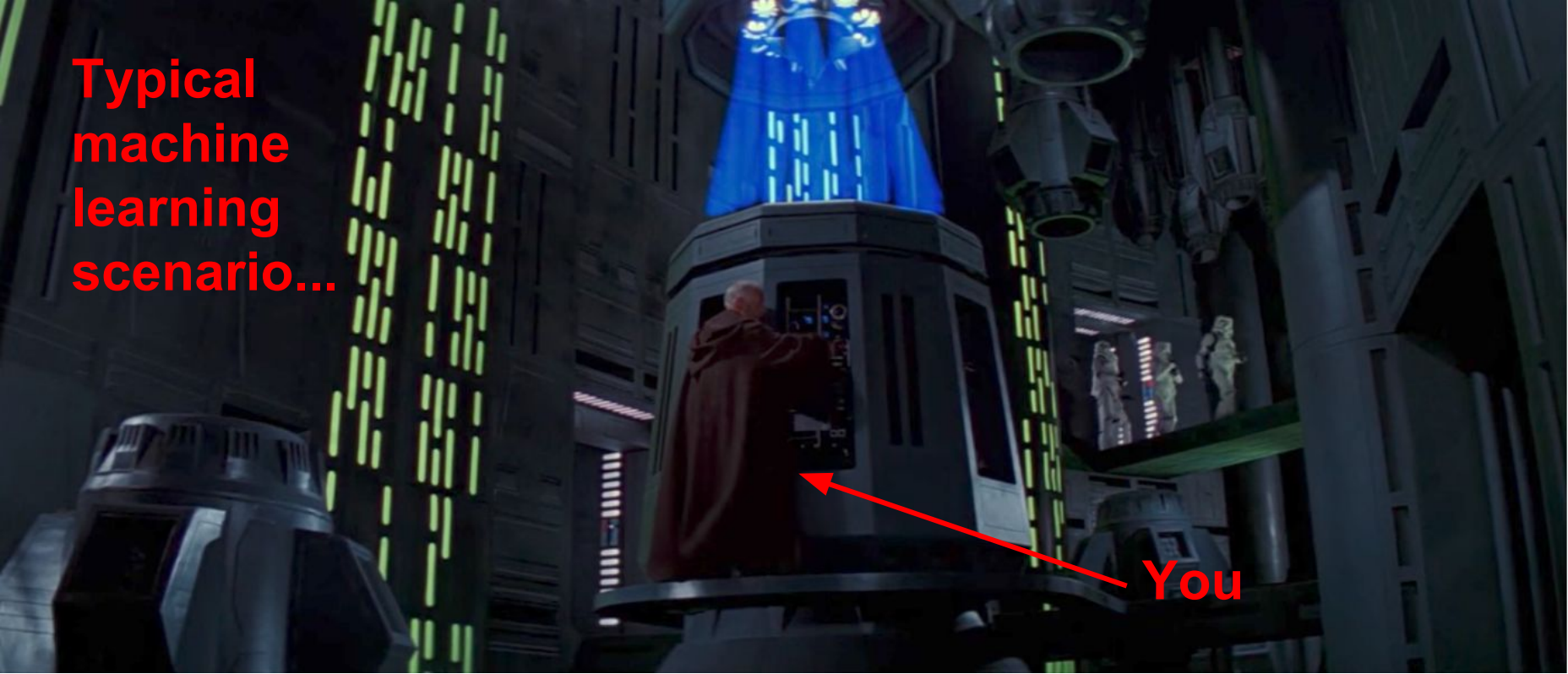
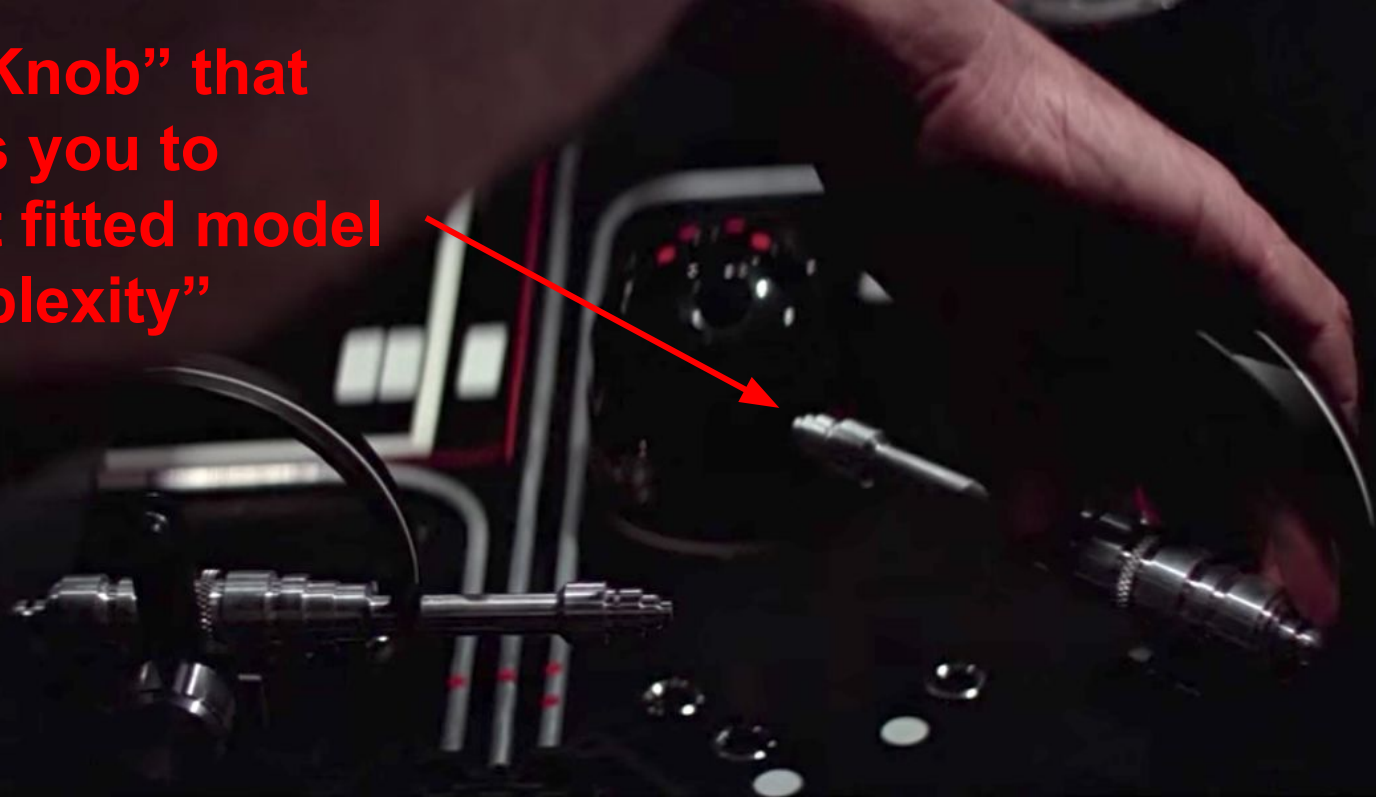


Typical
machine
learning
scenario...



You

**“The Knob” that
allows you to
adjust fitted model
“complexity”**





Low complexity

High complexity

**Underfitting knob settings:
high bias, low variance**



**Underfitting knob settings:
high bias, low variance**

**Overfitting knob settings:
low bias, high variance**



**Underfitting knob settings:
high bias, low variance**

**Overfitting knob settings:
low bias, high variance**



Low complexity

High complexity
**“Just right” setting with
optimal balance / tradeoff**

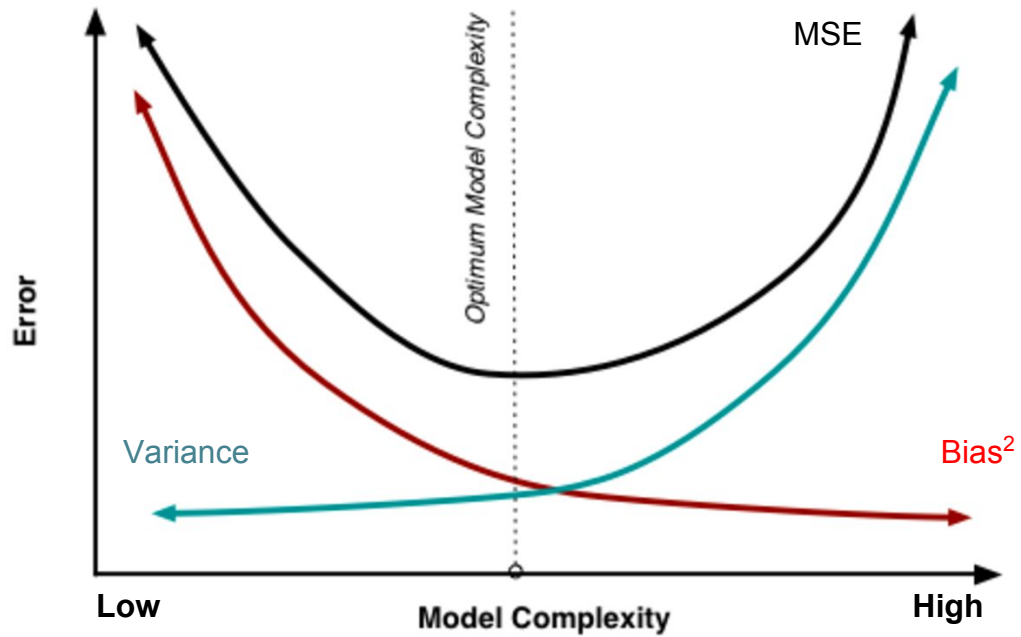
**Question: How does
this “knob” exist?**

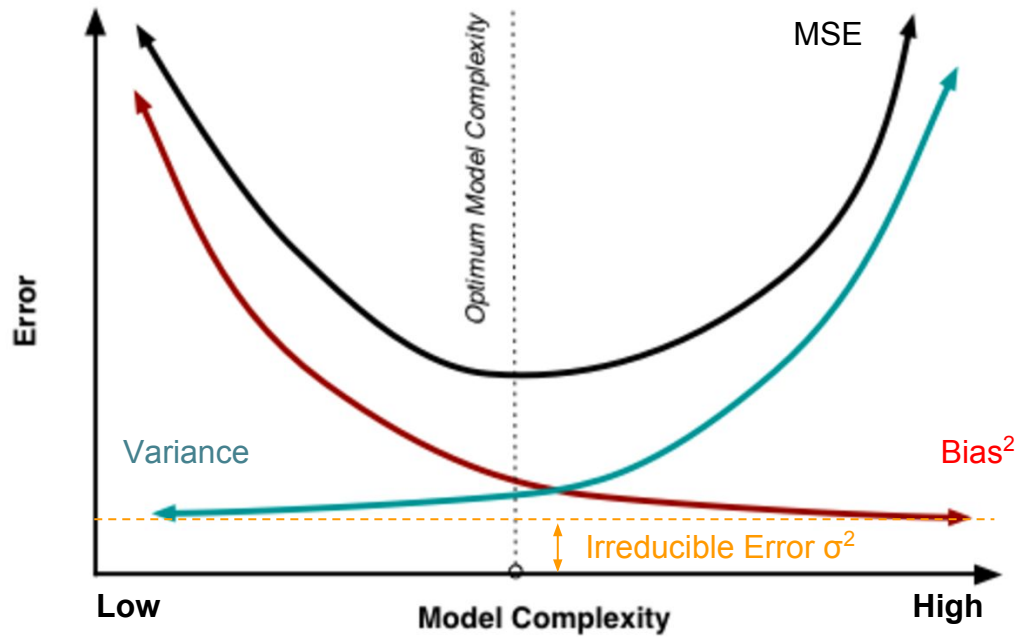


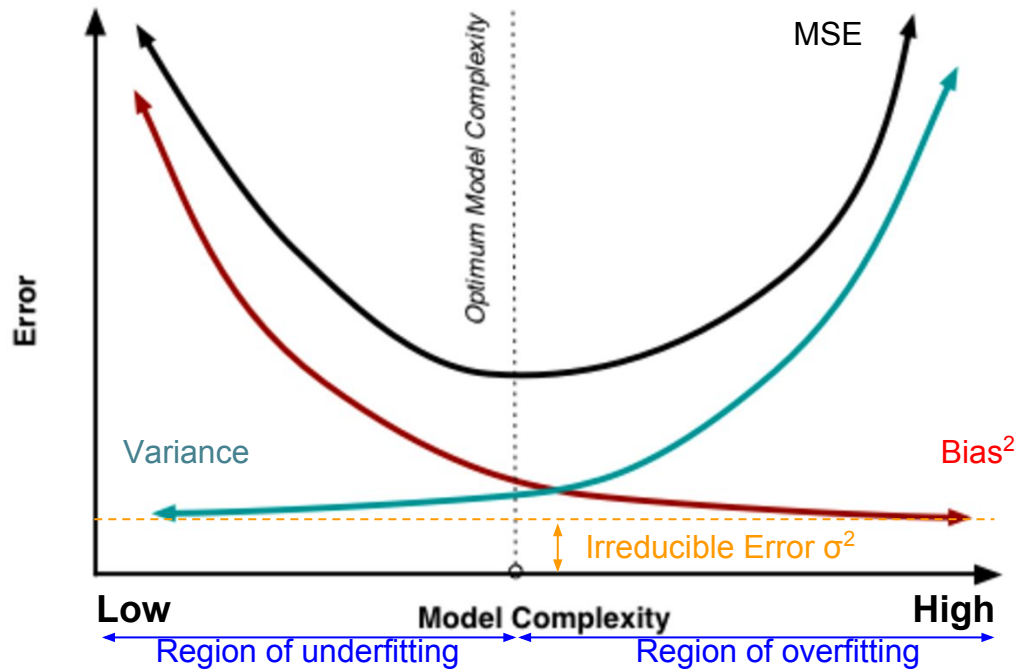
**Question: How does
this “knob” exist?**

**Answer:
Bias-variance
tradeoff
theorem!**









Question:
What if the
signal-to-noise ratio
drops?
i.e. σ^2 increases?



