

How did the earliest attempts at flight set a foundation for later developments?

Questions/Key Points	Notes
<p>What did humans imagine or think about flying, before they could actually do it?</p>	<ul style="list-style-type: none"> ● Mythology <ul style="list-style-type: none"> ○ https://www.auburn.edu/allynbaconanthology/documents/Icarus%20and%20Daedalus.pdf ○ Daedalus and Icarus, 60 BCE <ul style="list-style-type: none"> ■ King Minos had trapped Daedalus and his son Icarus in Crete ■ Tried to escape by jumping out of a tower and flapping wax/feather wings ■ Humans imagined flying like birds ○ Other Greek myths <ul style="list-style-type: none"> ■ Hermes with winged hat and feet ■ Pegasus the winged horse ○ Zoroastrian deity Ahura Mazda <ul style="list-style-type: none"> ■ https://www.britannica.com/topic/Ahura-Mazda ■ Depicted with a large pair of wings
<p>How did humans first attempt to fly? Were they successful?</p>	<ul style="list-style-type: none"> ● Tower jumping during the Islamic Golden Age <ul style="list-style-type: none"> ○ Armen Firman <ul style="list-style-type: none"> ■ https://www.uh.edu/engines/epi1910.htm ■ Jumped off a tower in Cordoba with a large cloak and survived with minor injuries ○ Ibn Firnas (Abbas ibn Firnas) <ul style="list-style-type: none"> ■ https://www.google.com/books/edition/_/yqSq6ve-ficC?hl=en&gbpv=0 ■ https://scholar.googleusercontent.com/scholar?q=cache:QX-cyzkdMRgJ:scholar.google.com/ ■ See also link to Armen Firman ■ Was inspired by Armen Firman's tower jump ■ Created a glider with a mostly successful flight besides the landing, in which he hurt his back.
<p>What kinds of unmanned flying machines did the ancient Chinese create?</p>	<ul style="list-style-type: none"> ● Kites <ul style="list-style-type: none"> ○ https://www.google.com/books/edition/_/NRbRAgAAQBAJ?hl=en&gbpv=1 ○ https://books.google.com/books?id=jFMQBAAAQBAJ&pg=PP7#v=onepage&q&f=false ○ 500 BCE - kites are used for military communication, although they had been available in the past for much longer ○ Invention of paper in the Han dynasty made kites more accessible to people ● Bamboo-copter

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How did da Vinci design and imagine his flying machines?

How else did people imagine flying machines?

- <https://scholar.googleusercontent.com/scholar?q=cache:KmkdCkcPx eoJ:scholar.google.com/>
- A single set of rotors connected to a vertical shaft, spun by strings pulled by handles
- Used as a childrens toy
- Existed since 400 BCE
- Later inspired George Cayley in his experiments
- Sky lanterns
 - https://www.google.com/books/edition/Ancient_Chinese_Inventions/EeVPT6UAk3EC?hl=en&gbpv=1
 - “Kongming Lantern,” also used for military signaling
 - Became popular to use during festivals and holidays
 - Also has a spiritual significance for people
- Ornithopter
 - <https://commons.erau.edu/jaaer/vol21/iss1/8/>
 - Given that humans’ only source of ideas for flight came from birds, it makes sense that people first tried to recreate the flight of birds
 - Earlier flying machines relied on the flyer to literally flap their wings like a bird. Da Vinci wrote detailed plans for an ornithopter that would use a mechanism to harness energy from the flyer and achieve sustained flight.
 - Da Vinci’s design was never built but it still shows the logical processes by which he thought and recorded his ideas.
- Aerial Screw
 - https://link.springer.com/chapter/10.1007/978-1-4302-0258-5_6
 - Da Vinci created a design of a VTOL aircraft that functioned like a rotating screw that generated lift, which would allow it to fly. He intended for it to be solely human-powered, which would not have worked because humans wouldn’t be able to produce that much lift
 - It was never built
 - Another issue with it physically was that the torque effect generated by the singular rotating screw would cause the system to rotate
- De Terzi’s flying airship
 - https://airandspace.si.edu/collection-objects/an-air-balloon-invented-in-the-last-century/nasm_A20140515000
 - <http://www.faculty.fairfield.edu/jmac/sj/scientists/lana.htm>
 - Francesco Lana de Terzi imagined an airship with a boat’s hull and a sail, lifted by vacuumed metal globes
 - His design was never built; historians agree that it was not possible with the technologies of his time.

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Summary

Humans have long seen birds in the sky and imagined flying among them. Thus, the earliest attempts at flight attempted to emulate the mechanics of birds. However, other scientists during and before the 17th century envisioned unique designs for flying machines that did not prove successful at the time. However, the events that occurred during this time period inspired the scientists that would come later and gave them the ideas necessary for them to take flight.