

# *Knowledge and Observation*

*distinguishing appearances and reality*



George Matthews, Plymouth State University

2020

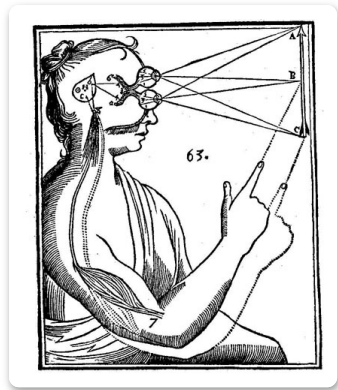


Rene Descartes  
1596-1650

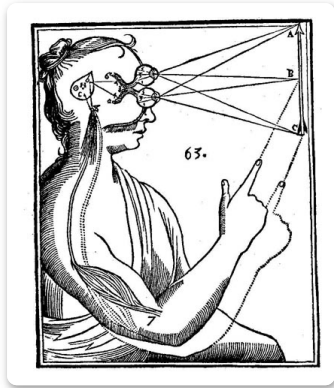
"It is now some years since I detected how many were the false beliefs that I had from my earliest youth admitted as true, and how doubtful was everything I had since constructed on this basis; and from that time I was convinced that I must once for all seriously undertake to rid myself of all the opinions which I had formerly accepted, and commence to build anew from the foundation, if I wanted to establish any firm and permanent structure in the sciences."

*Meditations on First Philosophy, 1641*

## *Descartes' dream*



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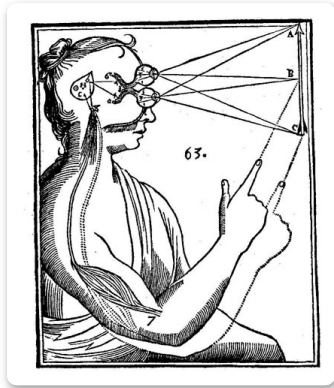
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- But then how can we know anything at all with any certainty?
  - How can I know that I am not dreaming right now, or that reality is not entirely different than the way it seems to me?



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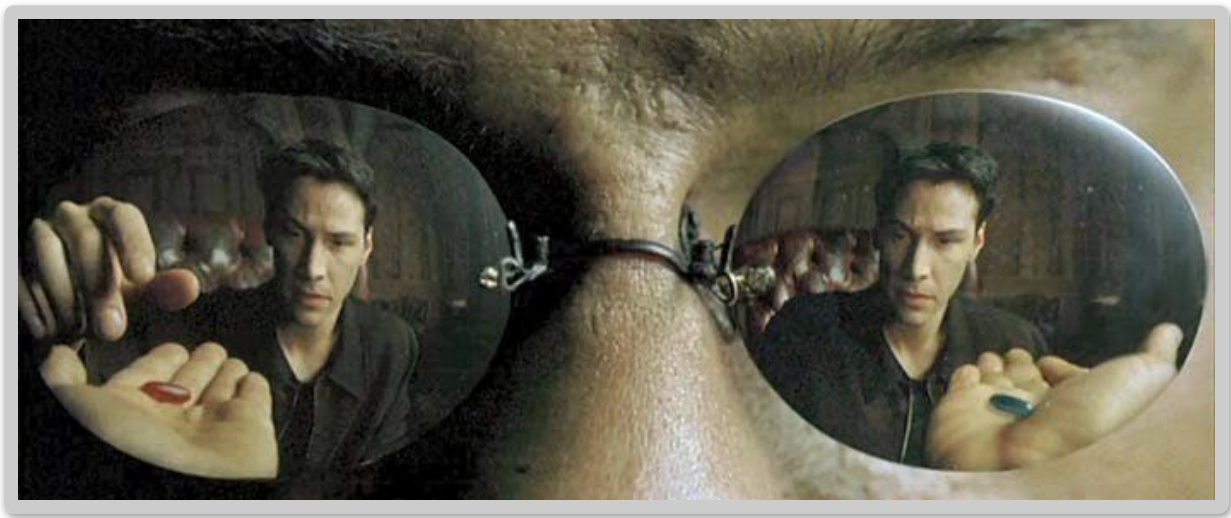
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Galileo Galilei  
1564-1642

"For in the sciences the authority of thousands of opinions is not worth as much as one tiny spark of reason in an individual man. Besides, the modern observations deprive all former writers of any authority, since if they had seen what we see, they would have judged as we judge."

Letter to Mark Wessler, 1612

## *Galileo's clock*



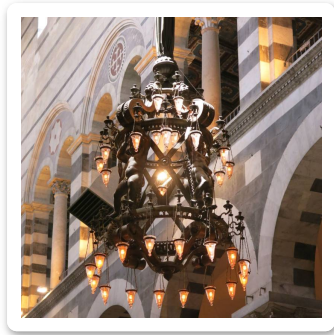


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- But how can we make accurate measurements without already having accurate measuring devices, and how can we tell that *they* are accurate?
- Science describes patterns in nature and needs to distinguish real patterns from only apparent patterns.
- The ultimate reality of things doesn't matter as much as being able to predict and control appearances and this is possible with methodical examination of appearances.

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# A Practical question



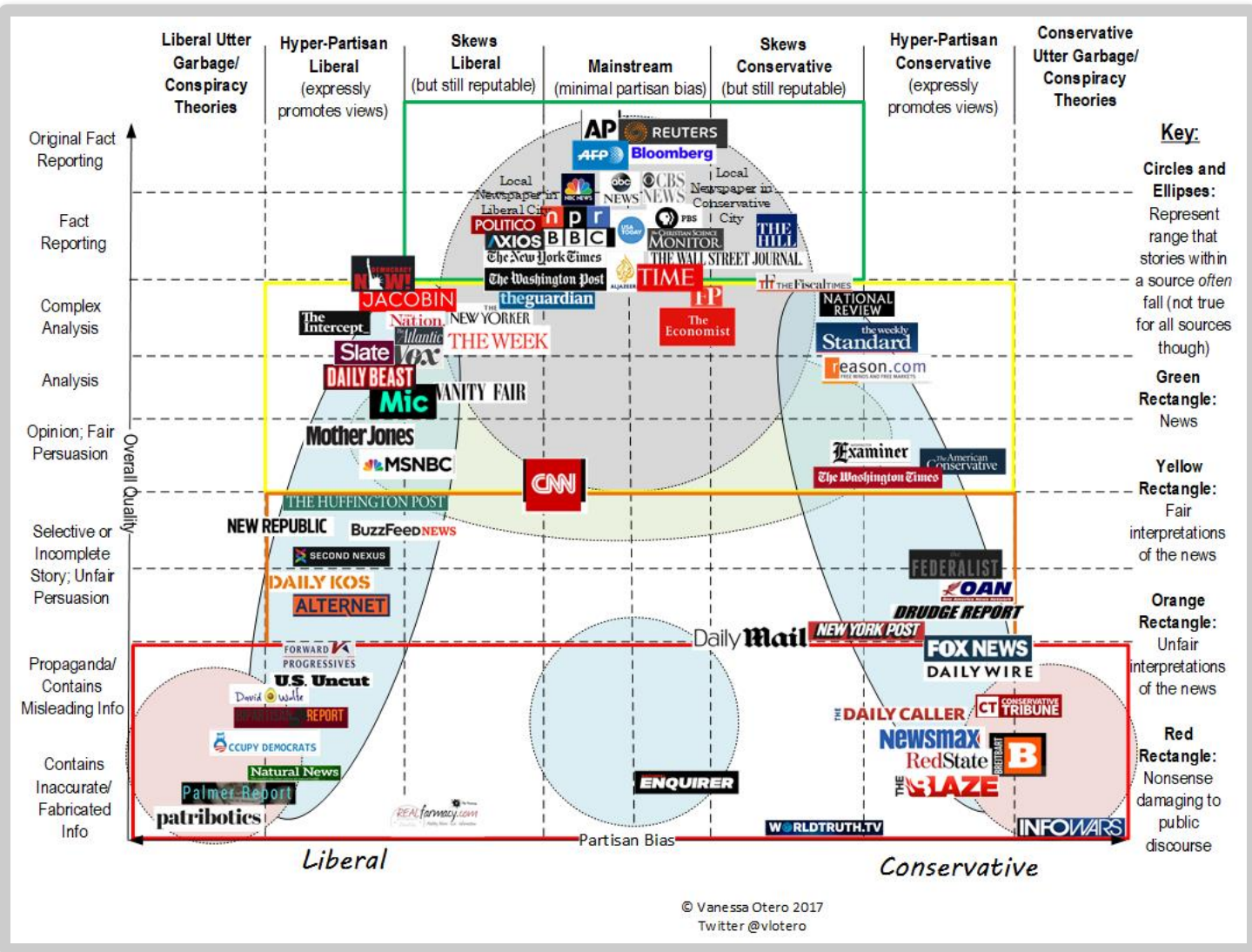
*Given that all sources of news might be biased, how can we figure out who to trust and what might actually be going on in the world?*

# A Practical question



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- Hints: collect data, classify, corroborate





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