live or work in New York or Washington, have either traveled on that route on many occasions, or know friends, colleagues, or family members who do. A quick review of some of those killed in the crash can give you an insight into the kinds of people who regularly travel on this route. The dead include:

- A tech company CEO
- A software architect for a major news media organization
- A US Naval Academy midshipman
- A university dean
- A senior vice president of a Fortune 100 company

Given the ongoing media coverage, it is very likely that the most influential business, political, and media decision makers throughout the US are not only keenly aware of the accident, but can also imagine circumstances where they could have been on that train that night.

If it had been a jet airliner traveling between major cities in the northeast US, the airliner's passenger list would have likely reflected the profile of the people on that Amtrak train.

These are the reasons why the traveling public, especially the more influential members of the traveling public, may feel about this train crash the same way they would perceive a plane crash, [as something that could happen to them](#).

<http://www.fra.dot.gov/>



EXCESSIVE FORCE

A landing gear bushing was significantly over-torqued when three AMTs, a Lead Technician, and a Shift Supervisor [all misinterpreted a torque setting](#).

■ I was assigned to work on securing an A320 right main landing gear Side Stay Bushing. I was directed by my Lead Mechanic to work with [two other AMTs].... We briefly went over the paperwork for this phase and Lead showed us the torque was 500 foot-pounds.... I set the tooling in place, put the nut and locking tab washer in place, spun it down by hand, and then engaged the tooling to begin the final torqueing of the retaining nut. [The other AMTs] read that the final torque setting was 500 foot-pounds and that the initial torque setting was 440 foot-pounds. The torque wrench was set to 440 foot-pounds, [shown to our inspector](#), and then attached to the tooling.

Once the initial torque was reached, we (myself and our Inspector) checked the tab lock positions and it was necessary to advance the position of the retaining nut by close to 1/4 inch to align the lock tab. Once we reached 500 foot-pounds, the tab lock was still not aligned. [The Inspector instructed us to back the collar off](#) and then reapply the minimum torque of 440 foot-pounds and recheck the tab lock position. We continued this through four break/reset sequences with no better luck.

We went to the incoming midnight Supervisor and explained the dilemma. He took the paperwork and briefly perused it and then said that we should turn the issue over to the incoming crew. We turned the paperwork over to [\[the midnight shift Lead\]](#) and explained the problem we were having. He left with the paperwork and returned approximately 15 minutes later to show me that he read that the torque was to be [no more than 500 INCH-pounds](#). The paperwork had “500 lbf. in” in the text. [Because of this misinterpretation](#), the applied torque was 12 times greater than was intended in the operation.

There is a difference between the way Boeing and Airbus present this information. Boeing uses “lb-ft” for foot-pounds and “lb-in” for inch-pounds. Airbus references foot-pounds with “LBF.FT” and inch pounds with “LBF.IN”. [I believe that “LBF.IN” is very confusing and led to our mistake in applying the improper torque for the job](#). Perhaps “LB.IN”, or spelling out “foot-pounds” or “inch-pounds” would be clearer.

FAA Proposes \$150,000 Civil Penalty Against Ameriflight, LLC

The U.S. Department of Transportation's Federal Aviation Administration (FAA) proposes a \$150,000 civil penalty against Ameriflight LLC of Burbank, Calif., [for allegedly operating](#) a Beech BE-99 when it was not in compliance with Federal Aviation Regulations. The FAA alleges that on Jan. 8, 2010, an Ameriflight pilot noted in the aircraft's maintenance log that water was leaking in through a gap in the windshield above the copilot's visor.



The same day, an Ameriflight mechanic “patch sealed” the windshield by applying sealant over the gap. The company returned the aircraft to service on Jan. 12.

On May 17, 2010, an Ameriflight mechanic again patch sealed the gap in the windshield and returned the aircraft to service.

The FAA alleges that patch sealing over the windshield gap **was not acceptable maintenance**. As a consequence of the gap and patch sealing placed over it, the FAA alleges the aircraft was not airworthy. The agency alleges that Ameriflight operated the aircraft on numerous flights when it was not in an airworthy condition due to these circumstances.

Ameriflight has 30 days from the receipt of the FAA's civil penalty letter to respond to the agency.

The hazardous attitude of resignation

An airliner is holding short for takeoff as a single-engine aircraft touches down on the runway and its pilot attempts a hasty exit, resulting in a loss-of-control accident.

"I felt **pressured to exit the runway** as soon as possible in order to not inconvenience the controller or airbus crew. This was a **self-imposed pressure** which was a result of my inexperience in operations at airports within Charlie Airspace," the pilot explained in an accident report. In another teachable example, a pilot landing at a fly-in fails to make a last-minute correction for a gust of wind, resulting in a "drop-in" landing and aircraft damage. "Due to the **implied pressure** of all of the landing traffic and the disruption that a go-around would cause, it may have influenced my decision to not attempt a go around when the aircraft first reacted to the wind gust," the pilot recounted.

Note that in both scenarios, the pilots referred to feeling pressured or the implied pressure of the situation **as factors that impeded their ability** to complete their landing approaches successfully.



Both pilots felt they had no choice but to follow courses of action that had a low likelihood of a successful outcome. They felt resigned to [giving over control of the situation](#) as a result of the pressure of external factors—real or implied.

These are two instances of the hazardous attitude resignation, discussed in Chapter 17 of the [Pilot's Handbook of Aeronautical Knowledge](#). Resignation includes this characteristic frame of mind: "The pilot will leave the action to others, for better or worse. Sometimes, such pilots will even go along with unreasonable requests just to be a 'nice guy.'"

When a flight instructor evaluates a student pilot who is being prepared to solo, and later, take a check-ride, an important judgment call is to be satisfied that the student will be able to [screen out external pressures](#) and make the safe piloting decision based on the needs of the aircraft—even if it inconveniences a third party or requires others in the pattern to practice a little patience.

After all, it's not likely that another party who pressured you into a bad decision will step forward afterward and claim blame for any accident. But even if someone did, it wouldn't matter, because the responsibility for safe operation [rests with you, alone](#).

http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/pilot_handbook/media/PHAK%20-%20Chapter%2017.pdf

[responsibility for safe operation](#)

Two Cessna Jets Used by Mumbai Flying School Destroyed in Accident

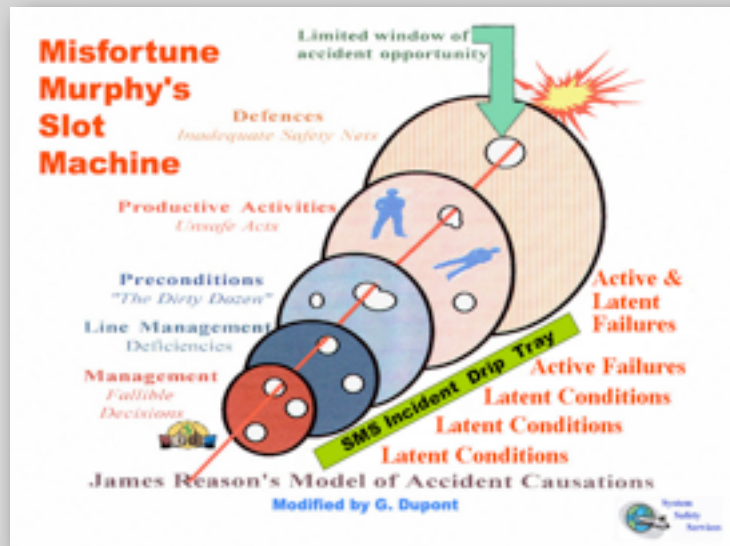
An aircraft maintenance engineer (AME) working with a Mumbai-based flying school [was benched](#) on Monday after being [charged of negligence](#) that led to an accident which destroyed two Cessna business jets last week at the Baramati airstrip.

The aircrafts belonged to Academy of Carver Aviation Pvt. Ltd, a Mumbai-based flying school.

The academy is among the many other city-based flying schools which uses the Baramati airstrip for training purposes, owing to want of land in Mumbai.

According to a DGCA probe report, the incident took place on May 4 when the AME was checking the ground run-up of a three-seater Cessna jet (VT-RDX). The AME **lost control of the plane**, allowing it to swirl 180 degrees on the right before crashing into another Cessna jet (VT-ACB), which was parked close-by. "The chocks (wedges that hold up aircraft wheels) on the right wheel gave away as the aircraft was at **full throttle** (throttle controls the mass flow-rate of fuel-injected in engines). As a result the plane took a rapid spin and crashed into another aircraft," said a senior DGCA official requesting anonymity.

The national regulator suspended the concerned AME and concluded its probe citing the matter as a case of '**human error**'. "Our investigation found that the accident was caused owing to the AME's fault. Both the planes have been written off," said Sanjay Brahmane, deputy director general, air safety (western region) with the DGCA.



New You Tube Video Available

by Gene Benson

Published on May 13, 2015

I recently posted a new video to You Tube. It is titled "**Mitigating a Hazard: Our Humanness**." This is a recording of a webinar that examines how our **human traits** can work against us to sometimes cause us to make bad decisions.



The video is narrated by Gene Benson and is based on a presentation he delivered at the National Business Aviation Association convention in 2014.

Click [here](#) to check it out.

Ramp Accidents Involving Hand Propping Continue

by Gene Benson

On May 3, a Cessna 182 was being hand propped on the ramp at the St. Mary's Airport in Pennsylvania. The pilot had reportedly instructed his [non-pilot girlfriend to hold the brakes](#) while he hand propped the airplane because of a dead battery. Predictably, the engine started with the throttle advanced, the non-pilot did not respond correctly, and the airplane careened across the ramp and into the terminal building.

Fortunately, only minor injuries were reported but these totally preventable and potentially deadly accidents [just keep happening](#).

When we are all set to go flying and find a dead or weak battery there is a strong desire to solve our problem by hand propping the airplane. But this can be a very dangerous and potentially costly choice.



[Here are some considerations and recommendations regarding the issue:](#)

- Hand propping may get the engine started, but the battery will not be fully charged for quite some time. If the electrical system is needed for anything other than a radio and some low-demand lights, there might be a problem. Many retractable landing gear airplanes use an electrically operated hydraulic pump for gear retraction. That system may require more power than what is produced by the alternator alone. Also, any airplane with a full authority digital engine control (FADEC) should not be flown without a fully charged battery.

- Do not attempt to hand prop an airplane if you have not been trained by someone who is experienced in the practice. This is not a stunt for amateur hour.
- NEVER hand prop an untied airplane without a COMPETENT PILOT at the controls. If it is necessary to hand prop without a competent pilot available, make sure the airplane is securely tied down. Wheel chocks are not sufficient. No exceptions.
- Never allow anyone else to hand prop your airplane if you are not certain that the person has been trained and is competent. It is tempting to ask the line person to spin the prop, but make sure this is not their first rodeo.

Please visit my website, genebenson.com for more safety information including free online courses, many are valid for FAA Wings credit.

"Vectors for Safety" is published approximately once per month courtesy of Bright Spot, Inc.

If you find this publication useful, please forward it to other pilots.

Not already on the mailing list? Click [here](#) to register.

In Night Shift Workers, Insomnia Linked to Impaired Work Performance

A new study of night shift workers suggests that overnight occupational and cognitive impairment is [more strongly correlated to insomnia](#) than it is to sleepiness.

Results show that night shift workers classified as alert insomniacs had the highest level of impairment in work productivity and cognitive function, which was significantly worse than controls. This occupational impairment was [more severe in alert insomniacs](#) than in insomniacs with excessive sleepiness. The study also found that alert insomniacs reported significantly [greater fatigue](#) than sleepy insomniacs, which emphasizes the clinical importance of distinguishing between [fatigue and sleepiness](#).

According to the authors, the impairments found in night shift workers who were **alert insomniacs have practical and serious consequences for workplace safety and occupational health**. The study results emphasize the importance of aggressively treating insomnia in night shift workers, which may improve work productivity and safety.

Human Factors Industry News 13

Airlines Quickly Adapting To Apple Watch's Technology

The Apple Watch has been on the market for less than a month. While many companies are still developing apps for it, [airlines are already embracing the technology](#).

That includes Atlanta-based Delta Air Lines, which five years ago was among the first airline to introduce an iPhone app.

Spokesman Paul Skrbec says customers quickly adopted the technology.

"Right now, one in three of our customers uses an app for checking in for their flights or accessing their boarding pass," Skrbec says. "So the adoption really drives our development, and we expect that to be the same with the Apple Watch product."

Delta's first app for the watch is basic, and largely mirrors what you'd see on your iPhone. But as wearable technology develops, airlines hope the devices become more than a customer convenience item.

According to Jim Peters, Chief Technology Officer at aviation tech giant SITA, airlines [are looking to wearables to make their employees more efficient](#).

"If you've got a security incident at a spot, or you've got too long of lines at one spot, then you can automatically shift staff around," notifying airline employees of where they need to be and what they need to do to solve the problem, Peters says.

Peters says that functionality could be a few years away. Along with Delta, American Airlines, Alaska Airlines, JetBlue and United Airlines offer an Apple Watch app. Southwest Airlines has said it's taking a wait-and-see approach.



Gamco Fire destroys A300-600

At least three Airbus aircraft were suffered damage in last week's fire at Middle East overhaul firm Gulf Aircraft Maintenance (Gamco), [which started in an Airbus A300](#) said to belong to Qatar Airways ..

Emerging details indicate that the effects of the fire at Gamco's Abu Dhabi facility were more severe than initially indicated, with jets belonging to Kingfisher Airlines and Air Mauritius confirmed as being affected.



Air Mauritius had an Airbus A319 parked next to the A300. The airline has identified the twin-jet as a four-year old example, owned by the carrier, equipped with CFM International CFM56 engines.

"According to initial information the tail of the aircraft collapsed and parts fell on our aircraft," says an Air Mauritius spokesman. "We do not know the extent of the damage and therefore cannot advise when the aircraft will be back in service."

India's Kingfisher Airlines says that it had an Airbus A320 in the same hangar awaiting a C1-check and installation of inflight entertainment systems.

A spokesman for the carrier says that the International Aero Engines V2500-powered twin-jet, which is owned by lessor AerCap and is less than two years old, escaped with "little damage" although it was subjected to "falling debris".

Qatar Airways has not confirmed that it is the operator of the A300 at the heart of the investigation, although there are increasing indications that the jet in question is an [A300-600R](#) and that the jet has sustained serious damage.

Gamco general manager Saif Al Mughairy tells flightglobal that, despite the fire, the maintenance operation itself should not be badly affected. He is not prepared to disclose details of the fire damage, beyond confirming that it started in an A300 aircraft, or the specific customers affected.

But he says that the company is otherwise operating "as normal" and that he is "very confident" that main investigation into the incident will be completed within four or five days.

12 Things Every Pilot Should Do Before Flying



It may be second nature to you, but don't forget what flying really means. You're about to pilot a complicated piece of equipment through the air with passengers that rely on you for safety. Here are a few things every pilot should do before takeoff:

1) Check The Logbooks

Always remember to check the aircraft logbooks before you fly. Even if the plane has been inspected, it's not technically airworthy until it's been properly signed off in the logbook. As PIC, the responsibility will fall on you for flying an un-airworthy aircraft.

2) Get An Official Weather Briefing

By calling 1-800-WX-BRIEF or going to DUATS online, you'll learn about the pertinent weather that may affect your flight.

3) Make Sure To Get Briefed on NOTAMs and TFRs Affecting Your Route

Once you're in the air, if you don't talk to ATC, there's little stopping you from breaking a NOTAM or busting a TFR if you haven't been briefed.

4) Do A Weight And Balance / Fuel Calculation

Are you doing a cross country or overnight trip with a full plane? Make sure to do your weight and balance calculation and fuel allocations before you take off.

5) Don't Forget A Performance Calculation

Why risk not making a takeoff or landing when you can just calculate the aircraft's performance, especially if you're "hot, high, and heavy?"

6) Familiarize Yourself With All Frequencies, Airspace, And Airports You'll Use

As the PIC, it's your responsibility to become familiar with all aspects of the flight BEFORE you take off. Become familiar with frequencies, airspace, and airports so you're not fumbling around mid-flight looking for an answer.

7) Plan For Diversions

Always have a backup plan in mind if you hit unexpected weather, have an in-flight emergency, or need to take a break. Consider planning your route to overfly airports that you could use.

8) Perform A Thorough Pre-Flight Check

Cutting corners before a flight is a good way to put yourself at risk in the air. Don't forget to manually check fuel, oil, tires, control surfaces, and the engine, among others, during a pre-flight check. Even if you've only landed for a quick break, it's always a good idea to check for unexpected issues. Consider having your passengers wait at the FBO while you do a pre-flight check, so you can focus all of your attention on the airplane.

9) Set Up Your Cockpit

Before you start the engine, set up the cockpit the way you like it. Make sure [you have everything secured](#) and in its place so you don't get distracted in the air.

10) Give Your Passengers Confidence

If you're flying with passengers, especially those new to flying in general aviation aircraft, don't forget to make them feel comfortable by explaining why, when, and how the flight will work, and what to do during possible emergency situations.

Staying calm, collected, and confident, yourself, will spread to those in the plane with you. Explain to passengers that you'll be using checklists not because you don't know what you're doing, but because it's a way of cross-checking procedures.

11) Place Checklists Within Reach

Always use manufacturer checklists for your aircraft as you run through procedures. Make sure checklists, including emergency checklists, are within reach of your seated position for easy access.

12) Relax - There's No Rush

Most of all, just relax. If you see something questionable as you prepare for a flight, don't hesitate to make the decision not to fly. While it may be second nature to you, flying an airplane is complicated and involves a lot of critical steps, so don't rush as you prepare. Take a few minutes before you climb into the cockpit to get some water and relax.

Leading yourself: A Baker's Dozen of Things to Master



You can't lead others if you can't lead yourself. Here are a baker's dozen of things to master if you want to lead yourself well and get on the road to becoming the best leader you can be.

Master your smartphone. Your smartphone is the Swiss Army Knife of the Digital Age. There are calendars, reminders, and apps that will help you be more productive.

Master checklists. Checklists will help you do routine things routinely so they don't get in the way of accomplishing big things. Checklists are usually situational.

You may have one for the start of the day and the week and one for the end. Use them for special situations like going on vacation and returning to work. Checklists are easy to create, use, and modify and they pay off big time.

Master scorecards. Keep score on how you're doing. Sam Walton used a "beat yesterday" book when he started his first WalMart in Rogers, AR. He was still keeping those books when he died.

Master routine meetings. They set the cadence for your team and make sure things are on track. Consider daily stand-up meetings with the team. Have weekly one-on-ones with every team member.

Master incremental improvement. Make a little progress every day.

Master the art of concentration. If you want to do significant work on important projects, you need large blocks of uninterrupted time.

Master the off button. When you need to concentrate, block out interruptions. Turn off your phone and your email. Sometimes, the "off button" is a door you can close or a place you can hide while you work.

Master the art of capturing ideas. If you don't they will flit away like butterflies on the wind.

Master the reading habit. Leaders are readers, plain and simple. Read.

Master the art of review and reflection. Take time every day and every week to assess your performance and your progress and your ideas.

Master the art of letting go. Take time off from work for other things. Let go of control when you don't need it. Most of the time you don't.

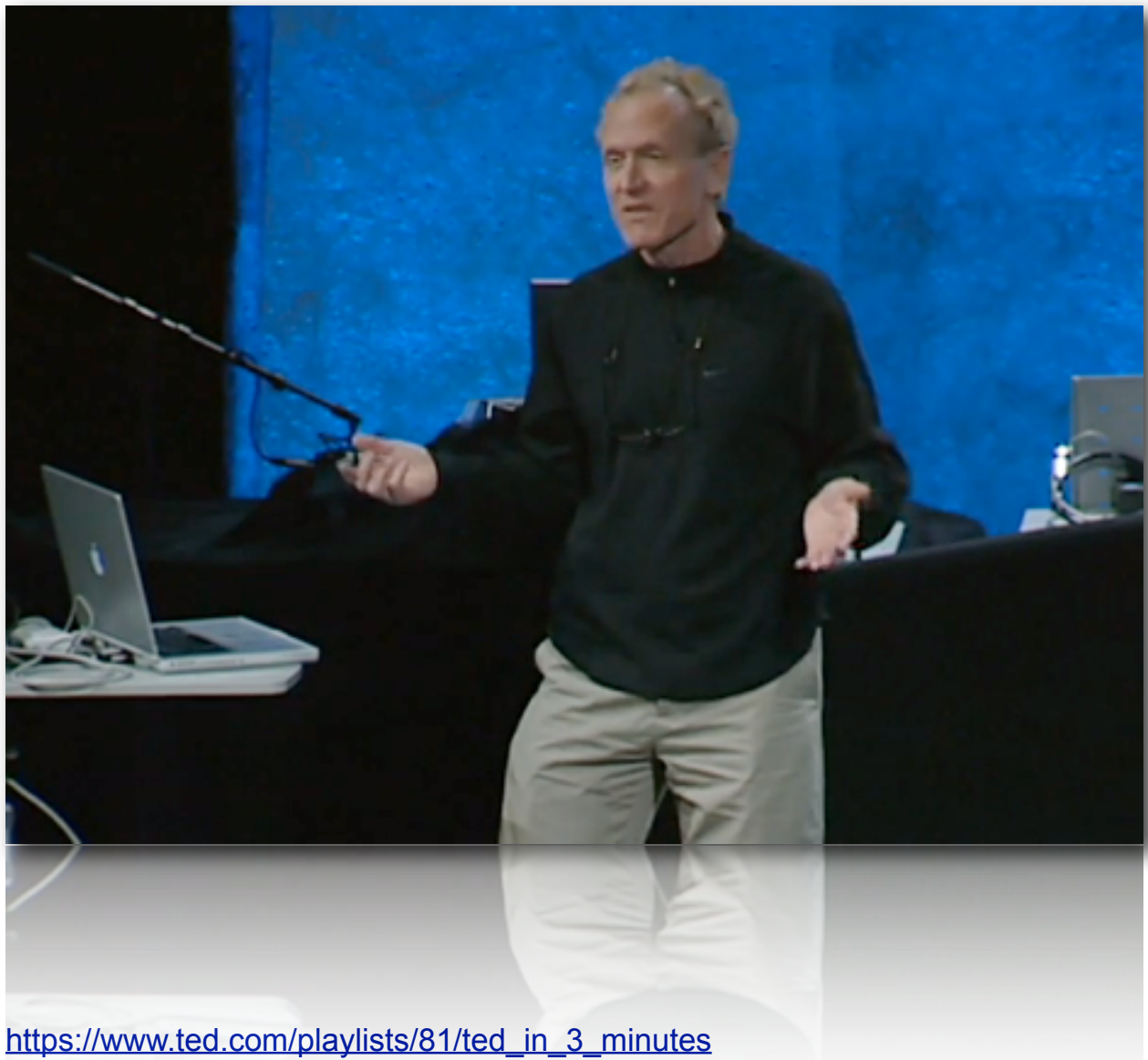
Master the art of planning. You need just enough. Too little and you set yourself adrift. Too much and you sacrifice agility for conformity.

Master the art of relationships. Cultivate your relationships with friends and loved ones. In the end they will matter more than accomplishments.

TED: Ideas Worth Spreading

Richard St. John 8 secrets of success

Why do people succeed? Is it because they're smart? Or are they just lucky? Neither. Analyst Richard St. John condenses years of interviews into an unmissable [3-minute slideshow](#) on the real secrets of success.



https://www.ted.com/playlists/81/ted_in_3_minutes