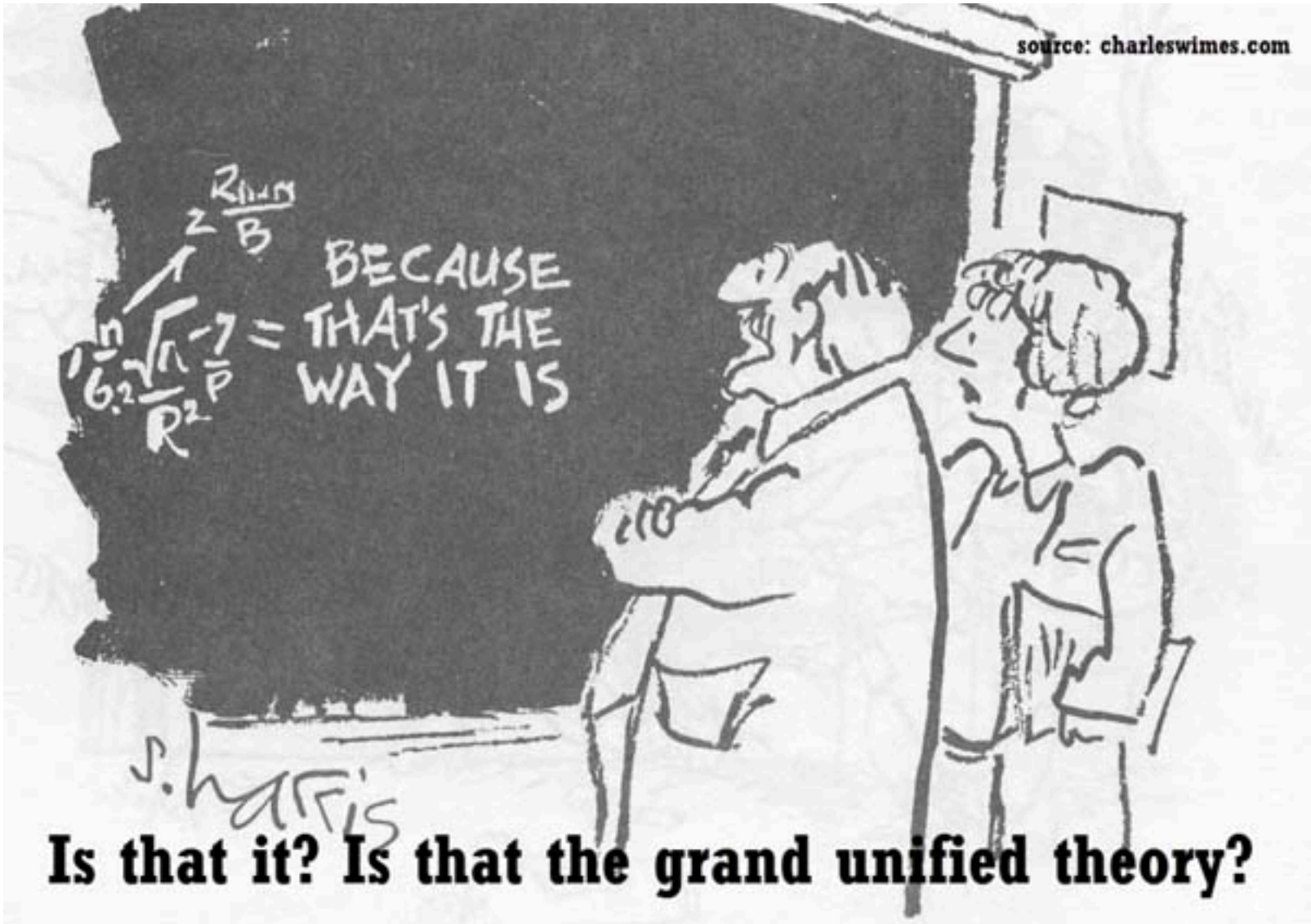
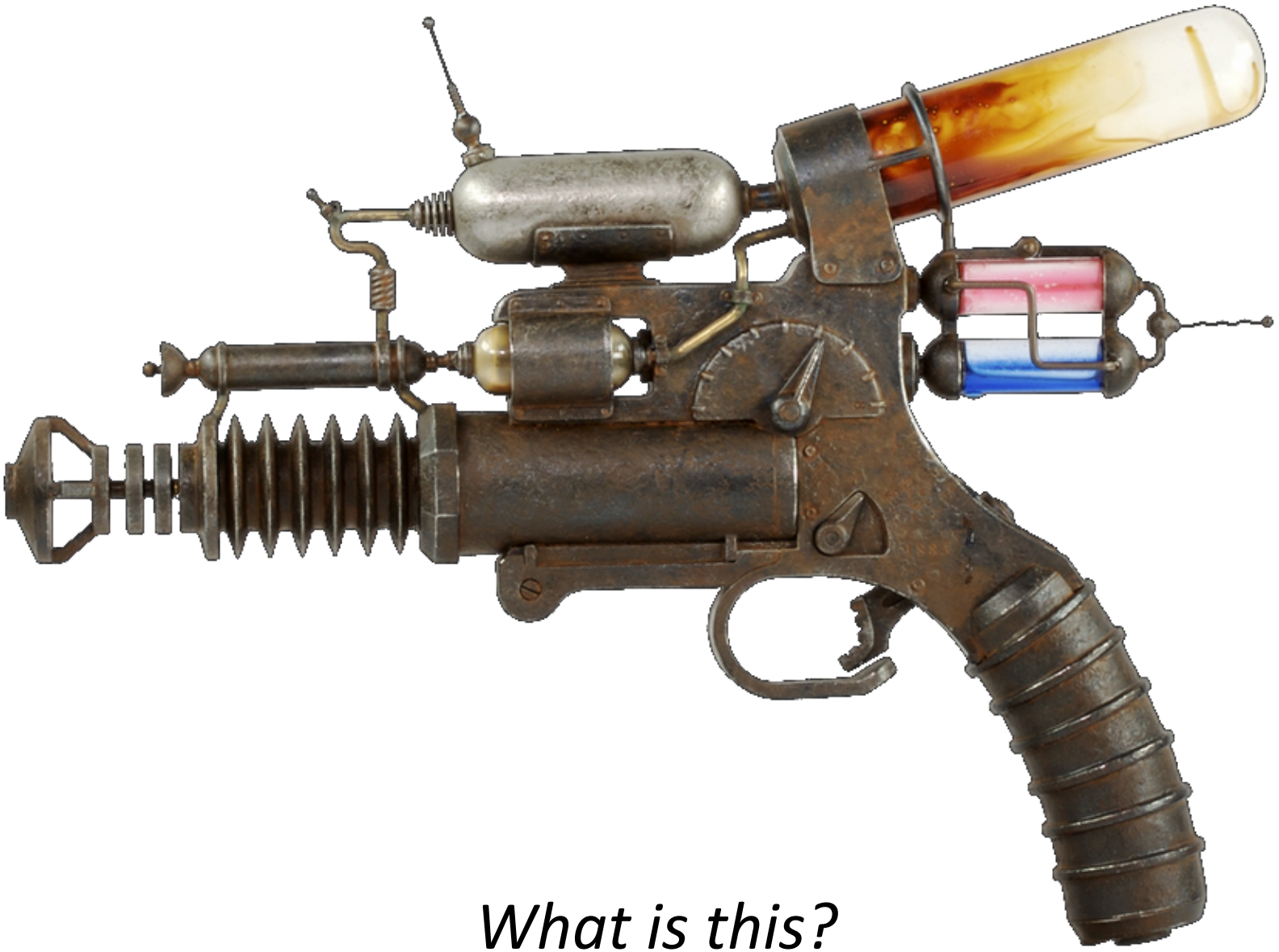


Is that it? Is that the grand unified theory?

Doing Computer Science as Science

Some material borrowed from David Jensen,
University of Massachusetts



What is this?

"It's a gun."

Nominal

Of, relating to, or consisting of a name.

DR. GRORDBORT'S : GOLIATHON 83 INFINITY BEAM PROJECTOR

Like 2 people like this. Be the first of your friends.

USD **$690.00**

Edition Size:	**500**
Dimensions:	**10.6" x 13.8" x 2" (H x W x D)** **27 cm x 35 cm x 5 cm**
Weight:	**9.9 lbs (4.5 kg)**

See a product video (6MB)

The Goliathon is the heaviest of the Rayguns, weighing in at 10lbs. It's sturdy and ribbed handle provides the user with sufficient support.

The Goliathon 83 has tubing, valves, two stage switching circuits, thermionic resonance chambers, inverse aether flux holding cells, and a Krimble radiator. Its three glass canisters, in yellow, pink and blue, carry residue from missions past.

This is a limited edition piece, handcrafted and made out of metal with some glass parts. It comes with its own velvet lined pressed tin case (which doubles as a display stand), Certificate of Authenticity and an assortment of implements and crafting tools.

The display box is approximately 460mm x 320mm x 140mm (18" x 12.5" x 5.5") *All sizes are approximate*

Displays nicely in its case.

Designed by Greg Broadmore. Sculpted and Built by Dave Tremont.

ADD TO WISHLIST | I OWN THIS

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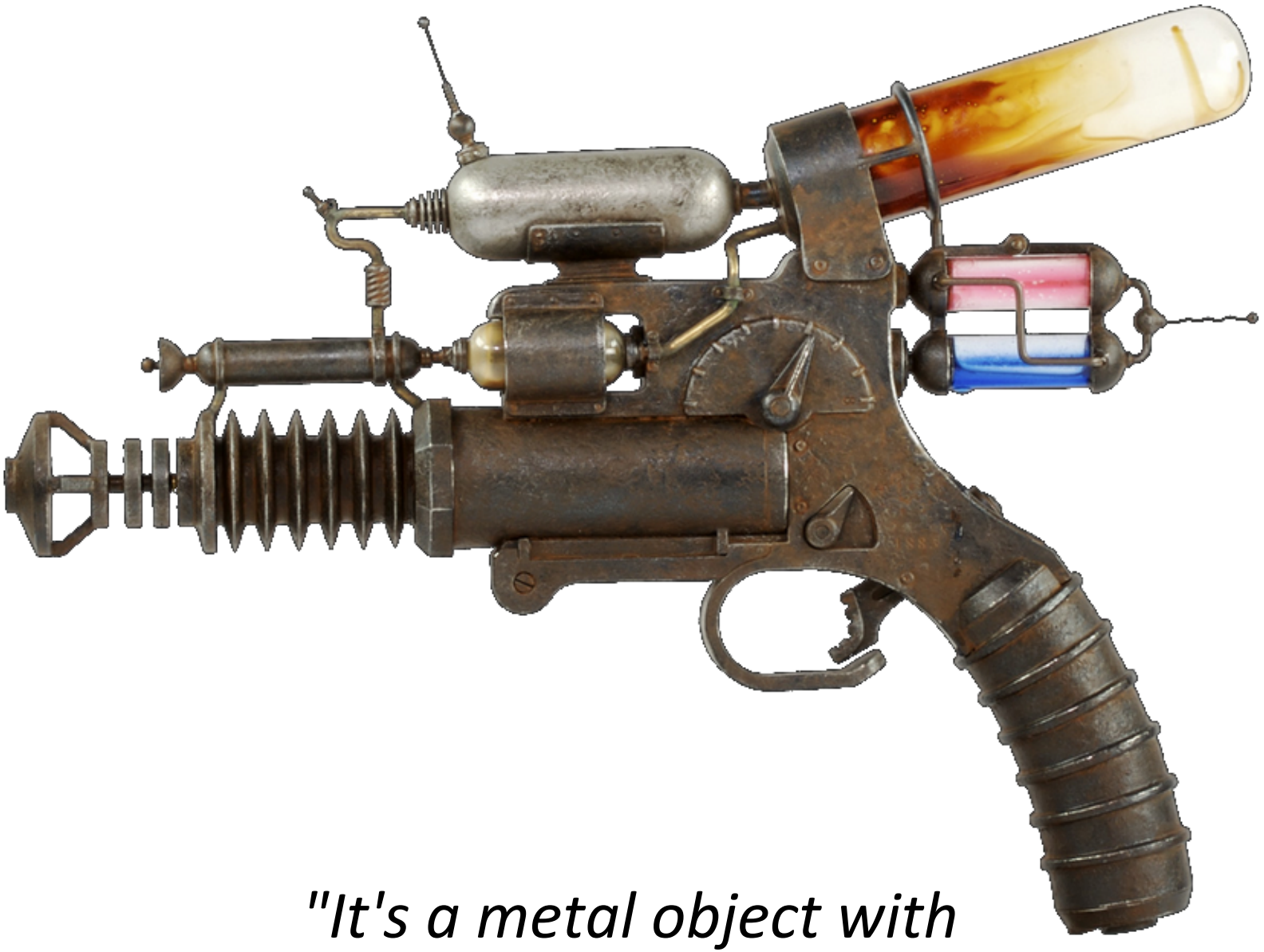
RELATED ITEMS:

- Dr Grordbort's Rayguns - are they from a movie?
- Manmelter 3600ZX - Miniature Edition
- ManMelter 3600ZX Sub-Atomic Disintegrator Pistol
- The Unnatural Selector - Ray Blunderbuss
- Goliathon 83 - Miniature Version
- Victorious Mongoose 1902a Concealable Ray Pistol
- Moon Mistress Limited Edition Print
- The Saturn 17 Limited Edition Print

See all Dr. Grordbort's items

Check Our Museum for Sold Out items



"It's a metal object with glass and wire parts."

Descriptive

An account in words of something, including all the relevant characteristics and qualities.

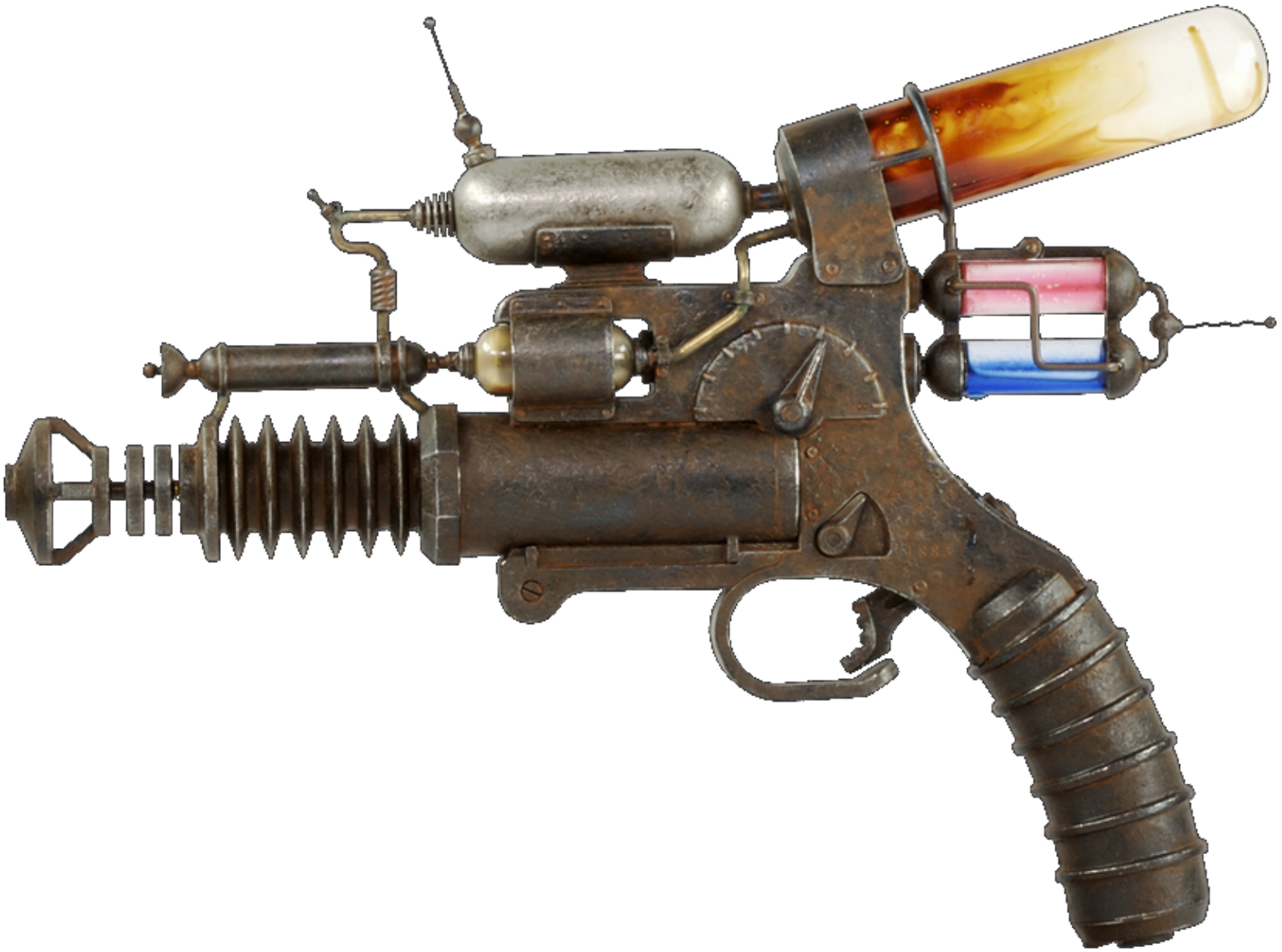
"It's a steampunk thing."

Contextual

Consisting of the circumstances
that form the setting for an entity,
in terms of which it can be
fully understood and assessed.

Steampunk

- "A subgenre of science fiction and sometimes fantasy that incorporates technology and aesthetic designs inspired by 19th-century industrial steam-powered machinery."
- "…often set in an alternative history of the 19th century's British Victorian era or American "Wild West", in a post-apocalyptic future during which steam power has maintained mainstream usage, or in a fantasy world that similarly employs steam power."



Explanatory, causal, or generative

Providing control, influence, or the ability to create specific behavior or state.

"Science is not science fiction. It accepts the tests of observation and experiment, acknowledges the supremacy of fact over wish or hope. The smallest experiment can crash to earth the most attractive theory."

--- Herbert Simon

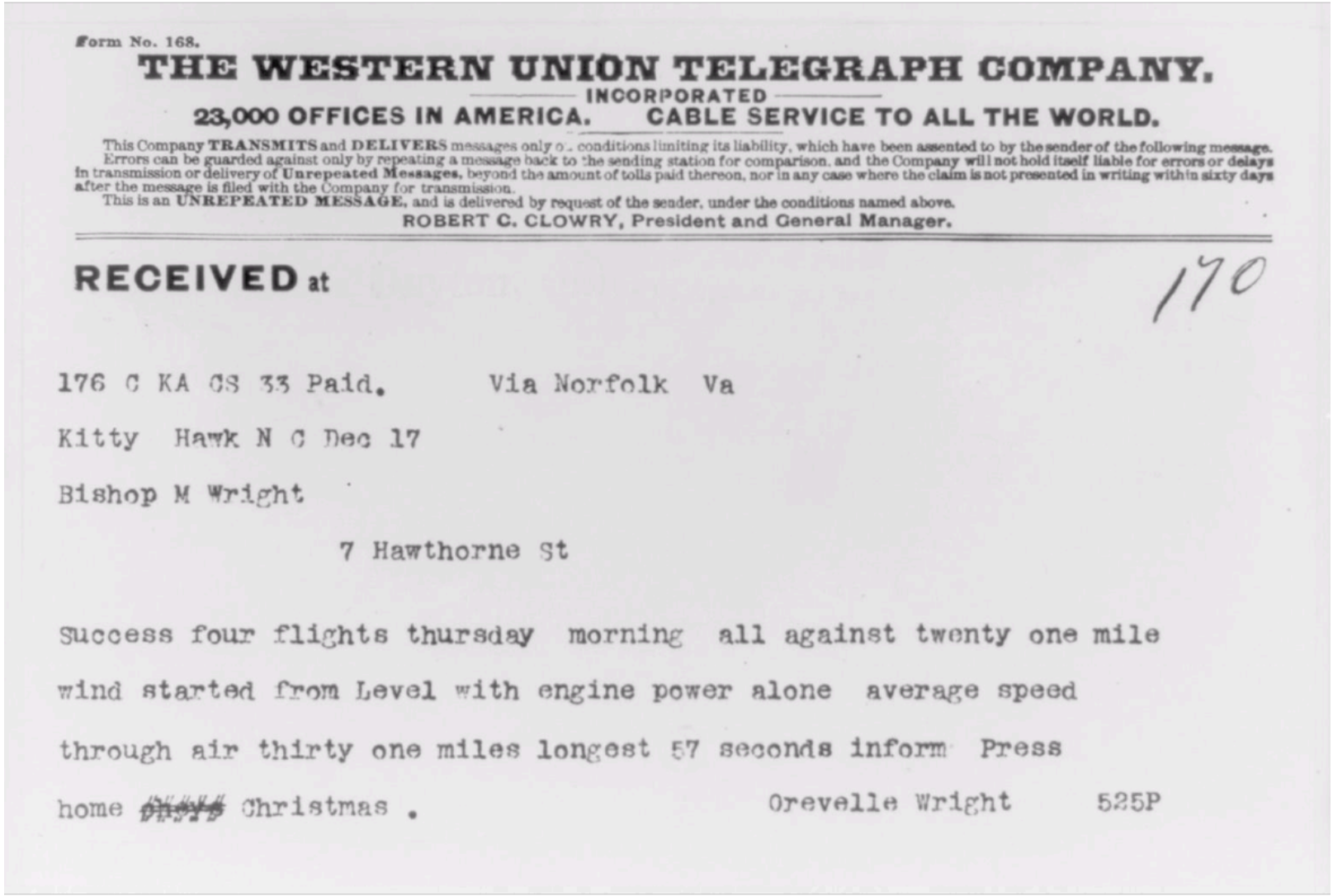
Why practice CS as science?

- Scientific practice provides a limited type of external validation that grounds our work in something other than mere consensual hallucination.
- Scientific practice enables more rapid progress towards things we wish to produce.
  - Explanations: How does that artificial intelligence system work? Why does the internet behave in that way?
  - Guidance: What should we do if we want our streaming video system to not crash when too many people are watching at once?
  - Technologies: How can we build a better integrated development environment? What networking protocol offers the highest performance for peer-to-peer networks?

A brief research communication

Success four flights thursday morning all against twenty one mile wind started from Level with engine power alone average speed through air thirty one miles longest 57 seconds inform Press home ~~#####~~ Christmas .

A brief research communication



Form No. 168.

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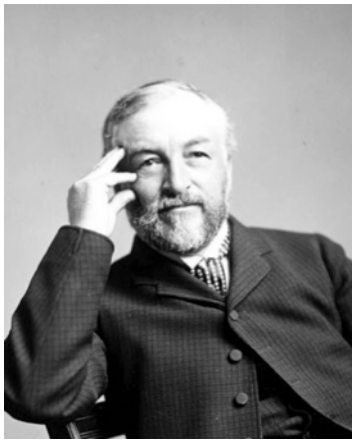
Orevelle Wright 525P

Who would you expect to succeed?

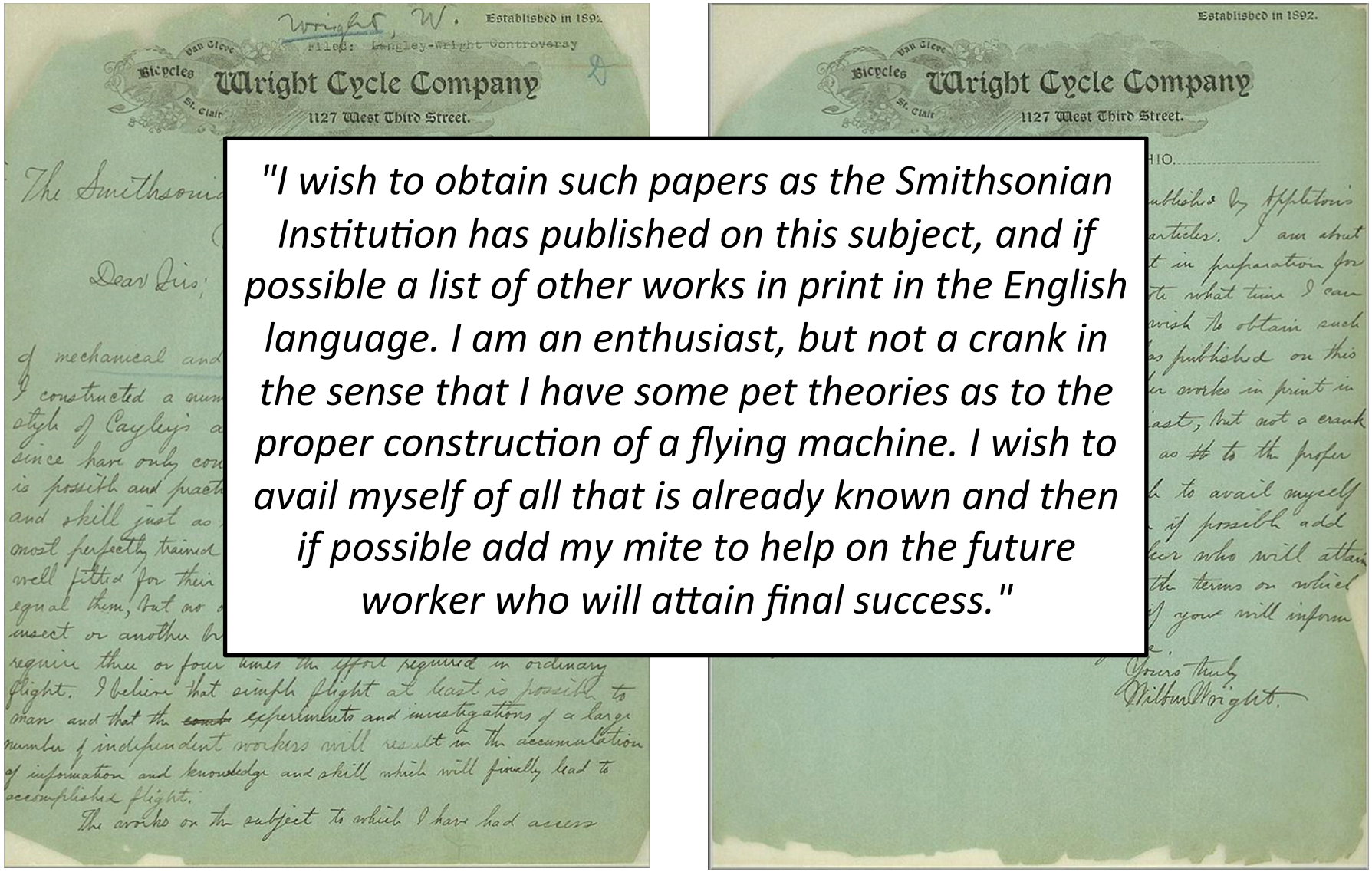


- **Background**
  Renowned astrophysicist & astronomer.
- **Institution**
  Head of the Smithsonian.
- **Funding**
  $50,000 from the US War Department.
- **Prior work**
  An unmanned steam-powered model flew ¾ of a mile in 1896.

- **Background**
  Neither finished high school.
- **Institution**
  Jointly ran the Wright Cycle Company.
- **Funding**
  Self-financed.
- **Prior work**
  None before 1899.

What did the Wrights do right?

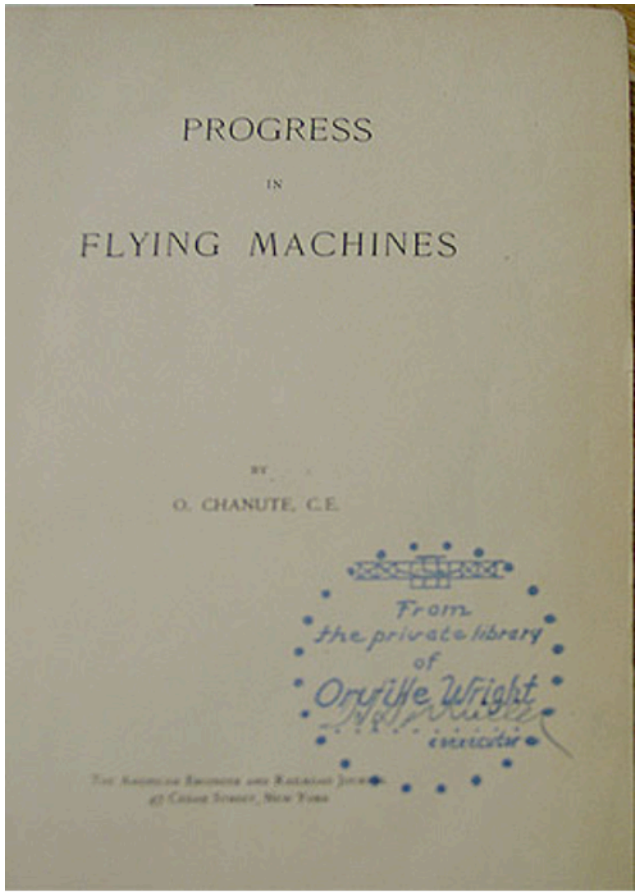
Reviewed what was already known



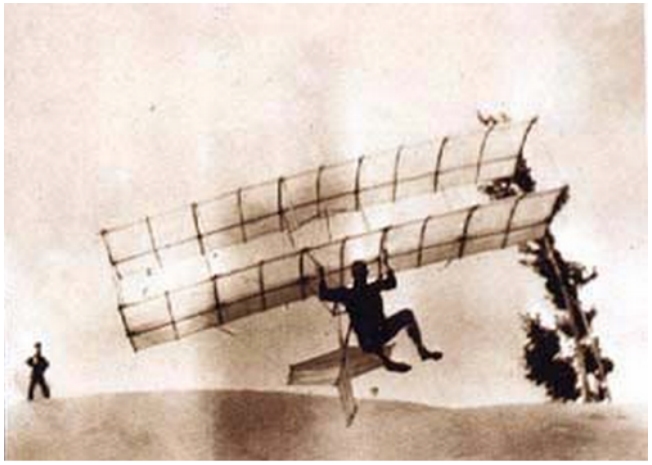
"I wish to obtain such papers as the Smithsonian Institution has published on this subject, and if possible a list of other works in print in the English language. I am an enthusiast, but not a crank in the sense that I have some pet theories as to the proper construction of a flying machine. I wish to avail myself of all that is already known and then if possible add my mite to help on the future worker who will attain final success."

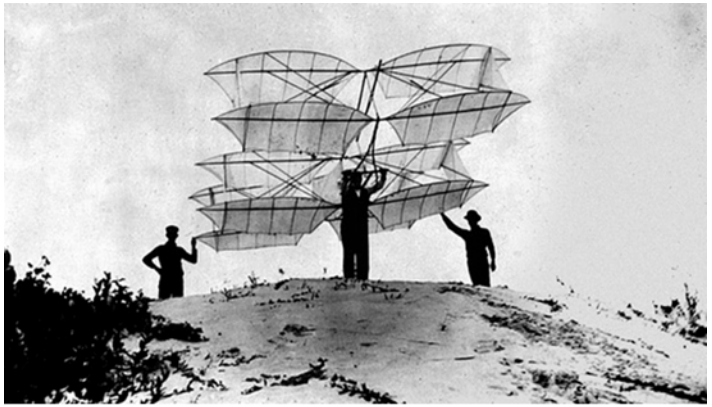
Reviewed what was already known

- Assistant Secretary Richard Rathbun replied with:
  - two books
  - three issues of the only existing journal on the subject
  - four pamphlets
- This was "a compendium of virtually everything that had been done with heavier-than-air flying machines" up to 1896.

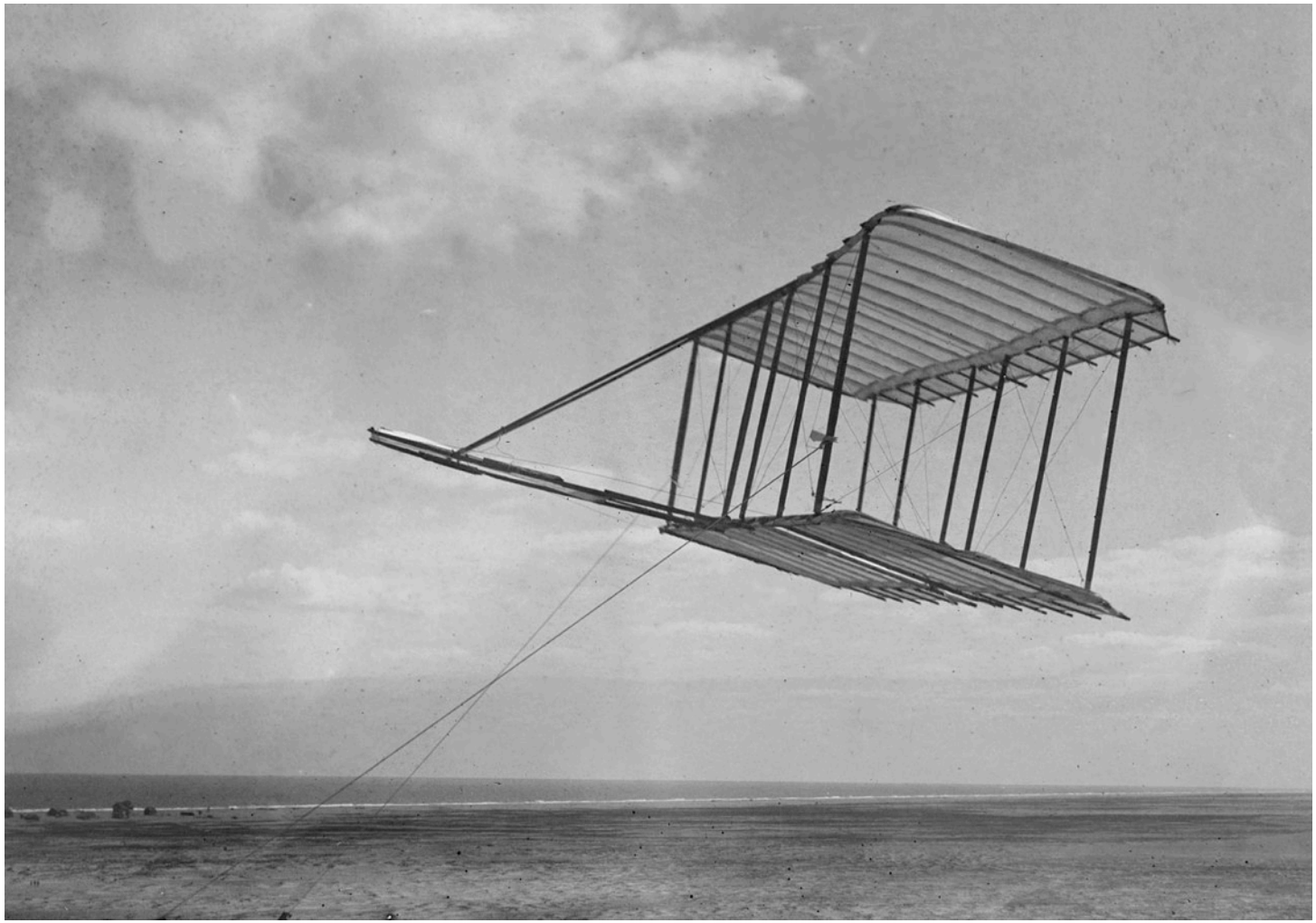


Corresponded with other researchers



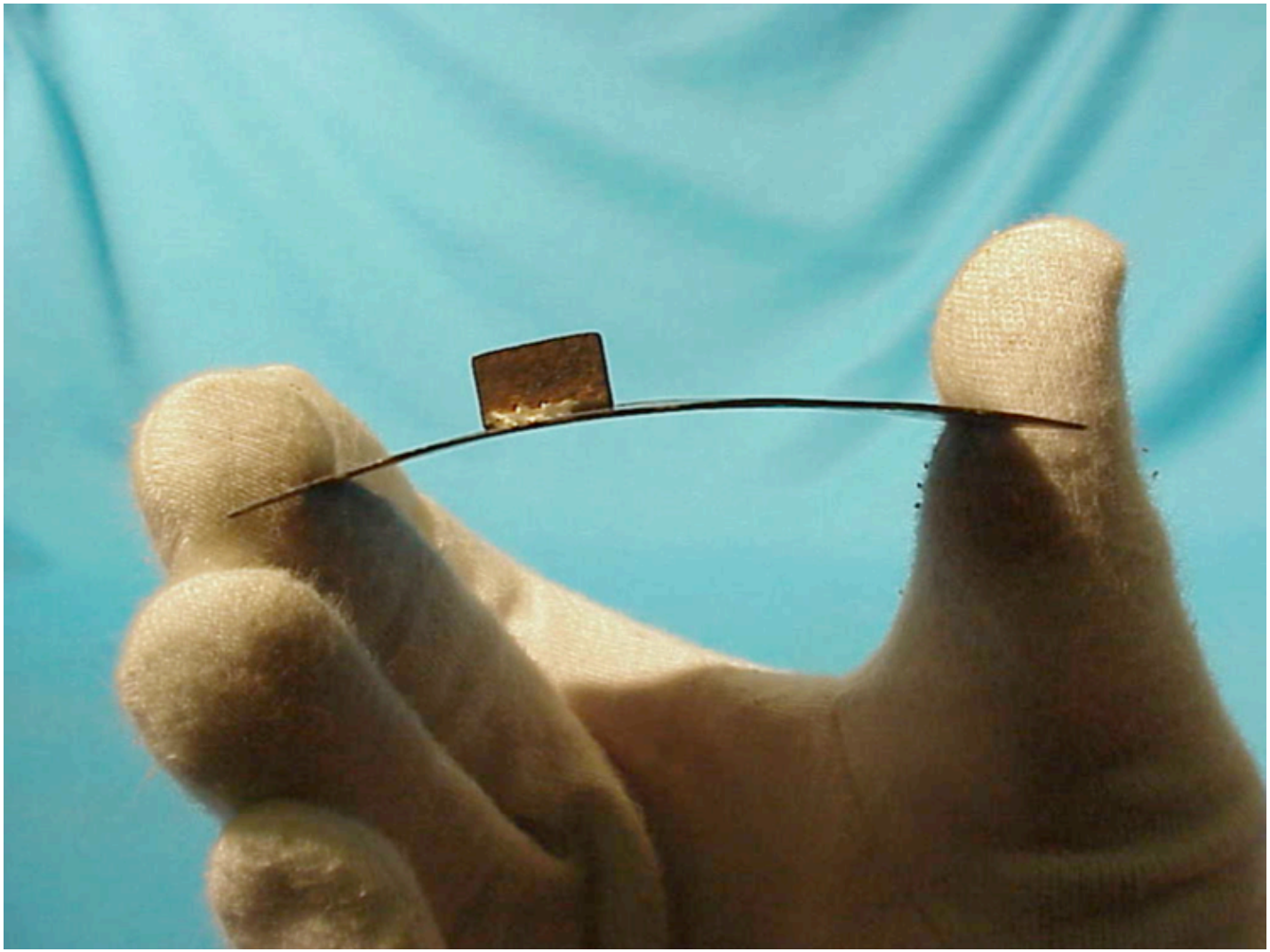


Constructed and tested prototypes

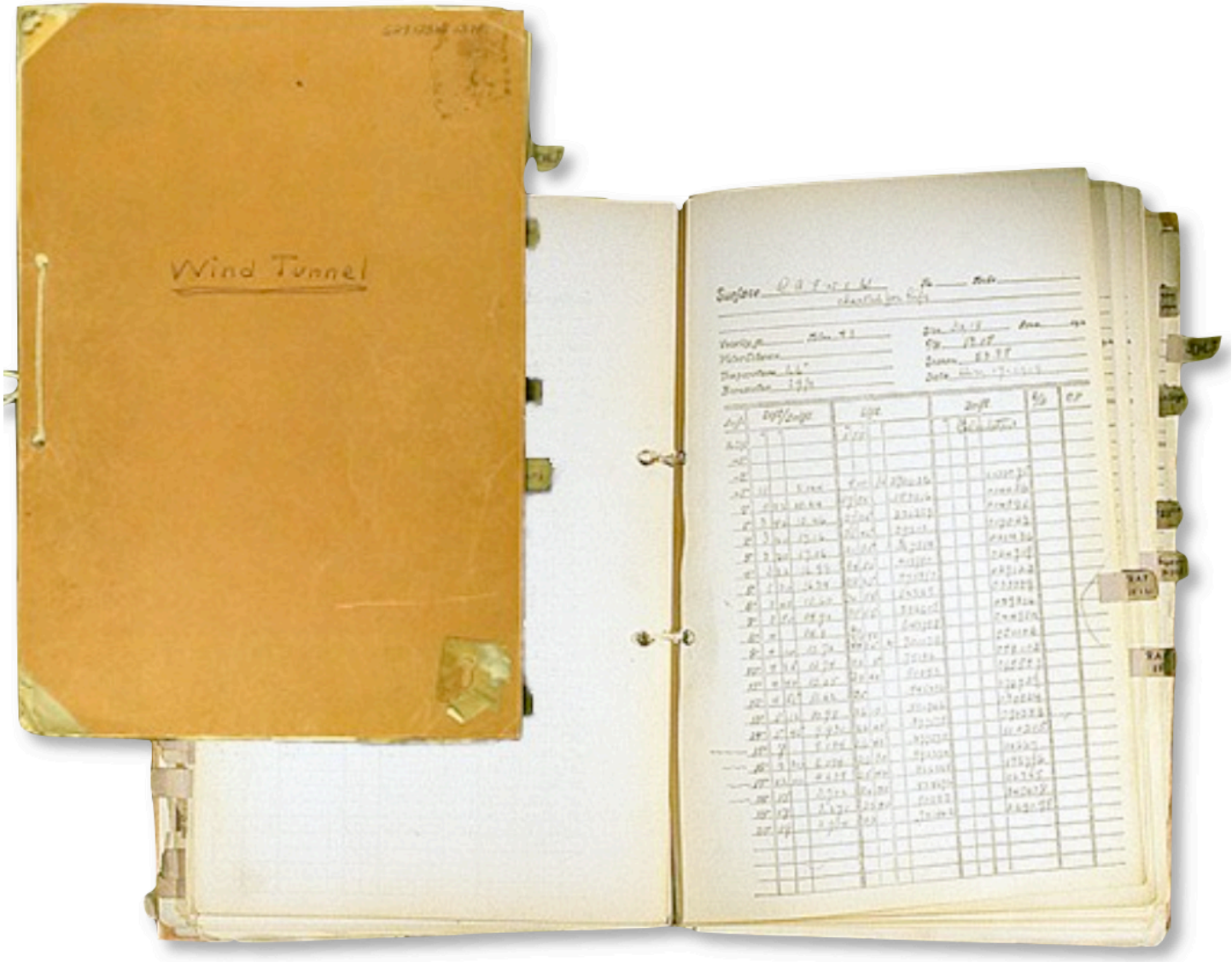


Constructed experimental apparatus

Conducted experiments



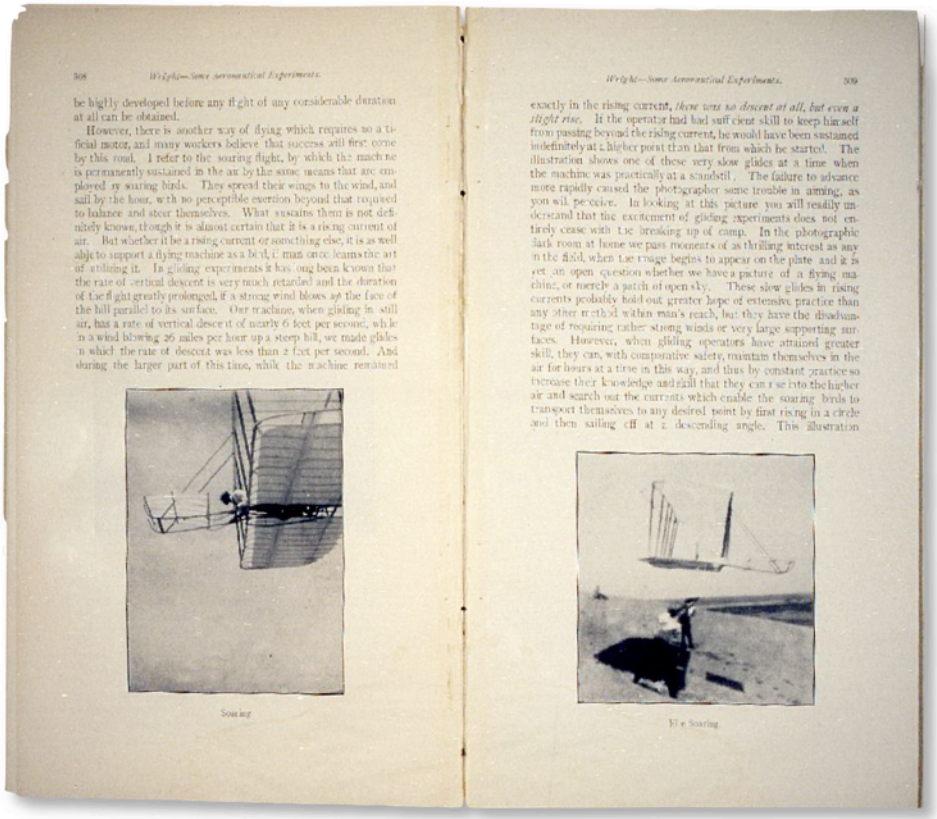
Gathered and analyzed experimental data



Falsified/confirmed prior results

$$L = kSV^2C_L$$

Published intermediate results



Wilbur Wright (1901). “Some Aeronautical Experiments.” *Journal of the Western Society of Engineers* 6:489-508

Overall approach

- Identify key technical challenges that were on the critical path to constructing the desired technology (e.g., control).
- Systematically investigate the underlying principles necessary to address those challenges.
- Apply those principles to construct prototypes.
- Systematically evaluate those prototypes.
- Iterate.

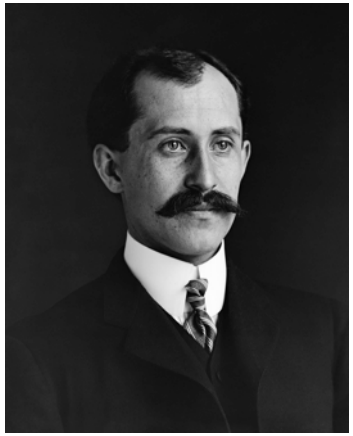
What didn't the Wrights do?

- "Just build it" --- Construct or modify systems without the aim of understanding the basic principles of flight.
- Construct systems in rough analogy to "what's already known to work."

"I cannot think of any part bird flight had in the development of human flight excepting as an inspiration... After we had thought out certain principles, we then watched the bird to see whether it used the same principles.

Learning the secret of flight from a bird was a good deal like learning the secret of magic from a magician. After you once know the trick and know what to look for you see things that you did not notice when you did not know exactly what to look for."

--- Orville Wright (1941)



Synopsis

- Science is not science fiction. We evaluate our work by correspondence to physical reality. Experiments formally evaluate that correspondence.
- Naming, describing, or giving context are less useful than providing causal explanations of underlying function.
- More rapid technical progress can be achieved by seeking an understanding of fundamental principles rather than by using a "just build it" approach.