



# DUNE

The science behind the universe

**SPOILER  
ALERT!**

The book

The plot

The Butlerian Jihad

The ornithopter

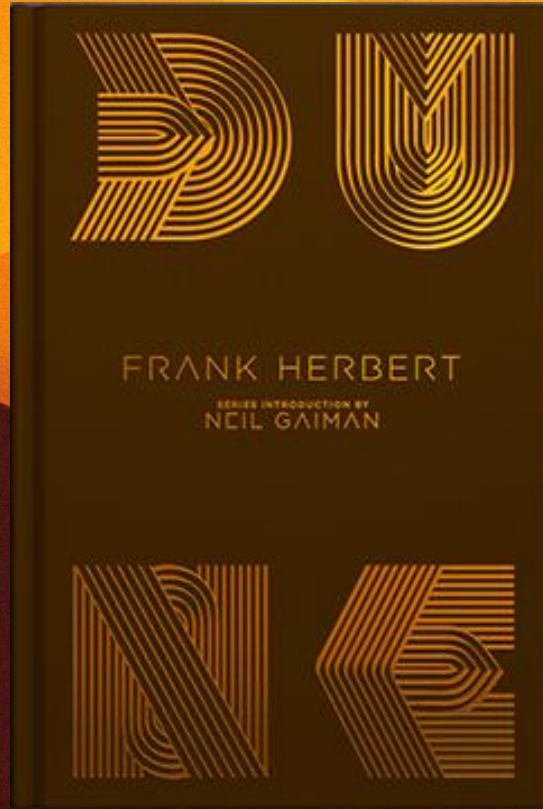
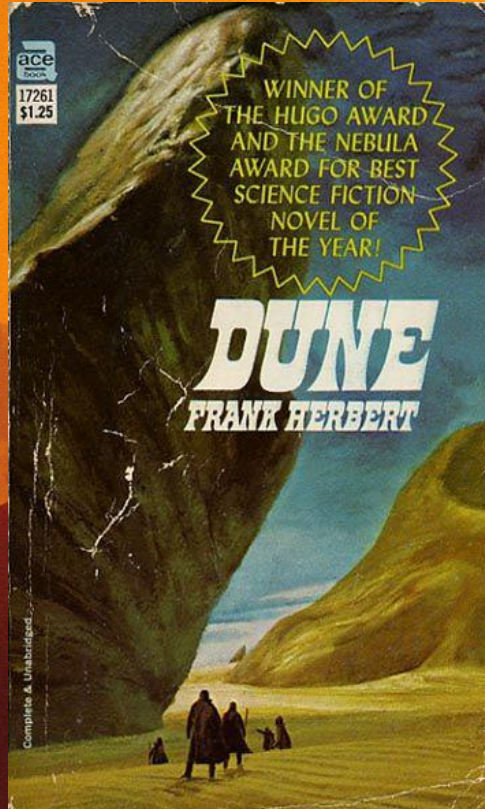
The Stillsuit

The Spice

The Ecology



# The book



# The plot



“Dune is set in the distant future in which various noble houses control planetary fiefs. It tells the story of young **Paul Atreides**, whose family accepts the stewardship of the planet **Arrakis**.

While the planet is an inhospitable and sparsely populated desert wasteland, it is the only source of melange, or "**spice**", a drug that extends life and enhances mental abilities.

Melange is also necessary for space navigation, which requires a kind of multidimensional awareness and foresight that only the drug provides. As melange can only be produced on Arrakis, control of the planet is a coveted and dangerous undertaking.

The story explores the multilayered **interactions of politics, religion, ecology, technology, and human emotion**, as the factions of the empire confront each other in a struggle for the control of Arrakis and its spice.”

The plot (shorter version)

Boy on a desert planet  
becomes a god after  
overdosing.



A surreal landscape of rolling sand dunes under a massive, glowing yellow sun. A small silhouette of a person stands on the crest of a dune, looking towards the sun. The scene is bathed in a warm, golden light, creating a sense of vastness and contemplation.

How does it compare to actual science?

## The Butlerian Jihad

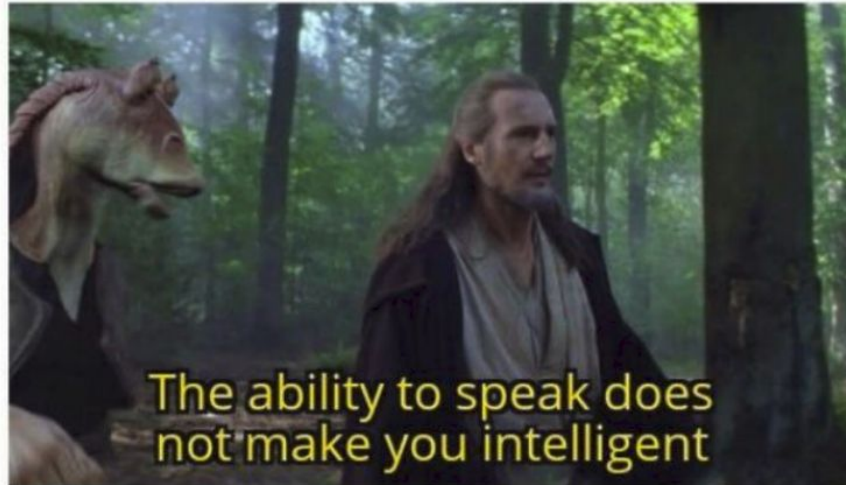
*“Thou shalt not make a machine  
in the likeness of a human mind.”*



# The Butlerian Jihad

Some people: OMG ChatGPT  
can speak like a human  
person, it's sentient!

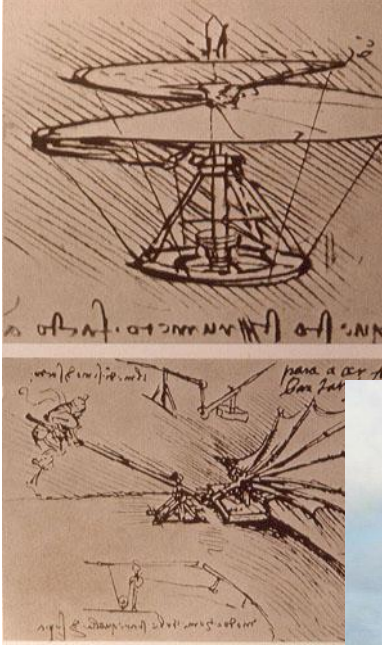
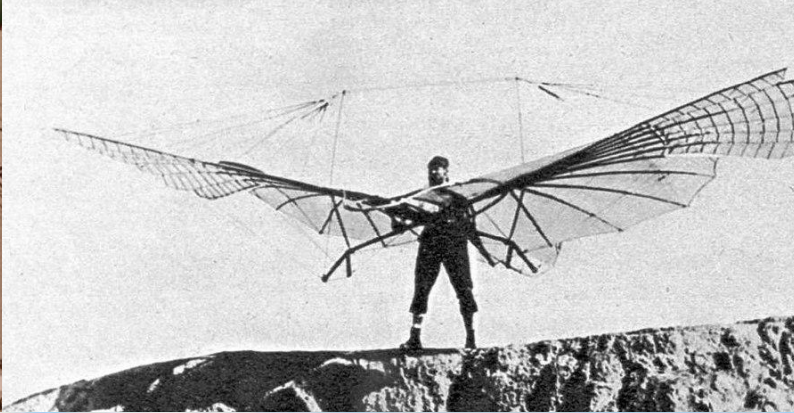
People who actually learnt AI theory:



The ornithopter



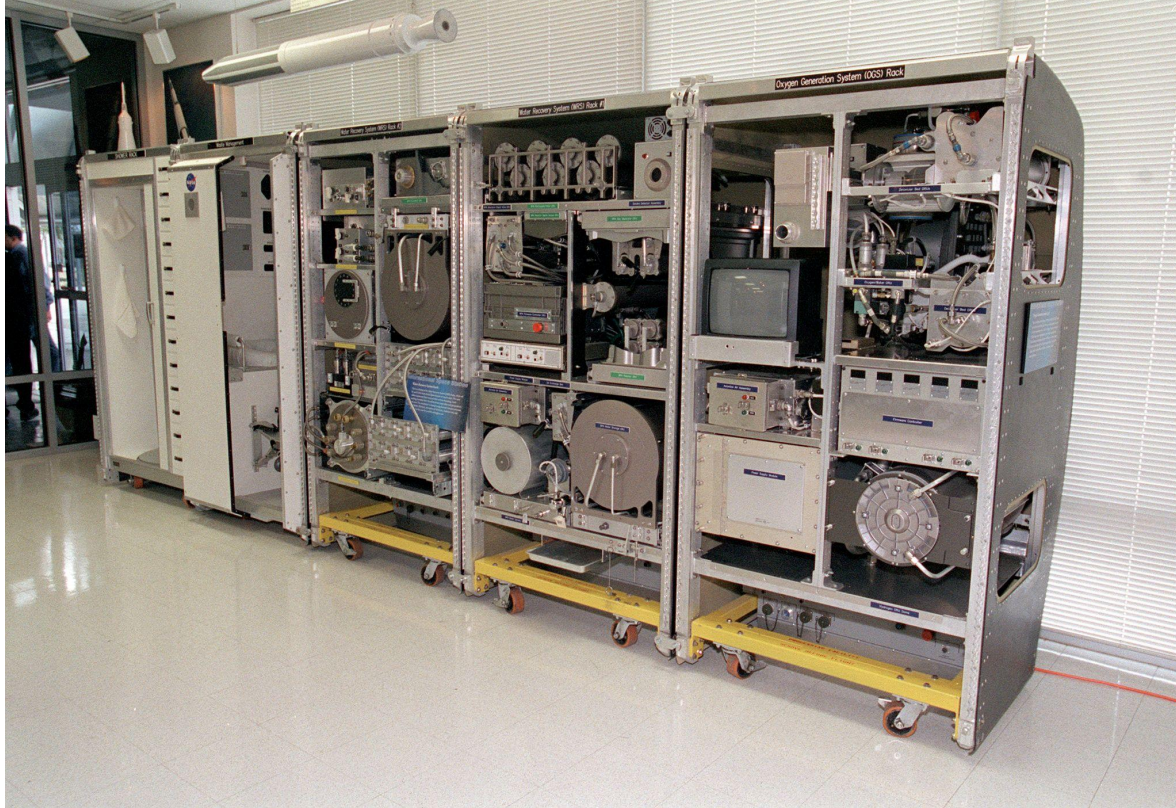
# The ornithopter



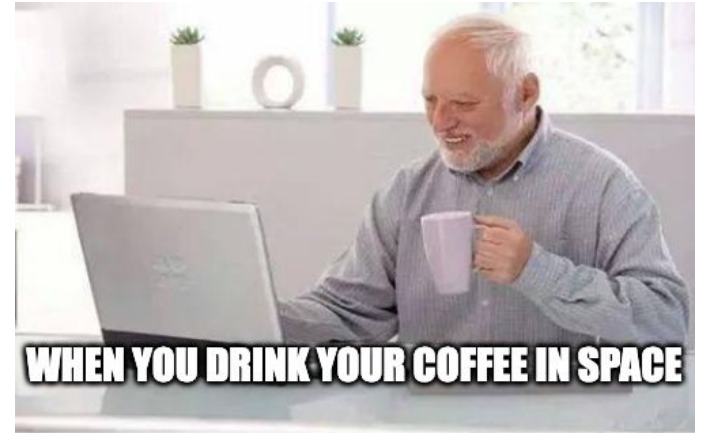
# The Stillsuit



# The Stillsuit



# The Stillsuit

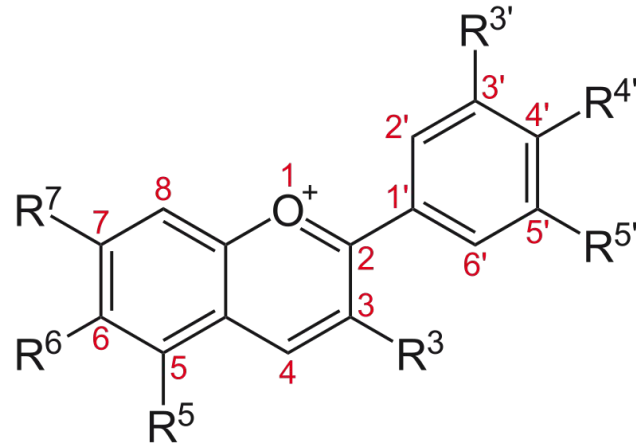
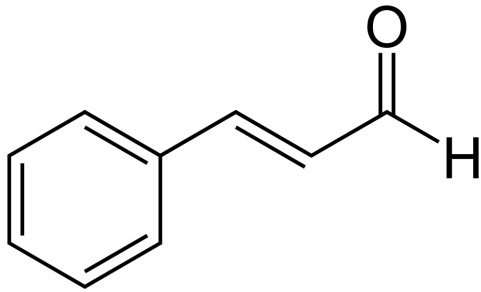


The Spice



# The Spice

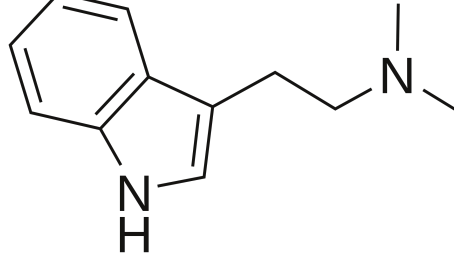
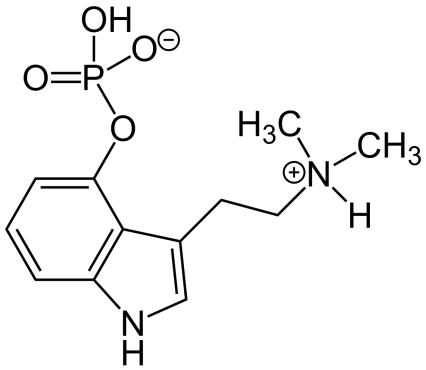
- Cinnamon smell: cinnamaldehyde
- Color change: anthocyanin
- Anti-ageing effect: anthocyanins (flavonoids)





# The Spice

- Mental acuity: coffee, tea chocolate
- Hallucinogenic drugs: Psilocybin, DMT, LSD



# The Ecology



# The Ecology

*“The thing the ecologically illiterate don’t realize about an ecosystem is that it’s a system. A system! A system maintains a certain fluid stability that can be destroyed by a misstep in just one niche. A system has order, a flowing from point to point. If something dams that flow, order collapses. The untrained might miss that collapse until it was too late.*

***That’s why the highest function of ecology is the understanding of consequences.”***

— Frank Herbert

(“Appendix I: The Ecology of Dune”)

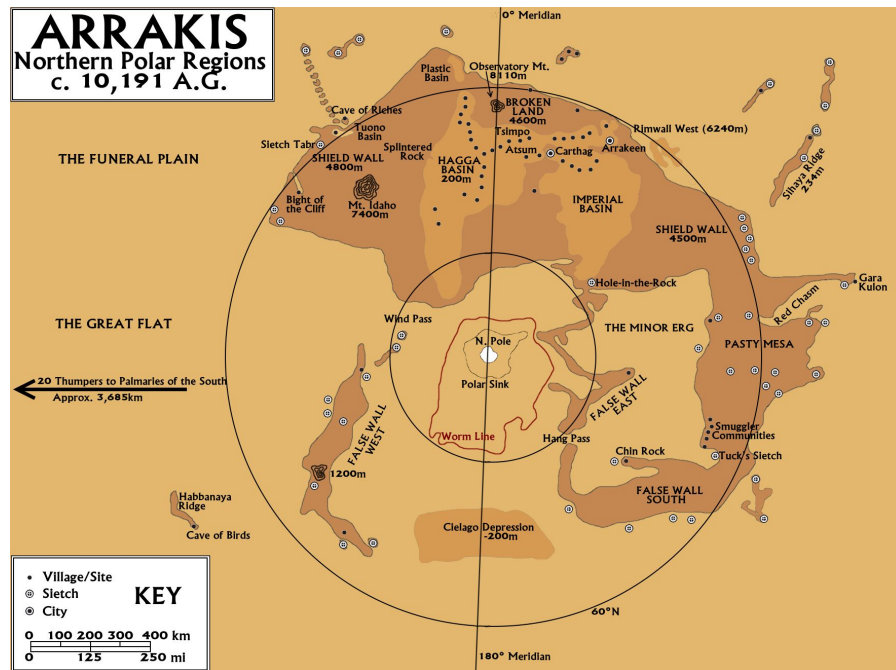
# The Ecology

## Similarities with Earth

- third planet of its solar system
- atmosphere
- carbon-based life
- average temperature

## But:

- no surface water
- no plants
- no photosynthesis



# The Ecology

## The case of Ascension Island

- Isolated volcanic island
- The Portuguese, who discovered the island in 1501, deemed it unworthy of colonization
- The British finally settled the island in 1815 for strategic reasons alone
- In 1847, report for the British Admiralty outlining a program of terraforming the island



# Final words

Is it science-fiction?

Yes, none of the science in Dune can be easily implemented as described.

Should you still read the book?

Absolutely.

Does Dune resonate today?

Yes.

(Should you see the movies? Yes, also)

# Sources

- [Dune fandom wiki](#)
- Podcasts episodes
  - [Technology of Dune](#) (EN)
  - [Biology of Dune](#) (EN)
  - [Quelle\(s\) science\(s\) sur Arrakis ?](#) (FR)
- Books
  - [The Science of Dune, 2007](#) (EN)
  - [Dune: Exploration scientifique et culturelle d'une planète-univers, 2020](#) (FR)
- Articles
  - [Dissecting the "spice" of Dune](#) (CNRS) (EN)