...

My Drift

Title: U.S. Military Drones

Written by: Jerry D. Petersen

Date: 20 May 2019

Article Number: 309-2019-7

I thought drone technology was relatively new. I know that the U.S. military used drones in Afghanistan after 9-11 but I can't remember them being used before that. Boy, was I wrong about when our military started building and using drones. I didn't even know that the military doesn't call a drone a drone. The official military name for drones is Unmanned Aerial Vehicles (UAVs). In this article, just to be inconsistent, I will call them drones and UAVs.

The definition of a drone.

A drone is simply a pilotless aircraft.

Short History of Drones

Many smarter people than me cite that the origin of drones dates back to 1849, when Austria attacked Venice using unmanned balloons stuffed with explosives. However, these balloons do not meet the current definition of drones. Yes, balloons have been around for centuries and I agree – they are not aircrafts therefore not drones.

First Military UAV or Drone

The first pilotless aircraft was developed after World War I in 1916. It was called the Ruston Proctor Aerial Target (see picture below). It was designed by Archibald

Montgomery Low, an English Engineer, who is called "the father of radio guidance systems," for his pioneering work on guided rockets, pilotless planes and torpedoes.

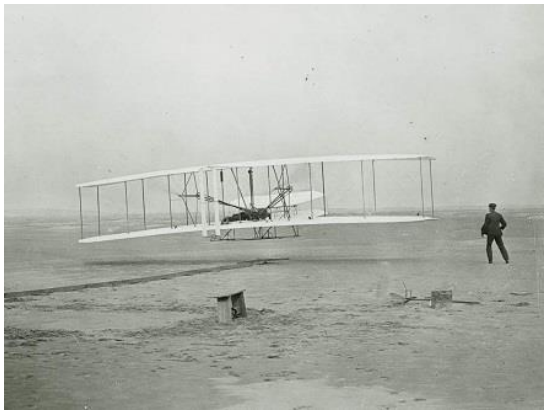
Shortly after that, the U.S. Army built the Kettering Bug (see picture below), intended to be used as "aerial torpedoes" using gyroscopic controls. The first Kettering Bug flew in 1918, but the war ended before it could be used in combat.

The Ruston Proctor Aerial Target

The Kettering Bug

Do you remember when the Wright brothers flew the first airplane?

Well, just in case your memory is as bad as mine, I will look up the date and tell you. On December 17, 1903, Wilbur and Orville Wright made four brief flights at Kitty Hawk Beach, North Carolina, with their first powered aircraft. The first flight lasted 12 seconds and covered 120 feet. The aircraft was named the 'Flyer' at Kitty Hawk.



The Flyer at Kitty Hawk
(The world's first airplane)

By using a little arithmetic, we can see that the first drone was developed 13 years after the first manned airplane. That was more than a hundred years ago!

Ever wonder where the word "drone" comes from?

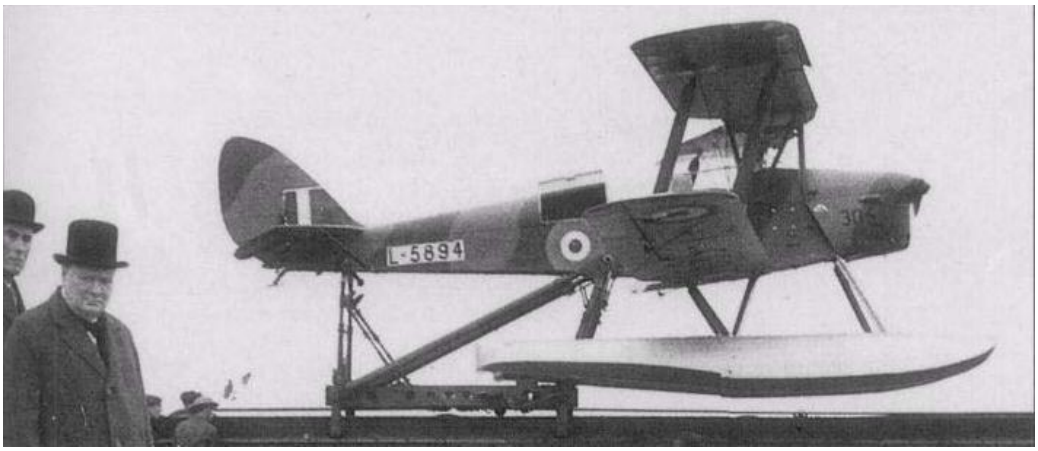
The word "drone" that we are all familiar with today has a deep history that many people (like me) are not aware of. In old English, the word drone referred to the male honeybee, whose only role is to mate with the queen. They are seen as "idlers",

because they do not gather nectar or pollen, and by the 16th century, the word "drone" also referred to lazy people.

Drone Bee

Then in the 1930s, the first recoverable and reusable radio-controlled aircraft was created. The Royal Navy needed something to practice shooting in the air, so they created "The Queen Bee".

The Queen Bee was the first pilotless aircraft to be called a DRONE.



The Queen Bee

Nuclear Tests

Do you know that the United States (between 1945 and 1992) conducted 1,054 nuclear tests by official count, including 216 atmospheric, underwater, and space tests? Most of these nuclear tests were conducted in Nevada. People who lived in Utah during this period are well-aware of these facts since we lived downwind from the Nevada Test Site. Thousands of Utah citizens (mostly young children) died from radiation related diseases such as Leukemia. This included my brother John who died on January 17, 1960 at age 6 of leukemia. I guess I was lucky to survive my childhood even though I have been told by a few people that after drinking a few beers, I glow in the dark.

In 1946, eight B-17 Flying Fortresses were transformed by American airmen into drones for collecting radioactive data. They were controlled at takeoff and landing from a transmitter on a jeep, and during flight by a transmitter on another B-17. They were used to gather samples from inside the radioactive cloud. The U.S. Navy conducted similar tests with Grumman F6F Hellcat and Lockheed P-80 Shooting Star drones.

Boeing B-17 Flying Fortress

Lockheed P-80 Shooting Star

Decoy Drones

The use of drones as decoys goes back to at least the early 1950s when the Northrop Crossbow drone was tested in such a role. The first operational decoy drone was the McDonnell Douglas ADM-20 Quail, which was carried by Boeing B-52 Stratofortress bombers to help them penetrate defended airspace.

McDonnell Douglas ADM-20 Quail Decoy Drone

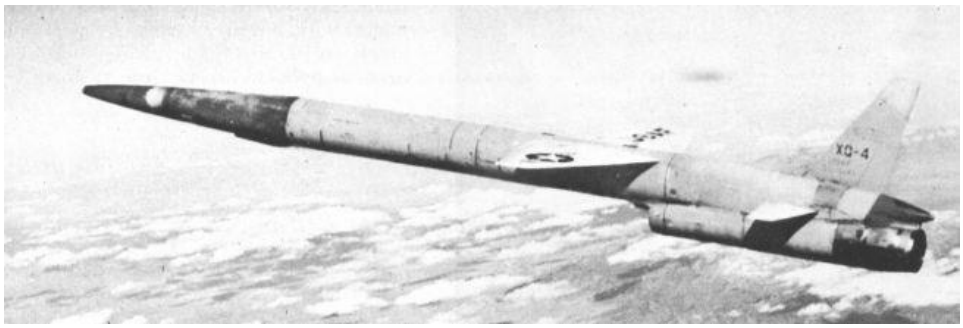
Target Drones

The first target drone converted to the battlefield aerial photo reconnaissance missions was the MQM-33 for the US Army in the mid-1950s.

In the late 1950s, the U.S. created the Firebee, a new drone that would be used for target practice. Later, the Firebee was used for exploring and gathering information.

Firebee Target Drone

However, by the early 1960s combat aircraft were capable of Mach 2 (2 times the speed of sound or 1534.5 mph) speeds, and so faster targets had to be developed to keep pace. Northrop designed a turbojet-powered Mach 2 target drone that was given the designation of AQM-35. In production form, it was a slender dart with wedge-shaped stubby wings, swept conventional tail assembly, and a General Electric J85 turbojet engine, like that used in the Northrop F-5 fighter Jet.



Northrop AQM-35 Target Drone

Reconnaissance (Spy) Drones

The success of drones as targets led to their use for other missions. A series of reconnaissance drones derived from the Firebee, the Ryan Model 147 Lightning Bug series, were used by the U.S. to spy on North Vietnam, Communist China, and North Korea in the 1960s and early 1970s.

Ryan Aeronautical Model 147 Lightning Bug

There were 58,220 U.S. military fatal casualties during the Vietnam War that lasted almost 20 years between 1955 and 1975. This was the war that was going during my young adulthood and while I served in the U.S. Navy. If you ever get the chance, you might want to visit the Vietnam Veterans Memorial Wall in Washington DC. Yes, many young American men and women died in this war that we lost due to stupid government politics.

The Vietnam Veterans Memorial Wall

Battlefield UAVs

The attitude towards UAVs, which were often seen as unreliable and expensive toys, changed dramatically with the Israeli Air Force's victory over the Syrian Air Force in 1982. Israel's coordinated use of UAVs alongside manned aircraft allowed the state to quickly destroy dozens of Syrian aircraft with minimal losses. Israeli drones were used as electronic decoys, electronic jammers as well as for real time video reconnaissance.

After this Israeli victory using drones, the U.S. Military decided that they better get serious about developing battlefield UAVs.

War on Terror

The War on Terror was launched on 16 September 2001 by the President George W. Bush and the United States government after the September 11 attacks on our country.

NEVER EVER FORGET 9-11 – The War on Terror is still going on!

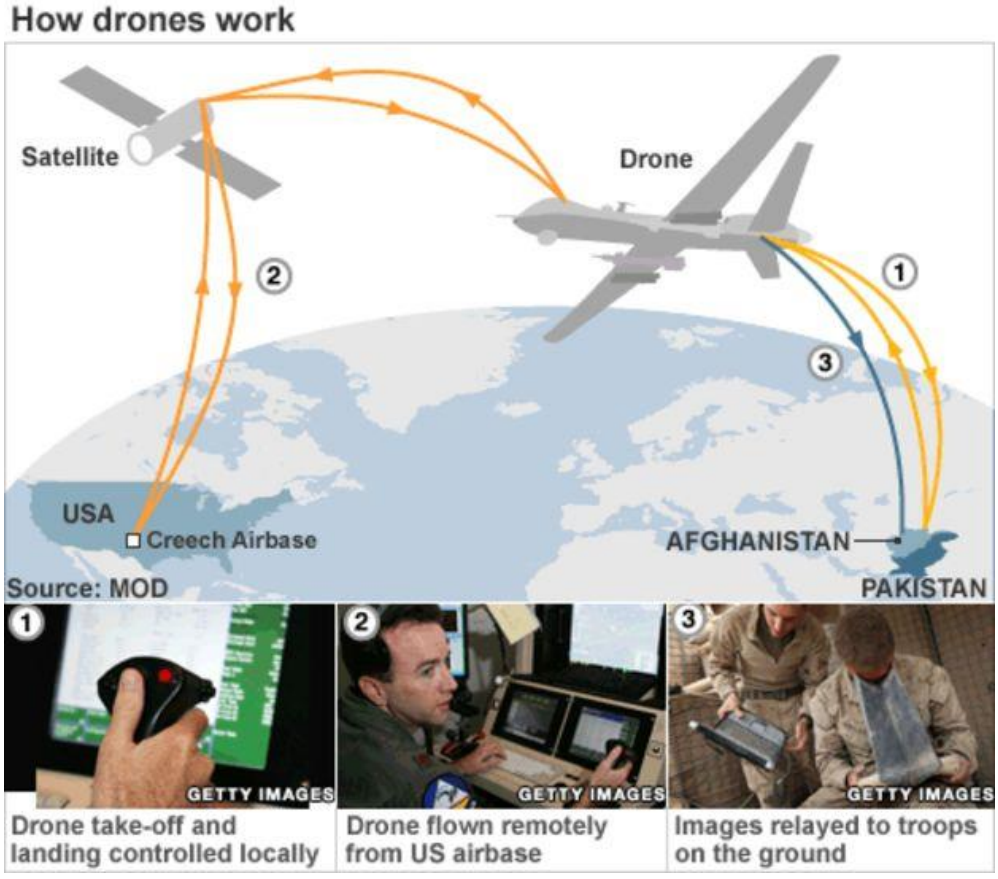
The first ever U.S. drone military strike was conducted in Afghanistan on Jan 1, 2015 at Spera District, Khost province. There have been at least 4,200 airstrikes conducted by the U.S. government since then, killing at least 4,000 terrorists and few civilians.

The General Atomics MQ-1 Predator drone was used (See picture at top of page 1 and on next page) for the first and many more of the airstrikes in the region. The Predator was used primarily by the United States Air Force (USAF) and Central Intelligence Agency (CIA). Initially conceived in the early 1990s for aerial reconnaissance and forward observation roles, the Predator carries cameras and other sensors. It was modified and upgraded to carry and fire two AGM-114 Hellfire

missiles or other munitions. The aircraft entered service in 1995, and saw combat starting from 2001 in the war in Afghanistan, Pakistan, the NATO intervention in Bosnia, Serbia, the Iraq War, Yemen, the 2011 Libyan civil war, the 2014 intervention in Syria, and Somalia. The Predator was taken out of service and replaced by newer drones in 2018.

The Predator, a Drone That Transformed Military Combat

How are Attack Drones Controlled



Current Military Drones

Now days, the U.S. military operates a large number of UAVs or Drones. Our military does not want our possible enemies to know exactly how many or what kind of aircraft they have available – manned or unmanned. However, it is easy to find websites providing the estimated number and type of drones. Based on available information, the U.S. military has more than 10,000 drones – here is the breakdown:

RQ-11 Ravens

Number: 7,500 Cost: $173,000
Range: 6.2 miles Altitude: 500 feet
Wingspan: 4 ft 6 in Speed: 28 to 60 mph
Description: The Raven is a small hand-launched remote-controlled UAV.
Purpose: Used for day or night aerial intelligence, surveillance, and target acquisition.

RQ-20 Pumas

Number: 1,200 Cost: $250,000
Range: 37 miles Altitude: 500 feet
Wingspan: 9 ft 2 in Speed: 52 mph
Description: The Puma is a small, battery powered hand-launched UAV.
Purpose: Aerial intelligence and surveillance with rotating 360-degree camera.

WASP III

Number: 1,000 Cost: $49,000
Weight: 1 pound Length: 16 inches
Range: 3.1 miles Altitude: 1000 feet
Wingspan: 29 inches Speed: 40 mph
Description: A Micro UAV developed to provide beyond-line-of-sight situation awareness. The aircraft is equipped with two on-board cameras to provide real-time intelligence to its operators.

Little side note. This is like the drone some people fly in the park near my house in Mililani. Some days there are several of these things flying all over the place. The other day, when me and my dog Apache were out walking, one of these drones just missed hitting me in the head.

RQ-7 Shadows

Number: 500 **Cost: $15.5 million**
Wingspan: 20 ft 4 in **Weight: 185 pounds**
Speed: 130 mph **Range: 70 miles**
Altitude: 8,500 feet
Description: Medium sized UAV that is launched from a trailer-mounted catapult and is recovered with the aid of arresting gear similar to jets on an aircraft carrier.
Purpose: Used for surveillance, targeting, and battlefield assessment.

RQ-16 T-Hawk

Number: 320 **Cost: $200,000**
Weight: 20 pounds **Speed: 80 mph**
Range: 6 miles **Altitude: 10,500 feet**
Description: This small UAV was developed to provide vertical take-off and landing capability. It can hover or fly in any direction.
Purpose: Used in Iraq and Afghanistan to search for roadside bombs. It has the ability to inspect a target — a suspicious vehicle, structure, or disturbed earth — from close range.

MQ-1C Grey Eagle

Number: 250 **Cost: $30 million**
Weight: 3,600 pounds **Speed: 192 mph**
Range: 250 miles **Altitude: 25,000 feet**
Description: The Grey Eagle can operate for 36 hours. The aircraft's nose houses a synthetic aperture radar/ground moving target indicator system. This large drone can carry a payload of 800 pounds and may be armed with weapons such as AGM-114 Hellfire missiles and GBU-44/B Viper Strike guided bombs.

MQ-9 Reaper

Number: 130 **Cost: $65 million**
Weight: 4,900 lbs **Speed: 230 mph**
Wingspan: 66 feet **Range: 1,150 miles**
Altitude: 50,000 ft **Payload: 3,750 lbs**
Description: The Reaper is an armed, multi-mission, high-altitude, long-endurance remotely piloted aircraft that is employed primarily against dynamic targets and secondarily as an intelligence collection asset. Given its significant wide-range sensors, multi-mode communications suite, and precision weapons--it provides a unique capability to perform strike, coordination, and reconnaissance against high-value, fleeting, and time-sensitive targets.

RQ-4 Global Hawk

Number: 50 **Cost: $223 million**
Weight: 4,900 Ibs **Speed: 390 mph**
Wingspan: 131 feet **Range: 15,000 miles**
Altitude: 66,000 ft **Payload: 3,000 lbs**
Description: The Global Hawk is a high-altitude, long-endurance unmanned aircraft system with an integrated sensor suite that provides intelligence, surveillance and reconnaissance capability worldwide. The Global Hawk's mission is to provide a broad spectrum of intelligence collection capability to support joint combatant forces in worldwide peacetime, contingency and wartime operations.

Because combat drones were originally designed for a fifteen to twenty-year life span, the Predator has been taken out of service and drones like the Global Hawk are nearing the end of their service life. However, most systems were acquired between 2010 and 2018, making them relatively young. Further, because drones do not carry a pilot, service life extensions are more feasible as they are less risky and costly than manned systems. The U.S. continues to build new and more advanced UAVs like the BAE Raven shown on the next page.

BAE Raven

What other countries have the most UAVs or Drones? China and Israel.

New WORRY for the United States - China has become a drone superpower and they are selling them to Mideast countries. Please read this article:

China is a drone superpower
For years, drone warfare has been an essentially American pursuit. The new age of armed robots has been symbolized by Predators and Reapers spewing Hellfire missiles.

But guess who's the biggest exporter of combat drones? China.

"In 2018, China became the largest exporter in the niche market of unmanned combat aerial vehicles (UCAVs), with states in the Middle East among the main recipients," according to the Stockholm International Peace Research Institute, which compiles estimates of global military strength and arms spending.

Indeed, combat drones are spreading across the globe. "The number of countries that import and use unmanned combat aerial vehicles (UCAVs)—which are remotely controlled armed aircraft often referred to as armed drones—continued to increase in 2019," SIPRI said.

"There is widespread discussion about the impact of UCAV proliferation on peace and security. China has become the primary exporter of UCAVs. Whereas China exported

10 UCAVs to 2 countries in 2009-13, in 2014-18 it exported 153 to 13 countries—5 of which are in the Middle East: Egypt, Iraq, Jordan, Saudi Arabia and the United Arab Emirates (UAE). In contrast, the United States delivered three UCAVs in 2009-13 and five in 2014-18. In both periods all the deliveries were to the United Kingdom. Iran delivered 10 UCAVs to Syria in 2014-18, while the UAE delivered 2 to Algeria."

This explains why the U.S. Army, which has been lackadaisical about air defense for years, is now suddenly interested. Nations such as Iran are far inferior to the United States in conventional combat weapons such as tanks and jet fighters, but it doesn't take much money or advanced technology to strap a bomb onto a small drone that's hard to detect or shoot down.

China's arms exports are slowing after a massive surge over the last few years. After nearly tripling between 2004 and 2013, they increased by only 2.7 percent over the 2014 to 2018. Interestingly, China's more aggressive foreign policy in Asia has hampered its arms exports. "China's arms exports are limited by the fact that many countries—including 4 of the top 10 arms importers in 2014-18 (India, Australia, South Korea and Vietnam)—will not procure Chinese arms for political reasons," SIPRI noted.

During the Cold War and after, China was notorious as an exporter of cheap knockoffs of old Soviet hardware such as tanks and jet fighters. Yet China's push to develop Western-style smart weapons, from aircraft carriers to stealth fighters, appears to be paying economic dividends. "Improvements in Chinese military technology have opened up opportunities for arms export growth, including exports to new custom-ers," said SIPRI.

"The number of countries to which China delivers major arms has grown significantly over the past few years. In 2014-18 China delivered major arms to 53 countries, compared with 41 in 2009-13 and 32 in 2004-2008. Pakistan was the main recipient (37 per cent) in 2014-18, as it has been for all five-year periods since 1991. China supplied relatively small volumes of major arms to a wide variety of countries: 39 of the 53 recipients in 2014-18 each accounted for less than 1 per cent of total Chinese arms exports."

However, China's arms exports haven't totally dampened Beijing's appetite for imported—mostly Russian—arms. China was the world's sixth-largest importer of weapons between 2014 and 2018, down 7 percent from the 2009 to 2013 time period. "Russia accounted for 70 per cent of Chinese arms imports in 2014-18," SIPRI estimated. "China remains reliant on imports for certain arms technologies such as engines for combat aircraft and large ships as well as long-range air and missile defense

systems. Its own arms industry has yet to develop the technological capability to match Russian suppliers in these fields.

Yes, thanks to China, the terrorist in the Mideast have drones with the capability to send missiles and drop bombs on the United States and our friends world-wide.

What have we learned in this article?

We learned that the origin of drones used in combat dates back to 1849, when Austria attacked Venice using unmanned balloons stuffed with explosives. Did you know that the first hydrogen filled rubber balloons were invented by Professor Michael Faraday in 1824?

Balloon carrying a Bomb

We learned that the first pilotless aircraft was developed after World War I in 1916 by an English engineer.

We learned that the first U.S. pilotless aircraft was built in 1918 by the Army and it was called the Kettering Bug. It was intended to be used as "aerial torpedoes" using gyroscopic controls.

We learned that in the 1930s, the first recoverable and reusable radio-controlled aircraft was created. It was called the "The Queen Bee" and was the first pilotless aircraft to be called a DRONE.

We learned that the U.S. conducted 1,054 nuclear tests between 1945 and 1992. They used drones to measure radiation generated by these tests.

We learned a little bit about Decoy Drones, Target Drones, and Reconnaissance (Spy) Drones that were used during the Vietnam War in the 1960s and 1970s.

We learned that starting in 2001, the Predator was the first combat drone that used missiles and bombs to hit targets in Afghanistan and other Mideast countries during the ongoing war against terror.

We learned how attack drone pilots control them thousands of miles away from the battlefield.

Nuclear Bomb at the Nevada Test Site

We learned that the official US military name for a drone is Unmanned Aerial Vehicles (UAVs).

We learned that the US military has more than 10,000 drones and we learned a little about each type.

We learned that the current war on terror is using a lot of drones on the battlefield and you can bet that future conflicts will be using even more of them.

I learned that it takes almost getting hit in the head by a drone to become interested in them enough to write this article.

Bigdrifter44@gmail.com

Bigdrifter.com