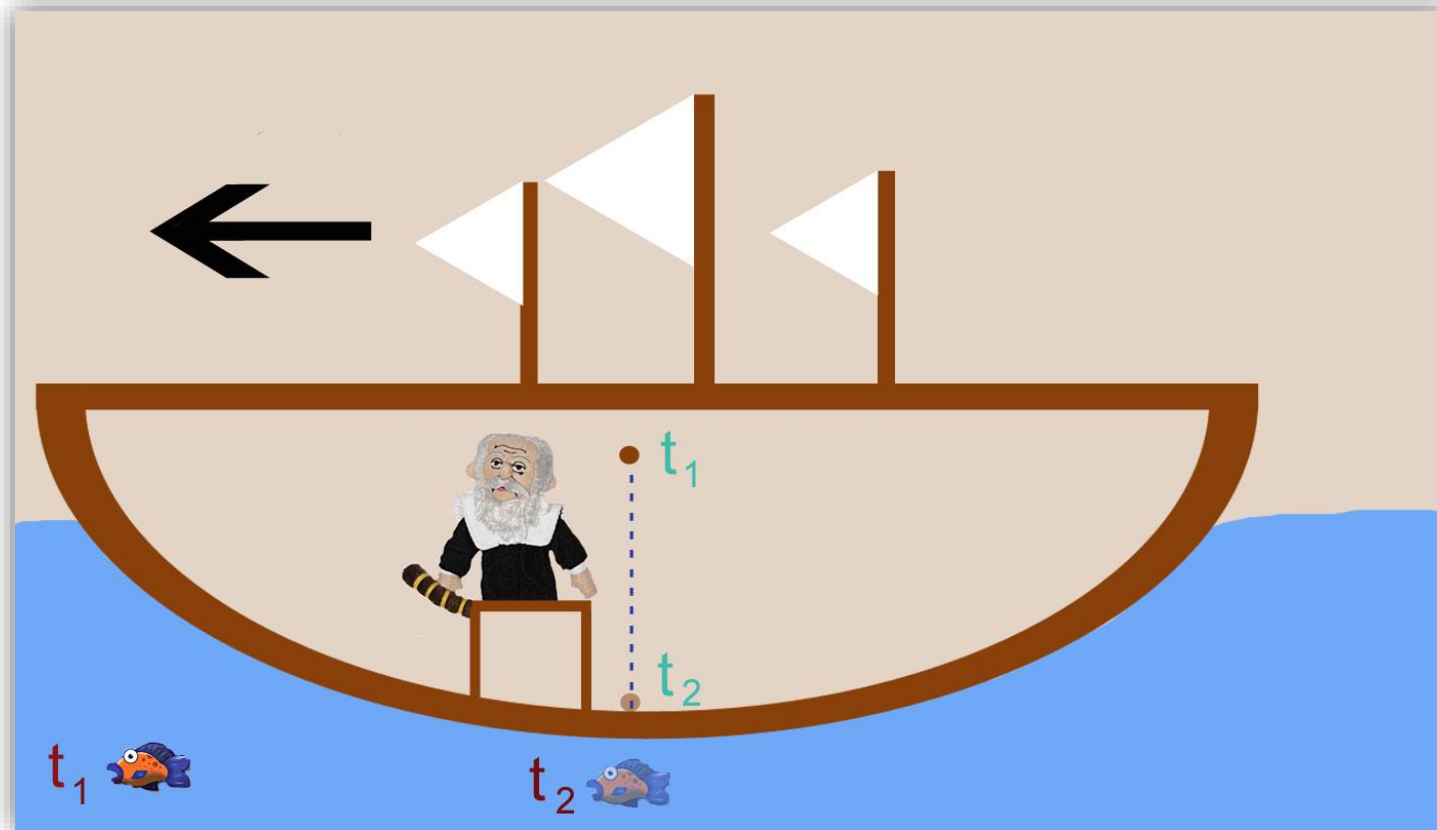


# Cultures of Experimentation in the 17<sup>th</sup> Century

Galileo vs. Boyle



# What Makes an Experiment Valid?

**scientific culture:** agreed upon set of definitions and practices among scientists

definition and practices of valid experiment changed during the 17th century

## What Makes an Experiment Valid?

1. Are thought experiments acceptable or must an experiment involve first-hand sensory experience?
2. Should telos/logic/mathematics drive conclusion? Or should data gathered from sensory experience drive conclusion?
3. Who witnesses the experiment? What makes the witness(es) reliable? Should the experiment be repeatable?
4. How does the scientist *report* the experiment? How much detail? To report errors and problems or not?

# I. Galileo Galilei (1564-1642): *Clever Renaissance Courtier*

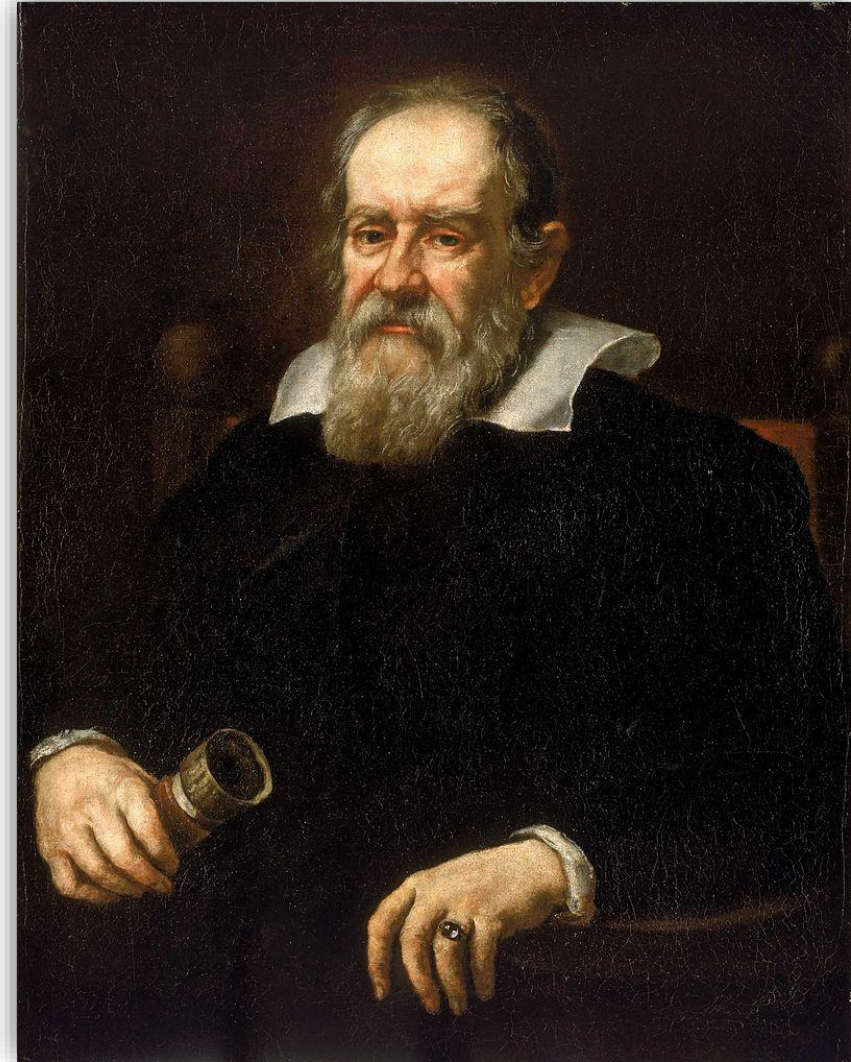
University Trained: Classical/Aristotelian logic and style

Career Goal: rise to position of professor of philosophy

Patron: Grand Duke of Tuscany, Cosimo di Medici

Galileo as a Renaissance Courtier

- competition for social position and favor
- advancement by being witty and entertaining
- broad knowledge of a wide variety of subjects
- conversational style with flourish and embellishment
- polished and refined writing



## II. Robert Boyle (1627-1694): *Nature's Modest Witness*

English nobleman in Ireland (7<sup>th</sup> son – no title!)

Self-made Chemist: private tutoring and undergraduate training

Science Outside the University: Early member of the **Royal Society of London**

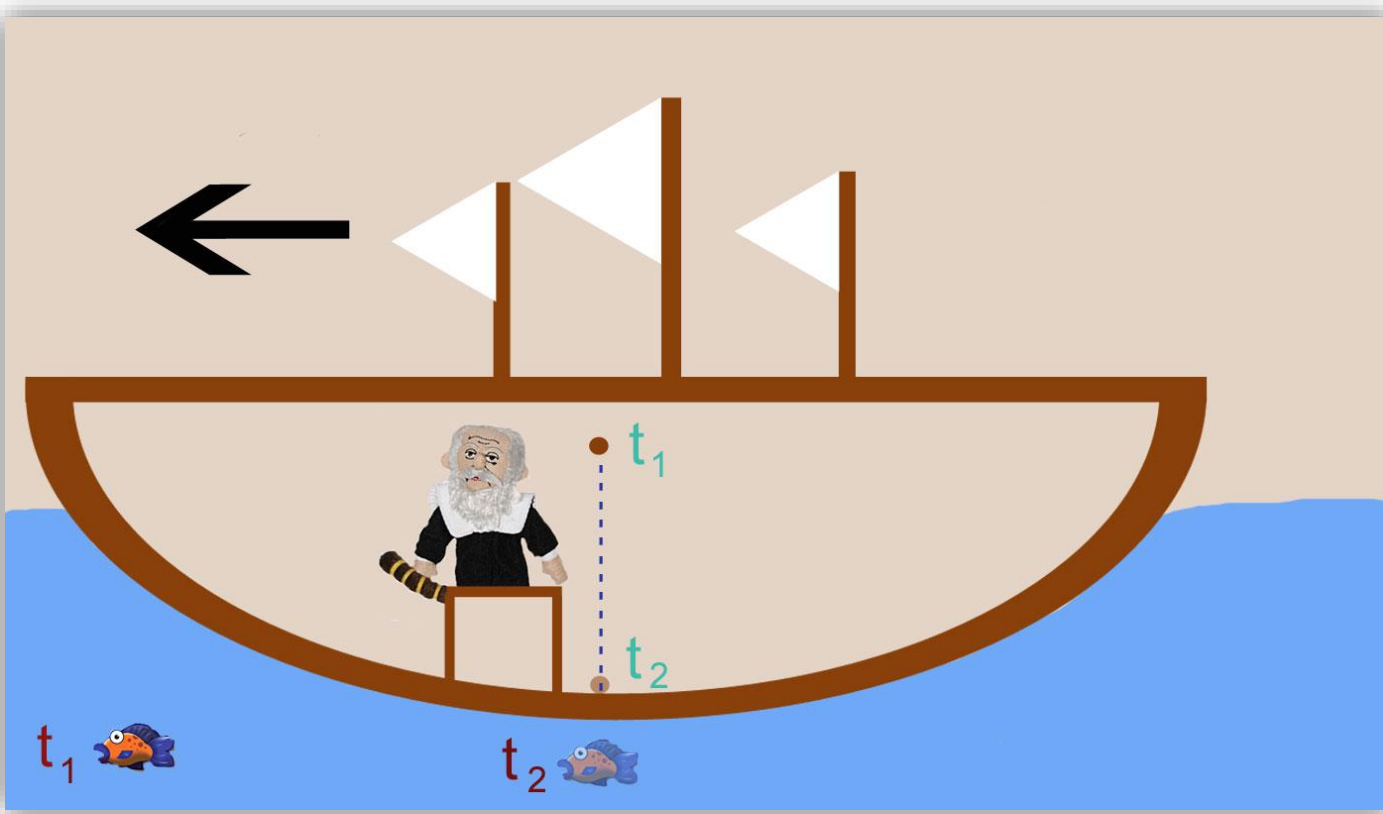
No patron: independently wealthy

Boyle as a 17<sup>th</sup>-Century English Gentleman

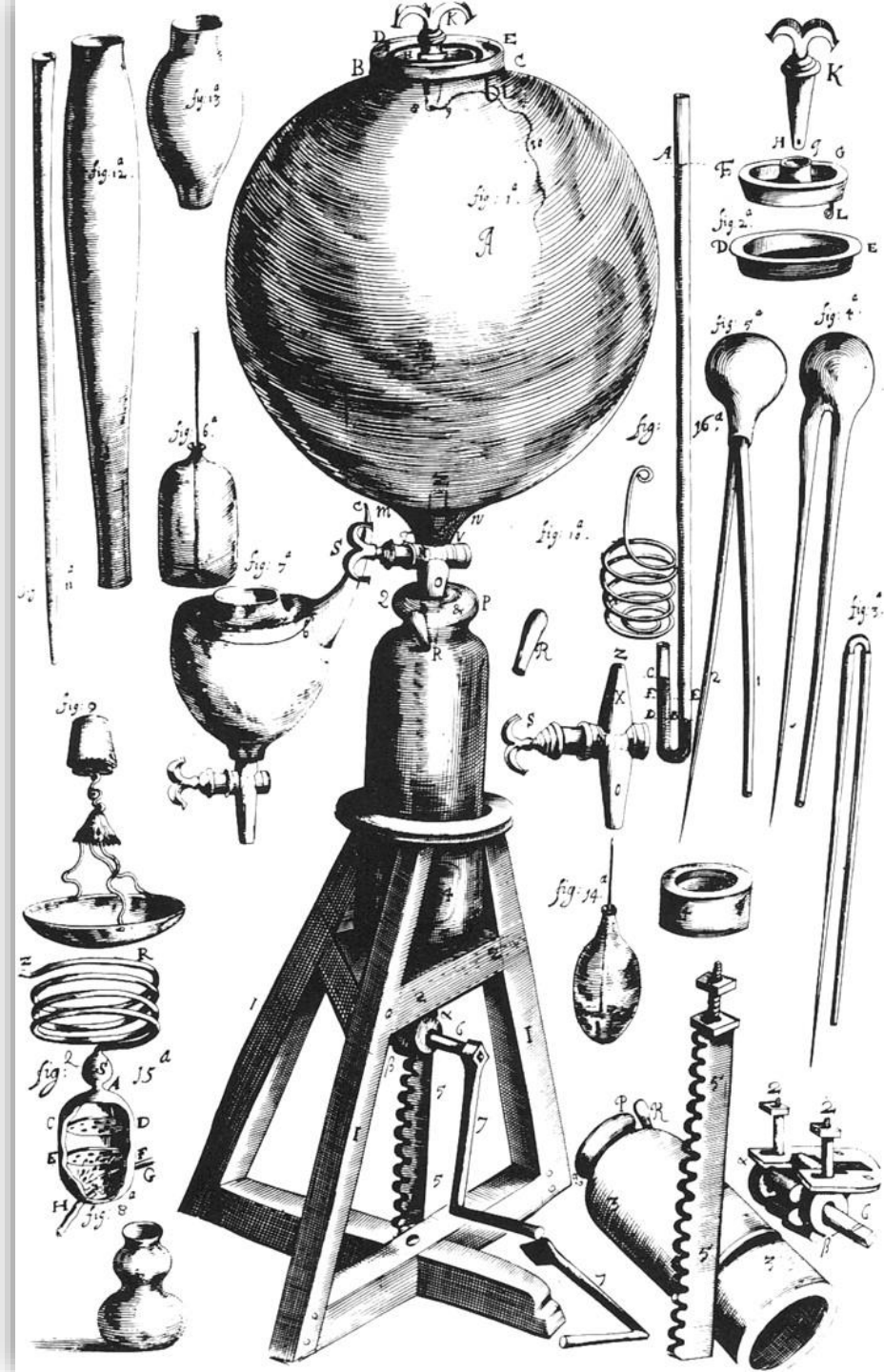
- project image of modesty and truthfulness
- matter-of-fact / no nonsense
- civility among self-sufficient gentlemen
- plain and unadorned writing

Created a new social role for the experimental scientist:  
**nature's “modest witness”**





Galileo's Ship Experiment  
 From: *Dialogue Concerning the Two Chief World Systems* (1632)



Robert Boyle's Air Pump (1661)