Oh no! not another expert! By Giulio Bernacchia

I've been a pilot for the past 27 years, first in the Italian Air Force, and then as a check Captain for an airline.

I have a good experience as a simulator instructor and examiner, (as a matter of fact one of my jobs was to train people with very basic experience…), and I flew NATO AWACS planes as an Aircraft Commander (air refueling qualified) and maritime patrol airplanes very low over water.

So, maybe immodestly, I think I can enter the 9-11 arena.

One thing I always found unbelievable was the sight of people from all walks of life, the only common thing among them the absolute incompetence about all things flying, who thought they could tell WHAT REALLY HAPPENED by watching a 15 minute documentary and reading a few out of context interviews, while dismissing tons of data developed by real experts in aerodynamics, physics and structural engineering.

To the uninformed, anything seems equally plausible, possible, explicable. It is not so. Things only get worse when totally senseless data is peddled as expert analysis. I'm aware that, having decided to enter the fray, I will be subject to the same degree of scrutiny I myself use on others.

I'm ready. Just one thing: I already know almost all the Italian jokes around, so please refrain from resorting to racial slurs, they take up bandwidth.

I'll start from an article I found at the following link:

http://www.venusproject.com/ethics_in_action/911_Impossible_Flying_757.html

I copied it verbatim adding my comments in boldface.

I consider it an example of pseudo-expertise which has the only effect of further muddling the issue.

The Impossibility of Flying Heavy Aircraft Without Training

Nila Sagadevan is an aeronautical engineer and a qualified pilot of heavy aircraft.

There are some who maintain that the mythical 9/11 hijackers, although proven to be too incompetent to fly a little Cessna 172, had acquired the impressive skills that enabled them to fly airliners by training in flight simulators.

All airline pilots started their careers at a level at which they were incompetent even to fly a Cessna 172. Flying schools were created just for this reason. The point is another: were the alleged hijackers as clueless as mr. Sagadevan is saying, and how good must someone be, in order to do what the official story says the hijackers did? We'll see…

What follows is an attempt to bury this myth once and for all, because I've heard this ludicrous explanation bandied about, at nauseam, on the Internet and the TV networks" "invariably by people who know nothing substantive about flight simulators, flying, or even airplanes.

A common misconception non-pilots have about simulators is how "easy" it is to operate them.

This is a gratuitous assumption. Did Mr. Sagadevan make a survey on the subject? I would imagine non-pilots think simulators are as easy or as difficult as the planes they…, well , simulate. But we shouldn't worry about what non-pilots think, should we?

They are indeed relatively easy to operate if the objective is to make a few lazy turns and frolic about in the "open sky". But if the intent is to execute any kind of a manoeuvre with even the least bit of precision, the task immediately becomes quite daunting.

Frankly, I don't get it. The wording makes me think that mr. Sagadevan might not be too familiar with simulators. He should explain what kind of person he has in mind, when he says that "*They are indeed relatively easy to operate if the objective is to make a few lazy turns*…." Is he talking about my grandma? or American Airlines Chief pilot? Either way he's wrong, because my grandma would find making lazy turns and precise manoeuvres equally daunting, whereas AA Chief Pilot would find both situations quite easy to cope with. If he is thinking of someone with basic experience, well, in this case mr. Sagadevan might be right, but he would have to follow a dangerous path: the hijackers, after all, might have needed just to make a few turns, with no need for finesse or precision, and mr. Sagadevan says this is easy…

And if the aim is to navigate to a specific geographic location hundreds of miles away while flying at over 500 MPH, 30,000 feet above the ground the challenges become virtually impossible for an untrained pilot.

Untrained in what? mr. Sagadevan doesn't say. And what does he mean by "navigating"? If I want to go from point A to point B by plane I can decide to just follow roads, railroads, even traffic signs, if I fly low enough. I can use the stars or the sun, or I can just set up my Flight Management System and let it do all the work. By the way this is what most pilots, if they have the proper equipment, and they fly for a living, will do. So, could it be that an "untrained" pilot might need to learn only a few button pushing sequences in order to go from point A to point B? we'll see….

And this, precisely, is what the four hijacker pilots who could not fly a Cessna around an airport are alleged to have accomplished in multi-ton, high-speed commercial jets on 9/11.

Again, there is ample proof (just check out this link : Chapter 7 of the 9/11 Commission Report (http://www.gpoaccess.gov/911/pdf/fullreport.pdf) but I suggest you read all the 585 pages of it**) that all hijackers involved had at least private pilot licences, and those who hit their intended target had a commercial licence. If they were deemed to be barely average, it means that they were barely average by FAA standards, which are not so low… So not being able to shoot an ILS approach to within X degrees of precision, doesn't necessarily mean that you can't make uncoordinated turns and suicidal dives.**

For a person not conversant with the practical complexities of pilotage, a modern flight simulator could present a terribly confusing and disorienting experience. These complex training devices are not even remotely similar to the video games one sees in amusement arcades, or even the software versions available for home computers.

I agree with the first part of the paragraph: when hosting school tours in the simulator facilities , I noticed that kids and teachers alike would look, mouths agape, at the complex array of needles and dials and little clocks in the cockpit. But, so what? I don't see what is the point mr. Sagadevan is trying to make. As for the second part of the paragraph, I just will assume mr. Sagadevan is talking about the overall differences between a 20 pound PC with a 17" screen and a 6000 lbs-18 foot-across-6-degrees-of-liberty-wrap around-visual-system flight simulator. Apart from that, anyone who owns MS Flight Simulator can easily see that the cockpits depicted in that software are just like the real thing. And by the way, it is the cockpit that the pilot is usually looking at, when flying, not the hydraulic jacks supporting the simulator.

In order to operate a modern flight simulator with any level of skill, one has to not only be a decent pilot to begin with, but also a skilled instrument-rated one to boot and be thoroughly familiar with the actual aircraft type the simulator represents, since the cockpit layouts vary between aircraft.

Unless we are talking about someone who wants to become a flight simulator *instructor*, and "operate" means *to sit at the instructor console setting up nasty surprises to the trainees*, Mr. Sagadevan is flying inverted on this one. Simulators were born as teaching tools, so you don't fly a simulator BECAUSE YOU ARE A GOOD PILOT, but BECAUSE YOU WANT TO BECOME A GOOD PILOT. As for the surreal claim that in order to operate a flight simulator one needs to " be thoroughly familiar with the actual aircraft type the simulator represents, since the cockpit layouts vary between aircraft", **it is actually the exact opposite. Simulators are used to familiarize new pilots with the layout they will find in the real plane.**

Every company's dream is to be able to pick a guy from the street and get him to full qualifications without having him fly on a real plane. Some companies are real close to this target. And the best and fastest way to become "*a skilled instrument-rated one to boot"* **is to fly a few training sessions on a flight simulator.**

The real added value of a simulator lies in the fact that you can practice PROCEDURES in a much more efficient way. You can reposition the "plane" on an 11 mile straight-in approach, let the student fly the approach, correct

his errors, and re-reposition him on the same 11 mile spot with a flick of a switch; you can practice dangerous situations in complete safety, discuss about it in real time, "freezing" the machine in mid-air, you can fiddle with the navigation system, practice entering waypoints, turning on and off the auto pilot, the auto throttle, and so on. Sims are very time-efficient tools.

If you have someone who foots the bill, then a sim can work wonders for you. Hint for the FBI: look for a really good Arabic speaking sim instructor who might have given a few private lessons…

The only flight domains where an arcade / PC-type game would even begin to approach the degree of visual realism of a modern professional flight simulator would be during the take-off and landing phases. During these phases, of course, one clearly sees the bright runway lights stretched out ahead, and even peripherally sees images of buildings, etc. moving past. Take-offs "even landings, to a certain degree" are relatively "easy" because the pilot has visual reference cues that exist "outside" the cockpit.

So what! PC simulators give their best when they simulate the very items the hijackers needed to work on: Autopilot on-Autopilot off, Waypoint in, auto throttle set. Who cares if you don't get a good realistic view of eastern USA!

The hijackers knew in advance that the take off would be performed by a real pilot, and there would not be need to worry about landing.

But once you've rotated, climbed out, and reached cruising altitude in a simulator (or real airplane), and find yourself en route to some distant destination (using sophisticated electronic navigation techniques), the situation changes drastically: the pilot loses virtually all external visual reference cues. She / he is left entirely at the mercy of an array of complex flight and navigation instruments to provide situational cues (altitude, heading, speed, attitude, etc.)

The point made by mr. Sagadevan is meaningless: pre-flight checks, push-back, engine-start, clearance-delivery, taxi, line-up, take-off, Standard Departure, climb, cruise were performed by professional pilots, on that fateful morning. But I agree, my grandma would have felt "entirely at the mercy of an array of complex flight and navigation instruments to provide situational cues (altitude, heading, speed, attitude, etc.)**" had she tried to climb to cruise altitude by herself.**

In the case of a Boeing 757 or 767, the pilot would be faced with an EFIS (Electronic Flight Instrumentation System) panel comprised of six large multi-mode LCDs interspersed with clusters of assorted "hard" instruments. These displays process the raw aircraft system and flight data into an integrated picture of the aircraft situation, position and progress, not only in horizontal and vertical dimensions, but also with regard to time and speed as well. When flying "blind", i.e., with no ground reference cues, it takes a highly skilled pilot to interpret, and then apply, this data intelligently. If one cannot translate this information quickly, precisely and accurately (and it takes an instrument-rated pilot to do so), one would have ZERO SITUATIONAL AWARENESS. I.e., the pilot wouldn't have a clue where she / he was in relation to the earth. Flight under such conditions is referred to as "IFR", or Instrument Flight Rules.

That is why the Hijacker Book of Tricks states that one should NOT take over the plane during taxi, but only when the professional pilots have done the hard work for you, and are ready to give you a perfectly trimmed, autopilot assisted, autothrottle regulated aircraft.

And IFR Rule #1: Never take your eyes off your instruments, because that's all you have!

True. I'm sure that all the professional pilots onboard the planes where doing just that. In the meantime the hijackers were sitting in First class…

The corollary to Rule #1: If you can't read the instruments in a quick, smooth, disciplined, scan, you are as good as dead. Accident records from around the world are replete with reports of any number of good pilots "i.e., professional instrument-rated pilots " who 'bought the farm' because they screwed up while flying in IFR conditions.

I agree with that. If you aspire to fly large jets in all weather, within strict tolerances, being employed by a major Airline, you should keep mr. Sagadevan's words in mind. Then again, if you plan to fly a suicidal mission, the requirements might be different…

Let me place this in the context of the 9/11 hijacker-pilots. These men were repeatedly deemed incompetent to solo a simple "Cessna-172", an elementary exercise that involves flying this little trainer once around the patch on a sunny day. A student's first solo flight involves a simple circuit: take-off, followed by four gentle left turns ending with a landing back on the runway. This is as basic as flying can possibly get.

Not one of the hijackers was deemed fit to perform this most elementary exercise by himself, in fact, here is what their flight instructors had to say about the aptitude of these budding aviators:

Mohammed Atta: "His attention span was zero."

Khalid Al-Mihdhar: "We didn't kick him out, but he didn't live up to our standards."

Marwan Al-Shehhi: "He was dropped because of his limited English and incompetence at the controls."

Salem Al-Hazmi: "We advised him to quit after two lessons."

Hani Hanjour: "His English was horrible, and his mechanical skills were even worse. It was like he had hardly even ever driven a car. I'm still to this day amazed that he could have flown into the Pentagon. He could not fly at all."

For a thorough analysis of the hijackers' flying experience, see again the link I provided above, and keep in mind that all those people who commented on the hijackers' skill levels were tasked to give a professional opinion on how those students fared compared to the required FAA proficiency levels, and

the FAA does not have a "kill-pilots-of-a-jet, stay-on autopilot-until-you-see-some-ground-reference-and-then-dive-on-it" syllabus and check ride procedure. What we know is that FAA check pilots deemed them able to fly solo, using twin prop planes, with the aid of electronic navigation. Which is more than I can say of some people I know. If you ask me whether I would select any of the hijackers as copilots, I would say no, because poor knowledge of a common language (in this case English) is alone more than enough to cause airplane crashes; But then again, unless we assume all FAA check pilots were either incompetent or accomplices, the hijackers possessed at least *some very basic piloting skills*. Atta had an attitude? so what! They spoke poor English? so what, they didn't need to answer the clever questions of an FAA inspector from Texas, the morning of 9-11. This we know, the rest if just speculation.

Now let's take a look at American Airlines Flight 77. Passenger / hijacker Hani Hanjour rises from his seat midway through the flight, viciously fights his way into the cockpit with his cohorts, overpowers Captain Charles F. Burlingame and First Officer David Charlebois, and somehow manages to toss them out of the cockpit (for starters, very difficult to achieve in a cramped environment without inadvertently impacting the yoke and thereby disengaging the autopilot). One would correctly presume that this would present considerable difficulties to a little guy with a "box cutter".

Pilots are strapped in their seats, unable to move quickly. A very determined, suicidal guy (but he wasn't alone, was he?) would just have to enter the cockpit and slash two sitting ducks' throats. For those who don't know, in the world pre-9/11 the Captain's procedure in case of hijacking was to do whatever the bad guy said, explain him what the plane could or could not do, and don't make him angry. The idea was to avoid all risks of an escalation of violence while in flight, appease the bad guy, and land the plane A.S.A.P. , so some SWAT Team sniper could put an end to the whole business. All this was based upon the assumption that the bad guy wanted to see the next dawn, so you can see that it works backwards if the guy is suicidal. Starting 9/12, notices in various forms circulated worldwide instructing all to lock the cockpit door, NEVER let anyone in the cockpit in flight, and resist forcible entry at all costs. Well, those hijackers sure were able to think outside the box, and knew us much more than we will ever know them.

Burlingame was a tough, burly, ex-Vietnam F4 fighter jock, who had flown over 100 combat missions. Every pilot who knows him says that rather than politely hand over the controls, Burlingame would have instantly rolled the plane on its back so that Hanjour would have broken his neck when he hit the floor.

You can't "roll the plane on its back", because such a manoeuvre performed at altitude would bring the plane to a stall much before it was halfway through. But let's consider it a figure of speech, an understandable exaggeration. After 9-11 there was considerable discussion, among the flying community, about the idea of devising "incapacitation manoeuvres" meant to throw the hijacker off balance. Finally they were considered to pose a higher danger than the risk posed by the hijacker. And that was AFTER 9-11! So I consider very unlikely that any pilot pre 9-11 would consider yanking the column to make the bad guy fall. But anyway this would go against the accepted procedure, which called for trying to avoid making 6 terrorists angry by having them bang their heads somewhere. What assurance could

Cpt. Burlingame have that a manoeuvre would incapacitate *all* of the terrorists and not snap the plane's back? He was no fool, and played the cards he had been dealt as well as he could.

But let's ignore this almost natural reaction expected of a fighter pilot and proceed with this charade.

Nonetheless, imagine that Hanjour overpowers the flight deck crew, removes them from the cockpit and takes his position in the captain's seat. Although weather reports state this was not the case, let's say Hanjour was lucky enough to experience a perfect CAVU day (Ceiling And Visibility Unlimited). If Hanjour looked straight ahead through the windshield, or off to his left at the ground, at best he would see, 35,000 feet - - 7 miles - - below him, a murky brownish-gray-green landscape, virtually devoid of surface detail, while the aircraft he was now piloting was moving along, almost imperceptibly and in eerie silence, at around 500 MPH (about 750 feet every second).

In a real-world scenario (and given the reported weather conditions that day), he would likely have seen clouds below him completely obscuring the ground he was traversing. With this kind of "situational non-awareness", Hanjour might as well have been flying over Argentina, Russia, or Japan he wouldn't have had a clue as to where, precisely, he was.

The hijacker probably did something different: he killed the pilots, he made sure the plane was nice and trimmed, he made sure the autopilot was still on, (just a switch, its operation can easily be learned on MS Flight Sim), he made sure the speed and altitude were stabilized (again, the autopilot will take care of that, with a little fiddling learned from basic school and Flight Sim), he produced a piece of paper from his pocket, were he had written down the coordinates of some waypoints (like the WTC or DC Airport); he inserted such coordinates in the Flight Management System (if you can send an SMS or navigate through your cell phone menu you can manage THE BASIC functions of an FMS, Flight management System), then he sat back and started praying, while his acolytes were keeping the passengers at bay.

After a few seconds (at 750 feet per second), Hanjour would figure out there's little point in looking outside - there is nothing there to give him any real visual cues. For a man who had previously wrestled with little Cessnas, following freeways and railroad tracks (and always in the comforting presence of an instructor), this would have been a strange, eerily unsettling environment indeed.

It's right, he figures there is little point in looking outside: he's flying on autopilot, to a navigation point whose precision is determined by the GPS onboard system. Hell, *I* rarely looked outside when flying at altitude!!! (for any *real* pilot reading: just kidding, I always did my midair-prevention lookout)

Seeing nothing outside, Mr. Hanjour would be forced to divert his attention to his instrument panel, where he would be faced with a bewildering array of instruments. He would then have to very quickly interpret his heading, ground track, altitude, and airspeed information on the displays before he could even figure out where in the world he was, much less where the Pentagon was located in relation to his position!

Mr. Hanjour was probably praying that his God give him the strength to carry out his terrible and "sacred" mission, he was probably not worrying about parameters which were being held rock-steady by the autopilot.

After all, before he can crash into a target, he has to first find the target.

It is very difficult to explain this scenario, of an utter lack of ground reference, to non-pilots; but let it suffice to say that for these incompetent hijacker non-pilots to even consider grappling with such a daunting task would have been utterly overwhelming. They wouldn't have known where to begin.

But, for the sake of discussion let's stretch things beyond all plausibility and say that Hanjour - whose flight instructor claimed "couldn't fly at all" - somehow managed to figure out their exact position on the American landscape in relation to their intended target as they traversed the earth at a speed five times faster than they had ever flown by themselves before.

Once he had determined exactly where he was, he would need to figure out where the Pentagon was located in relation to his rapidly changing position. He would then need to plot a course to his target (one he cannot see with his eyes - remember, our ace is flying solely on instruments).

Mr. Hanjour, having picked, months in advance, during the planning phase, a suitable waypoint, knows were he is going, and where to start the descent. By now he is probably starting to look out trying to acquire his target visually. A likely point could be Ronald Reagan Airport, easy to see from a distance and very near to the Pentagon. The flight path, from the moment the hijackers take control, points directly to the airport area. So, no need to know much about navigation, no need to look outside, just few sequences of button pushing.

In order to perform this bit of electronic navigation, he would have to be very familiar with IFR procedures. None of these chaps even knew what a navigational chart looked like,

Says who? The hijackers really didn't care about entering reserved airspace, flying down the proper corridors, cutting terminal areas or going up against one way airways. Just point A to point B. And by the way, you can mail order all the charts you want, and all the books to explain them, but they did not need to do it anyway.

much less how to plug information into flight management computers (FMC) and engage LNAV (lateral navigation automated mode).

I wouldn't expect that the hijackers left a note, addressed to mr. Sagadevan, explaining their progress at the task of button pushing. Is there any proof that they NEVER practiced (on the ground, on MS flight sim, on a real sim) the easy sequences of BASIC FMS programming? Rhetoric question: we know they had some simulator training, and one can easily obtain instruction manuals on FMS operation.

If one is to believe the official story, all of this was supposedly accomplished by raw student pilots, while flying blind at 500 MPH, (about 750 feet every second) over 30,000 feet high and above the unfamiliar ground, (and practically invisible) terrain, using complex methodologies and employing sophisticated instruments.

Actually it was the plane which was doing the hard work. The complex methodologies were being employed by the onboard computer, with very little workload for the "pilots."

To get around this little problem, the official storyline suggests these men manually flew their aircraft to their respective targets (NB: This still wouldn't relieve them of the burden of navigation)

The official story doesn't say exactly that. It says that the hijackers employed the autopilot to steer the plane (so they *knew* how to perform this trivial task, which is carried out by turning a knob on the dashboard until the nose points to the desired direction, or the navigation needle is upright) and, in AA77 case, they disconnected it at about 38 miles west of the Pentagon, at 7000 feet. (AP disconnect time: 09:29; start of turn: 09:34; crash time : 09:37:46. That's 8 minutes flying by hand, of which about 5 with wings level. Hardly an intercontinental flight) If you are going to the right direction, and you keep the wings level, you will not stray too much even if you disengage the autopilot. So, just a shallow descent and keep the wings level, not much of a workload. The fact that the plane was brought to 7000 feet when still at 38 miles shows that the hijacker, knowing his limitations, feared he could not be able to judge the correct top of descent point, or the point from which a "normal" descent would be flown by a professional pilot. So he decided to err on the undershoot side, starting an early descent. As for the navigation, the "needle" showing which way the autopilot would fly the plane if the AP were on is still visible when the AP is off. You just need to keep the needle upright by gently banking the wings to set the desired heading. Sounds difficult? it's not. And the needle was probably set to take the plane over the general DC Airport area, where it indeed ended up being. From that, and at an altitude of much less than 7000 feet, it is easy to pick the giant shape of the Pentagon.

. But let's assume Hanjour disengaged the autopilot and auto-throttle and hand-flew the aircraft to its intended - and invisible - target on instruments alone until such time as he could get a visual fix. This would have necessitated him to fly back across West Virginia and Virginia to Washington DC. - - This portion of the Flight 77's flight path cannot be corroborated by any radar evidence that exists, because the aircraft is said to have suddenly disappeared from radar screens over Ohio, but let's not mull over that little point. - -

According to FAA radar controllers, "Flight 77" then suddenly pops up over Washington DC and executes an incredibly precise diving turn at a rate of 360 degrees per minute while descending at 3,500 feet per minute, at the end of which "Hanjour" allegedly levels out at ground level. Oh, I almost forgot: He also had the presence of mind to turn off the transponder in the middle of this incredibly difficult manoeuvre, - - one of his instructors later commented the hapless fellow couldn't have spelt the word if his life depended on it. - -

First of all, mr. Sagadevan makes it sound like descending at 3500 feet per minute is a feat that only NASA test pilots might perform. NO, 3500 is an

absolutely normal rate of descent, and 3400 or 3600 is exactly as difficult as 3500. And about the "360 degrees per minute turns", whatever they might mean in mr. Sagadevan's head, take a look at this link, which explains with numbers and formulae a very normal manoeuvre:
http://perso.orange.fr/jpdesm/pentagon/pages-en/trj-path.html

Secondly, the transponder had been off since 08:56 and was never switched on again by the hijackers. So mr. Sagadevan is probably a little confused on this. Maybe he thinks that the "primary" the controllers at Dulles TRAC noticed at 09:32 is controllerspeak for transponder return. It's not. A "primary" is the "blip" caused by radar energy reflection off the plane's metal structure. It gives no indication whatsoever about the airplane identity.

Mr. Sagadevan says: "According to FAA radar controllers, "Flight 77" then suddenly pops up over Washington DC and executes an incredibly precise diving turn at a rate of 360 degrees per minute while descending at 3,500 feet per minute…." **Well, it is not what the official version says: *" American 77 was then 5 miles west-southwest of the Pentagon and began a 330-degree turn. At the end of the turn, it was descending through 2,200 feet, pointed toward the Pentagon and downtown Washington. The hijacker pilot then advanced the throttles to maximum power and dove toward the Pentagon"*. The plane flew a 330 degree turn, that is a circle less 30 degrees… It was a left turn, which is what someone sitting on the left seat (captain's seat) would do to keep a target to his left in sight. All this would require a bank angle of between 32 and 45 degrees, and a moderate rate of descent. Nothing that requires Iceman (remember Top Gun?) to do. Again, the hijacker decided to err on the undershoot side, and descended a lot more than what a good pilot would have done. Almost too much, since he had to fly the last seconds level at a very low altitude, clipping the lampposts along his way.**

The maneuver was in fact so precisely executed that the air traffic controllers at Dulles refused to believe the blip on their screen was a commercial airliner. Danielle O'Brian, one of the air traffic controllers at Dulles who reported seeing the aircraft at 9:25 said, "The speed, the manoeuvrability, the way that he turned, we all thought in the radar room, all of us experienced air traffic controllers, that that was a military plane."

Of course; civilian controllers (and military as well) don't usually get to see a civilian airliner at 300 plus MPH at low level flown by a suicidal holy warrior. Normal speed limit in Europe is 200 KTS (230 MPH) at or below 10000 feet. This doesn't mean airliners aren't physically able to fly fast at low altitude. We wish we were allowed to do it, it's so much more fun! So if you see a blip flying as fast as a military jet, you say "it looked like a military jet" but it doesn't prove anything.

And then, all of a sudden we have magic. Voila! Hanjour finds the Pentagon sitting squarely in his sights right before him.

Of course. He had been flying around it for the past two minutes. And still he decided to follow a highway pointing "inward" as an extra navigation aid, in

his run in on the Pentagon. Just like what someone with little experience would do.

But even that wasn't good enough for this fanatic Muslim kamikaze pilot. You see, he found that his "missile" was heading towards one of the most densely populated wings of the Pentagon - and one occupied by top military brass, including the Secretary of Defense, Rumsfeld. Presumably in order to save these men's lives, he then executes a sweeping 270-degree turn and approaches the building from the opposite direction and aligns himself with the only wing of the Pentagon that was virtually uninhabited due to extensive renovations that were underway - -, there were some 120 civilians construction workers in that wing who were killed; their work included blast-proofing the outside wall of that wing. - -

I think it should already be clear why it was desirable to fly around the target. Visibility! You point to the large landmark (the airport) with the aid of electronic navigation, (that is to say you make sure the needle points up…) you acquire it visually and then you shift your attention to your real target, which you circle while you lose altitude so there is no way you lose sight of it.

It is the way someone with little experience would navigate. Just autopilot on as much as possible, straight lines, little banking and then, a long continuous turning descent from an altitude that will make it impossible to screw up.

The notion that someone with the gall to plan the destruction of two super sky scrapers full of people, the White House or the Congress Hall choose which side to hit the Pentagon in order to save a handful of people seems rather ridiculous to me, but it's just my opinion.

I can testify that it is absolutely possible to fly for miles on end at 50 feet at 250 KTS (287 MPH) with a low-wing-loading large plane , but I admit it, I never tried at 400 plus MPH.

I shan't get into the aerodynamic impossibility of flying a large commercial jetliner 20 feet above the ground at over 400 MPH. A discussion on ground effect energy, tip vortex compression, downwash sheet reaction, wake turbulence, and jetblast effects are beyond the scope of this article (the 100,000-lb jetblast alone would have blown whole semi-trucks off the roads.)

Let it suffice to say that it is physically impossible to fly a 200,000 pounds airliner 20 feet above the ground at 400 MPH.

I'm sure that mr. Sagadevan won't mind publishing his papers demonstrating such claim, which, by the way, goes against what quite a few witnesses saw. Moreover, the plane didn't fly ALL THE TIME at 20 feet, but just for the last few SECONDS.

The author, a pilot and aeronautical engineer, challenges any pilot in the world to do so in any large high-speed aircraft that has a relatively low wing-loading (such as a

commercial jets), i.e., to fly the craft at 400 MPH, 20 feet above ground in a flat trajectory over a distance of one mile.

I'll do that if he promises me I'll get my reward in Heaven. In my opinion mr. Hanjour was very lucky in his nefarious endeavour, because a pilot of his experience, allowed to try multiple instances of the same manoeuvre, would have a very high failure rate. It means that he successfully reached the minimum level of proficiency he had set for himself: to hit the Pentagon somewhere somehow. But then I trained more than one pilot who managed to fly a procedure within limits the first time, and subsequently failed several times. But they, unlike mr. Hanjour survived the successful procedure and in time became good pilots.

If we examine the hijackers' success rate, we see that two hit the targets with maximum damage, but those were the easy targets, and again they almost missed, even after manoeuvring the planes to well beyond their normal limits; one barely hit after clipping lampposts, and one failed entirely. If I were to choose dedicated CIA agents ready to die in order to give their leaders a reason to start a war, I would select better pilots.

Why the stipulation of 20 feet and a mile? There were several street light poles located up to a mile away from the Pentagon that were snapped-off by the incoming aircraft; this suggests a low, flat trajectory during the final pre-impact approach phase. Further, it is known that the craft impacted the Pentagon's ground floor. For purposes of reference: If a 757 were placed on the ground on its engine nacelles (I.e., gear retracted as in flight profile), its nose would be almost 20 above the ground! Ergo, for the aircraft to impact the ground floor of the Pentagon, Hanjour would have needed to have flown in with the engines buried 10-feet deep in the Pentagon lawn. Some pilot.

At any rate, why is such ultra-low-level flight aerodynamically impossible? Because the reactive force of the hugely powerful downwash sheet, coupled with the compressibility effects of the tip vortices, simply will not allow the aircraft to get any lower to the ground than approximately one half the distance of its wingspan - until speed is drastically reduced, which, of course, is what happens during normal landings.

In other words, if this were a Boeing 757 as reported, the plane could not have been flown below about 60 feet above ground at 400 MPH. (Such a maneuver is entirely within the performance envelope of aircraft with high wing-loadings, such as ground-attack fighters, the B1-B bomber, and Cruise missiles - and the Global Hawk.)

Again, I can offer my personal experience of flying at 50 feet at 250 KTS. Mr. Sagadevan surely will produce proof of what he says. We are all waiting.

The very same navigational challenges mentioned above would have faced the pilots who flew the two 767s into the Twin Towers, in that they, too, would have had to have first found their targets. Again, these chaps, too, miraculously found themselves spot on course. And again, their "final approach" manoeuvres at over 500 MPH are simply far too incredible to have been executed by pilots who could not solo basic training aircraft.

All I have said so far applies to WTC as well, with the exception that the towers were a far more visible target.

It can be easily seen that both planes manoeuvred hard to hit the targets. It means that the approach manoeuvres were not really well thought (any *real* pilot would do better than that…) So the planes were being flown by someone who knew how to bank a plane (you just turn the control yoke, there is no FAA inspector on the jump seat taking note of how coordinated your turn is), but was no Chuck Yeager, just like all the instructors said about the hijackers.

The writers of the official storyline expect us to believe, that once the flight deck crews had been overpowered, using "box cutters" and the hijackers "took control" of the various aircraft, their intended targets suddenly popped up in their windshields as they would have in some arcade game, and all that these fellows would have had to do was simply aim their airplanes at the buildings and fly into them. Most people who have been exposed only to the official storyline have never been on the flight deck of an airliner at altitude and looked at the outside world; if they had, they would realize the absurdity of this kind of reasoning.

Maybe that's what happened to mr. Sagadevan: he was admitted into a flight deck of an airliner in flight, looked at the outside world, and suddenly had the inspiration: he wrote his article. I did the same (a thousand times, and I sat at the controls) and then I wrote MY article.

In reality, a clueless non-pilot would encounter almost insurmountable difficulties in attempting to navigate and fly a 200,000 pounds airliner into a building located on the ground, 7 miles below and hundreds of miles away and out of sight, and in an unknown direction, while flying at over 500 MPH - and all this under extremely stressful circumstance

Yes, true, but what does this description have to do with what happened on the 11th of September?

In my opinion the official version of the fact is absolutely plausible, does not require exceptional circumstances, bending of any law of physics or superhuman capabilities. Like other (real pilots) have said, the manoeuvres required of the hijackers were within their (very limited) capabilities, they were performed without any degree of finesse and resulted in damage to the targets only after desperate overmanoeuvring of the planes. The hijackers took advantage of anything that might make their job easier, and decided not to rely on their low piloting skills. It is misleading to make people believe that the hijackers HAD to possess superior pilot skills to do what they did.

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