



What do we see here? What does this photo tell us about airpower's special capabilities?

- C-130 cargo aircraft specially equipped to operate on ice and snow
- Scientists at the South Pole rely on airpower to deliver food, water, medicine, people, technical equipment, and more
- Without airpower, scientists could not operate at the South Pole. There are no roads in Antarctica, so even if you have sled dogs or snowmobiles, travel by land is impossible.

To be clear about what "airpower" means up front, during this talk we'll use General Billy Mitchell's definition.

- "Airpower is the ability to 'do something' in the air."
- That "something" might be to fly bomber missions, to transport passengers, to conduct search and rescue, anything.

Airpower is unique. Let's talk about why.



WWI PILOTS:
Airpower can save us from trench warfare

What was "trench warfare"? What was that like for the foot soldiers of WWI?

- It was a bloodbath.
- Foot soldiers would dig trenches, hide inside, and then go "over the top" to attack the enemy that was also entrenched.
- Going "over the top" was futile. You'd get mowed down by machine guns immediately.

Airmen, flying in the skies above the trenches, would look down and see the horror. They knew that if airpower was given resources and independence from the army and navy, they could fly over the surface forces and hit the enemy's headquarters behind the lines to end the battle with minimal bloodshed.

While military airpower is indeed a bloody, lethal weapon, it also has potential to be a humane force.



Let's list some of the special features that airpower has in comparison with what we call "surface forces," the armies and navies.

Put another way, what can airplanes do that boats, tanks, cars, and feet can't do?

(Use a whiteboard to make a list of responses from cadets.)



The most unique characteristic of airpower is what we call "perspective."

This is a "duh" point. When you're in an airplane, you can fly way up high and see things you can't see on the ground.

Who knows what the earliest form of military aviation was?

-- Balloons. Even before the Wright Brothers, armies used hot air balloons to achieve "perspective."

They could climb into the sky and see the enemy's position, then come back down and tell the generals who would then move the troops into the right position to defeat the enemy.

-- What's the technical word for the use of airpower to see what the enemy is doing?

Reconnaissance

Here, extreme skydiver Felix Baumgartner enjoys the most awesome perspective ever.



What going on in this photo?

-- B-2 *Spirit* being refueled by a KC-135.

How far can you drive your car?

- A few hundred miles. And even if you refuel, eventually you'll get tired and have to stop.
- Even if you share the driving with a friend, eventually you'll reach the ocean or the roads will end.
- One way or another, ground forces have a limited range.
- The same principle applies to naval forces. No one will invade Iowa by boat.

So, why is airpower unique in terms of range?

- B-2 bombers, based in Missouri, can fly nonstop to Iraq / Afghanistan / Wherever, bomb their target, and fly back to Missouri during a single day.
- Aircraft refueling gives airpower virtually unlimited range.
- Even more, airpower is not limited by surface features - the sky never ends.



What aircraft do we see here? What's one really cool, advanced feature that makes this aircraft special?

-- F-22 Raptor. It can fly faster than the speed of sound without using afterburners / "supercruise"

What's faster, a F-22 raptor, the fastest boat ever built, or the fastest car ever built?

-- The Raptor, of course.

-- Just about any aircraft is faster than just about any surface vehicle.

Speed is obvious, but what's more is airpower's responsiveness. Why do you think airmen claim to be more "responsive" or faster to respond than armies or navies?

-- Because of their speed and range, aircraft can get to where the action is quickly.

-- Likewise, naval and ground forces take a long time to deploy to where they are needed.

-- If you're the President and you want to "project power," to show an adversary that you know they're up to no good, you can deploy a squadron of fighters or bombers to a neighboring country on a moment's notice.

-- Further, a friendly nation will be more agreeable to their hosting a few squadrons of aircraft and a few hundred airmen for a projection of power than they would surface forces. No one really wants "ground troops" from a foreign nation on their soil. Aircraft are easier to stomach because they're less noticeable to the locals.



Airshows are so fun to see because aircraft are maneuverable, as shown in this photo of the Thunderbirds.

If you're on the ground or on the sea, how many dimensions of space can you operate in?
-- Two. Left to right and backward and forward.

Aircraft, of course, operate in all three spatial dimensions.

If a battleship is aimed right at you, you can move left/right or forward/backward to escape him. If The Hulk is running toward you, you can only run away in those two dimensions. But in an aircraft, up and down give you an extra dimension of options.

For this reason, airmen tend to think of all surface forces, no matter the kind, no matter how well defended, as sitting ducks. "The bomber will always get through." Maneuverability makes airpower innately superior to two-dimensional surface forces.



What's going on here?

-- A C-5 *Galaxy*, the largest aircraft in the fleet and one of the largest ever built receives its payload, a tank.

-- Imagine that. An airplane so enormous and powerful it can carry tanks or even other aircraft.

Mobility is the ability of airpower to move from one place to another. A medieval castle can't move, but aircraft can. Any vehicle has a certain amount of mobility, but modern US airpower takes the idea of mobility to the extreme.

Mobility is perhaps best represented by *airlift*, which is the rapid mobility of "stuff" - tanks, people, supplies, helicopters, food, medicine, sick people, etc - by air.

Another closely related term is "global reach" or "rapid global mobility." What's that mean?

-- Using airpower to operate from anyplace on the planet to rapidly airlift "stuff" to any other place on the planet

-- Think back to the first photo, where the C-130 was landing at the South Pole. That's mobility.



What aircraft do we see here? What is this aircraft known for?

- Gippsland Airvan, GA-8.
- It's like a pick-up truck in airplane form. It can carry 8 people, or take out the seats and haul lots of heavy gear.
- You can use it for aerial reconnaissance missions, or in its native Australia, it's used to airlift physicians and medical supplies to the remote villages of the Australian outback.

The GA-8 is a good example of airpower's flexibility, that is, airpower's tendency to be capable of performing a bunch of different missions with the same basic tool.

- In contrast, a tank is good for pretty much one thing: ground attack.
- A submarine is good for one or two things: attacking ships or launching missiles (which is really an expression of airpower!)

Versatility is a closely related concept. Not to put too fine a point on it, versatility means airpower can go after a "big" mission like flying around the globe and dropping heavy bombs on strategic targets on one day, to operating in a smaller, more focused or "tactical" mission, like protecting troops on the ground with close air support.

- An amazing example of versatility is the B-52. It's flown nuclear alert missions and close air support missions.

What's important to know about flexibility and versatility is simply that airpower gives leaders lots of options because you can use it in big ways and small ways and probably in some other ways you have never imagined using a particular aircraft.



We've talked about the characteristics of airpower. Now let's look at some celebrated examples of airpower in action, where those characteristics were put on display.



Who was Billy Mitchell and what did he do for airpower?

Billy Mitchell was a decorated Army officer and pilot who fought in WWI. In the aftermath of WWI, he was convinced that airpower was the new military technology par excellence. Unfortunately, the Army and Navy still envisioned only a minimal role for aviation in national defense.

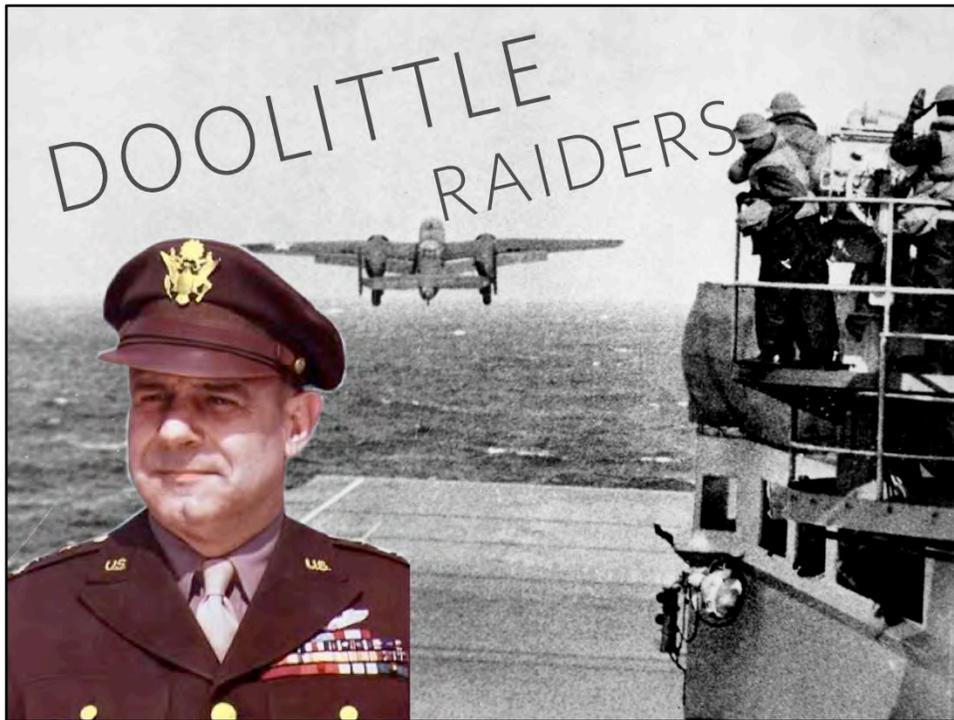
Mitchell led a loud, public campaign to create an independent air force. In particular, he wanted the independent air force to focus on strategic targets - the big, tough targets behind enemy lines - while Army officers wanted aviation to provide close air support and reconnaissance for ground troops. The air arm would still be subordinate to the infantry, and Mitchell wanted to change that.

Most famously, he demonstrated the potential of airpower by bombing the captured German battleship Ostfriesland by air. Consequently, some leaders in the Navy got the message about airpower, but most leaders in the Army were still unpersuaded about airpower's strategic, offensive potential.

Because he was so vocal to the point of insubordination, Mitchell was court-martialed.

After his death, after WWII, the value of airpower was vindicated and in recognition for his foresight and leadership against the naysayers, Congress awarded him a Medal of Honor.

Mitchell is the father of the independent US Air Force.



The Japanese attacked us at Pearl Harbor, killing thousands of Americans and bringing us into WWII.

Americans wanted to strike back at Japan as soon as possible. We had to show them that we weren't going to be bullied.

While naval forces could seek out and attack Japanese ships on the high seas, that's not quite the same as bombing Tokyo itself.

Only airpower had the rapid global reach to hit Japan. Only airpower could fly around and above Japan's defenses to strike important targets in the middle of the nation.

And at the time, even then it'd be incredibly hard to launch bombers (not small fighters!) from aircraft carriers, but the brilliant pilot / engineer Jimmy Doolittle figured out a way to enable a bomber to take off from such a small runway - the aircraft carrier's deck.

The real heroism in the story of the Doolittle Raiders is that the aircrews knew this was a one-way mission. They could carry just enough fuel to get China, if they were lucky. It was just as likely that after bombing Tokyo they'd have to bail-out over the ocean, or over the jungles and try to make their way to safety. For incredible leadership and valor, Jimmy Doolittle was awarded the Congressional Medal of Honor.

Doolittle's raid on Tokyo is an excellent example of airpower's unique ability in "global strike."



Military airpower isn't only an instrument of violence. It can accomplish incredible humanitarian missions that surface forces simply can't do.

The Berlin Airlift is a great example. The Soviet Union (Russia) had cut the Berlin off from the rest of the world. No one could get in or out by land. The Soviets were keeping food and medicine from the Berliners in an effort to compel them to align politically with the Soviets. Put another way, the Russians were holding Berlin hostage.

Could we have loaded some trucks with food and supplies and put tanks in front of the trucks and forced our way into Berlin? Maybe, but not without shooting and killing people. If we did that, some nations would look at us as the bad guys, as killers, not humanitarians trying to help Berlin.

Could the navy help deliver supplies? They could help on the margins in a supporting role, but Berlin is in the middle of Germany, it's not a coastal city.

Only airpower could get supplies to the imprisoned people of Berlin. For more than a year, unarmed cargo planes, loaded with food and medicine, flew in and out of Berlin. Flying supplies doesn't sound glamorous, but it's critical. Moreover, it took guts because the Russians could've shot down the unarmed cargo planes at any time, though they'd be risking war to do it.

One great hero to arise out of the Berlin Airlift was a man called the "Candy Bomber," or "Uncle Wiggly Wings," former CAP member Gail Halvorsen. As a pilot, Halvorsen flew over the poor, suffering kids of Berlin. These kids had just survived WWII and were trying to begin living normal lives when the Russians blockaded Berlin. Halvorsen wanted to help the kids. Was there some way for him to bring a tiny bit of joy to their lives?

Halvorsen's idea was to get some candy bars, tie handkerchiefs around them and drop them to the little kids below. Kids started looking for his plane daily and to help them know which plane was his, Halvorsen would dip wobble his aircraft's wings. Soon other pilots joined the candy bomber's efforts.

Only airpower could help Berlin and do so without firing a shot.



In WWII, the typical B-17 bomber carried a crew of ten men. Dozens and dozens of crews would be needed to strike a critical target. First the crews would have to fend off Nazi fighters. Then somehow survive withering flak guns attacking from the ground. Even if they did that, they were dropping free-fall bombs that could be pushed by the wind, and the target areas were often masked by clouds or smoke. If they missed the target, the crews would have to return the next day, and they knew the Nazis would be waiting for them. Therefore, even airmen -- but especially infantry generals and admirals -- grew pessimistic about the dream of airpower magically winning wars by striking critical targets deep inside enemy lines.

Fifty years later, in Gulf War I, the technology caught up to the doctrine. What does that mean? Stealth technology made our best aircraft almost invisible to radar. Even if the enemies looked hard and were on their guard, they couldn't spot the F-117 or B-2. The old adage, "the bomber will always get through" was becoming a matter of fact. Stealth enabled airpower to strike even the most heavily defended targets.

Moreover, bombs and missiles became so much more precise since the days of WWII's dumb bombs. If the enemy placed his key military assets next to hospitals and orphanages in hopes we wouldn't dare try to strike the target for fear of killing a lot of innocent people, "smart bombs" guided by radar or GPS or TV cameras could be precisely steered to just the right spot, hitting the target and only the target.

Gulf War I was a 100-day air campaign followed by a 100-hour ground invasion. And all the while, US ground troops knew they could sleep under the stars at night, safe from air attack because we had "air supremacy." We "owned" the sky.



What are the issues facing airpower today and tomorrow?

Let's consider one question about drones.



We try to live by Core Values of Integrity, Service, Excellence, and Respect. Therefore we acknowledge that there is a moral dimension in everything we do.

Who can tell us some of the moral questions about UAVs / drones? What are the hopes and fears of this new technology?

+ UAV's make war too easy (arguments for)

- a nation that doesn't have a human being at risk in the cockpit is more likely to send a drone into battle because there's nothing to lose
- being killed by a faceless machine is inhuman; there is something immeasurable yet sinister about "death machines in the sky"
- the men and women who remotely pilot drones are asked to live a surreal life, fighting wars 9-5 and living in suburban Las Vegas at night
- small wars tend to become big wars; because its so easy to send drone into battle, we increase the chances of big wars developing
- drones could make terrorism more common; if a low-tech enemy can't compete against high-tech drones, they'll take the low-tech battle to our hometowns in terrorist attacks

+ UAV's are a step forward for peace (arguments for)

- drones are merely a different type of airpower, but in the end, airpower is airpower, it's how you use a tool that matters
- there are innumerable good things that can come about because of drones - weather forecasting, traffic monitoring, inexpensive freight services
- drones are cheaper than manned aircraft because they require fewer safety measures, weigh less, consume less fuel, and have fewer parts to maintain
- the fact of drones being around isn't going to change; therefore the US better be the world leader in drones



Conclusion