



## Historical Development Trends Of nmaned Aircraft Devices.Part I.

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### ABSTRACT

In this article, the history of the appearance of drones, their stages and periods of development, the inventions of scientists that led to their appearance, and the analysis of scientific data about the first drones are written.

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### Introduction

The fields of information technologies and robotics are developing rapidly. The demand for specialists in the field of IT technologies is increasing day by day in the world. At the same time, such rapid technological growth calls on developed countries and our country to catch up with the times.

Various IT parks have been built in our country based on the initiatives and instructions of the head of state. Of course, it would not be wrong to say that our young specialists who are currently studying in these IT parks are the foundations of our future.

Today, the development of nano-technologies does not bypass the field of unmanned aerial vehicles, one of the fields that is becoming popular in the civilian and military sectors and is developing day by day.

Although the history of the creation of this industry dates back to the beginning of the 20th century, rapid growth was observed in the beginning of the 21st century.

So, in turn, when did the unmanned aerial vehicles or drones, which are now popular among the people under a different name, appear? What types are there, the benefits of their use and how their use will benefit civil society, humanity, whether we can use them in the military field, in what ways or in which ways we can use them to ensure the safety of the state and citizens and maintain public order. It is natural that questions arise.

### Literature Analysis And Methodology

Today, many specialized bureaus, entrepreneurs and even hobbyists are engaged in the design and creation of unmanned aerial vehicles or drones. The size and number of these devices are constantly growing. The demand for unmanned aerial vehicles (UAVs) or drones is driven by a number of benefits, the most important of which is to save the lives of pilots in flight. In addition, it is characterized by low costs, compactness, efficiency, environmental friendliness, the possibility of long-distance flight and the possibility of use in many sectors.

Currently, there is no single definition of unmanned aerial vehicles in the legislation of the world community, but they are all similar in content.

For example, "A drone is a flying device without a crew on board."

A similar definition was mentioned by N.A. Fedoseeva, a teacher of foreign languages at the Aviation College in Ulyanovsk, Russian Federation, and her student M.V. Zagvozdkin in their research.

One of the Internet social networking sites defines a drone as "any flying device that does not have a pilot in the air."

*Unmanned aerial vehicles (hereinafter referred to as drones) are also called unmanned aerial vehicles (UAVs) or unmanned aerial vehicles (UASes). Drones are divided into remotely controlled and autonomous types, that is, they move based on pre-entered information, according to one of the social networks.*

*Chapter 1, Clause 2 of the Resolution No. 658 of the Cabinet of Ministers of the Republic of Uzbekistan dated November 15, 2022: "Unmanned aerial vehicle - an unmanned aerial vehicle that is fully controlled remotely from another location or programmed and fully in flight autonomous aircraft (excluding model aircraft and toy aircraft models). An unmanned aerial vehicle combines unmanned and remotely controlled aerial vehicles, which are usually used as a single system.*

*According to the definition approved by the International Specialized Civil Aviation Organization (ICAO) conference of the United Nations: "A drone is an unmanned aerial vehicle that flies without a crew (commander) or at all." It is said to be controlled from the ground, from other air vehicles, from space or fully programmed and fully autonomous flying vehicles.*

Although all the above definitions correspond to each other in content and meaning, there is still no single definition. This has been the cause of various debates and discussions among researchers.

Based on the above definitions, we believe that the following definition is appropriate: "Unmanned aerial vehicle (device) is a flying air vehicle that, during flight, without a pilot (commander, crew) or completely from the ground, uses other from air transport(s), from space, or from fully programmed and fully autonomously piloted flying vehicles".

Let's briefly touch on the word "drone", one of the popular terms among the people.

The term "drone" was first used in 1936 by US Navy Captain Delmar Farney in his report, and the term became popular later.

There are many types of drones today, and their names are certainly different. Unmanned aerial vehicles used in the military field are often called "drones", and unmanned aerial vehicles used in civilian areas are called "copters".

Currently, the types of copters such as quadcopter, tricopter, octocopter and hexacopter are more developed.

In turn, the word "quadcopter" is taken from the English language and means "helicopter with four rotors". Depending on the number of rotors and other functions, copters are also called multicopters.

The names of the copters are based on the number of their blades: "tricopter" - three-bladed, "quadcopter" - four-bladed (rotor), "octocopter" - six-bladed and "hexacopter" - eight-bladed.

At first, drones were used only to destroy aerial targets, attack the enemy, and collect information, but later they were widely used in some civilian areas.

In particular, its use in agriculture, surveillance and security services, geodesy, archaeological search and rescue, cargo delivery, and other fields of cinematography, such as photo and video recording, has been widely developed and popularized.

It's hard to believe that the history of modern drones, which are currently developing and gaining popularity, has been more than a century and a half. Let's take a look at the emergence and development of these drones.

The opinions of scientists, including researchers, who have conducted research in this field, and the fact that there is no single opinion about when exactly the drones appeared, there are still various debates and discussions among them, even now.

Yu.V. Vodolajskaya, associate professor, candidate of technical sciences, Institute of Emergencies Ministry, Voronezh, Russia, L.A. Konnova, doctor of medical sciences, professor, science worker of the Russian Federation, and G.I. Bonchuklar, candidate of economic sciences, University of the Ministry of

Emergencies in St. Petersburg, Russia, discussed the history of the development of drones. They believe that it is appropriate to study in four periods.

According to their opinion, it is appropriate to study in the following periods, that is:

**1st period: 1849-early 20th century.**

During this period, scientists on the creation of unmanned aerial vehicles carried out preliminary theoretical studies, various flight accounts and the first experiments;

**Period 2: early 20th century - 1945 (military drones).**

Considering the Second World War, drones were used only for military purposes. These drones have the ability to cover a short distance and fly for a certain period of time in the form of an aircraft-projectile (an aircraft capable of carrying small and kilogram projectiles);

**Period 3: 1945-1960s (reconnaissance drones).**

Just after the Second World War, the period of production of types of drones designed to collect information about various enemies;

**Period 4: 1960 and present.**

The development of unmanned aerial vehicles and the appearance of their various types has led to their use in civil fields in addition to military fields.

In our opinion, it would be appropriate for the above scientists and researchers to study the history of the development of unmanned aerial vehicles by periods.

It was the invention of unmanned aerial vehicles that created many facilities for the development of not only the military sector, but also some areas of civil society.

### Discussion

So, while the debate about who invented it continues, let's take a look at the research of some scientists and researchers.

For example, in the article "Etapy razvitiya bespilotnogo letatel'nogo apparata" by T.P. Seplyayeva, O.V. Morozova, the first creation of drones was in 1849, during the counter-struggle between the authorities of the then Republic of Venice and the Austrian state. He sent it to the city. They recorded that these balloons automatically dropped bombs on the city, but, although this did not cause much damage to the city, it confused the city's inhabitants.<sup>1</sup>

At the same time, D. Justin, F. Stansbury and S. Roberts add about this situation in their book: "...200 incendiary balloons were launched mostly from land. But at the same time, it was mentioned in some sources that some balloons were also launched from the ship "SMS Vulcano". They took into account the flow of air (wind). However, due to the change in the air (wind) flow, the balloons did not reach their targets, it was said that only one balloon fell on the city (target). There are even reports that many of the balloons have moved backwards."<sup>2</sup> - they wrote.

It should be noted that most of the inventions related to drones were invented during the war. This includes drones. In order to further strengthen the military potential, new technologies are invented, and these technologies are currently serving to ease and facilitate the problems of people's everyday life.

L.A. Konnova, doctor of medical sciences, professor, employee of the Academy of Sciences of the Russian Federation, and G.I. Bonchuk, candidate of economics at the University of the Ministry of Emergency Situations of Russia in St. Petersburg, in their 2018 article entitled: "Ob istorii besprovodnykh letatel'nykh apparatov i perspektivakh ispolzovaniya v praktike spasatel'nykh rabot" in their article, they touched on the history of the origin of drones as follows, "interestingly, many the technological innovations that are being created and popularized are actually not new discoveries, but have a long history, created and developed

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<sup>1</sup> Т.П.Цепляева, О.В.Морозова: Этапы развития беспилотных летательных аппаратов, Открытые информационные и компьютерные интегрированные технологии (журнал) 2009 йил, № 42, 10-бет.

gradually with other fields related to these technologies. One of these ideas led to the creation of unmanned aerial vehicles, now popularly known as "drones".

Initially, the purpose of their creation and use was related only to the military sphere (often that is why military unmanned aerial vehicles are called "drones"). However, these drones are currently being used in many areas of civil society.

In 1889, the world-famous engineer Nikola Tesla first proposed the idea of objects controlled by radio waves and showed his boat controlled by radio waves to the public. But in the future, objects controlled by radio waves were not boats, but drones.

In 1910, the English military engineer Ch. Kettering created a flying device controlled by a clockwork mechanism and filled with an explosive substance, which later led to the creation of an aircraft-projectile, but this device remained only as an experimental device. - have been written.

However, we should not forget one important thing, every country played a big race during the war to create technological discoveries to further increase its military potential. This, in turn, led to the creation and invention of new technological discoveries. The results of developments in these technological races have varied depending on the investments made in each country.

As a result of the research of our above researchers and scientists, the process of dividing this developing field into periods, that is, the passage of periods, has developed in different degrees in each country.

For example, B.J. Kuvatov and T.Z. Makayev in their article "Istoriya razvitiya bespilotnogo letatel'nogo apparata": "In 1933, Great Britain created the first multi-purpose unmanned aerial vehicle called "QueenBee". Three of these devices, based on the "Fairy Queen" device, were controlled by radio waves from the ship. Of these three UAVs, two have crashed, and the third has made a successful flight. This made Great Britain the first country to successfully use drones. This "DH82A Tiger Moth" was a radio controlled unmanned target used by the Royal Navy from 1934 to 1943.

It can be seen that Great Britain was one of the first to successfully use drones, but unfortunately, its development history and duration was very short.

At the same time, they have the ability to carry torpedoes PSN-1 and PSN-2 designed for special tasks under the name "Flying Wing" by the aviation designer Nikitin in the 1930s-1940s in the former USSR, two types (manned and unmanned autonomously controlled ) started to create airplanes. In the early 1940s, 700 km/h. with a speed of 100 km. and presented a project of an unmanned torpedo capable of moving at a greater distance. However, they noted in their articles that this project was not implemented until it was designed.

FAU-1, an unmanned aircraft-projectile created by German scientists during the Second World War, aroused great interest in many people. The FAU-1 was equipped with a jet engine, carried a warhead of 750 to 1,000 kilograms and could fly at a distance of 250 kilometers. There were two different ways of launch: stationary launch equipment (catapult) and flying aircraft.

Both methods of launching used by German scientists during the Second World War are still used today.

After the Second World War, many countries began to create drones. This led to the emergence of drones that are used not only for military purposes, but also for other civilian purposes. Including for intelligence and data collection, for surveillance purposes, intended for transportation, etc.

Many types of drones were created and manufactured in the former USSR. The first reconnaissance drone in the USSR was the Yak-9V, based on the Yak-9.

In addition, drones such as the famous Tu-123 "Yastreb", Tu-141 "Strij" and Tu-143 "Reis" have been created.

In the USSR, the 1980s are considered the period of development of drones. During this period, the Armed Forces had more than a thousand intelligence and radio interference and jamming devices. However, by the late 1980s, the development of drones slowed down. They believe that this is due to the collapse of the USSR. In 1996, most of the remaining drones from the USSR were destroyed.

In 1990, due to the financial crisis, the demand for drones decreased significantly.

The collapse of the USSR had a serious impact on the creation of drones in the Russian state. Only in 2008, "Dozor-85" drones, which can fly for up to 8 hours, and "Tipchak" drones for monitoring the airspace were adopted by the armed forces.

At the international exhibition "MAKS-2009" in 2009, "Dozor-600", created on the basis of the American MQ-1B Predator drone, was presented. In addition, "Orlan-10" and "Orlan-3M" complexes have been accepted into the Armed Forces of Russia since 2010.

At the 2016 "Helli Russia" exhibition, the Russian state "Helicopter Rossii" concern demonstrated a new generation of three drones that can take off and land automatically. Another advanced feature of these drones is that they can fly continuously for 24 hours.

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