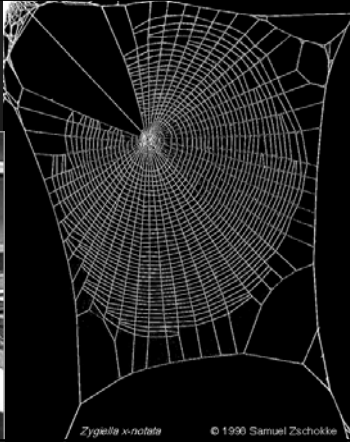
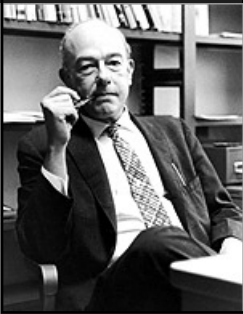


Web of Belief



Forming New Beliefs

- Immediate observations.
- Inferred beliefs
- “Hypotheses”
- Conjectures that go beyond observations.
- What makes for a good conjecture?
- Six “Virtues” of hypotheses.

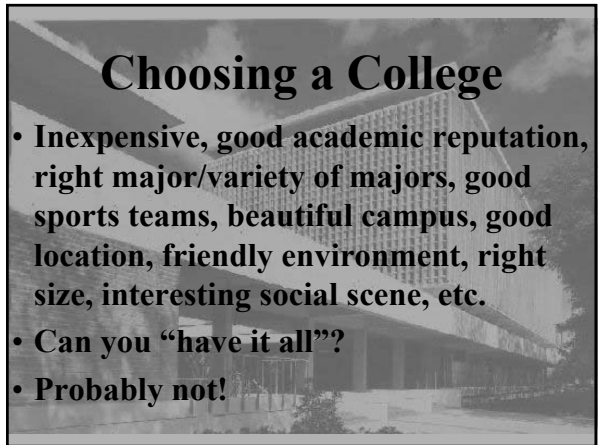
Choosing a College

- “Virtues” of colleges.
- What you are *looking for* in a college.



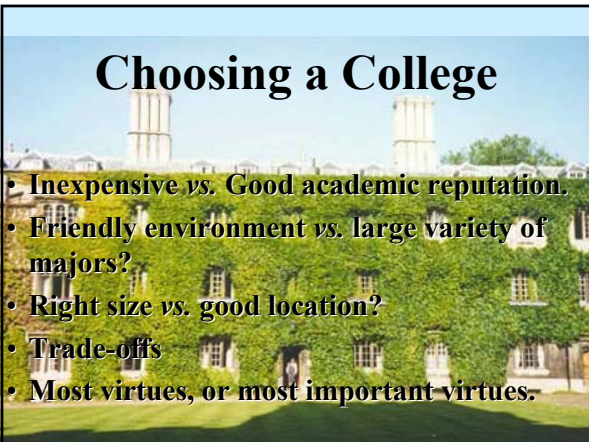
Choosing a College

- Inexpensive, good academic reputation, right major/variety of majors, good sports teams, beautiful campus, good location, friendly environment, right size, interesting social scene, etc.
- Can you “have it all”?
- Probably not!



Choosing a College

- Inexpensive vs. Good academic reputation.
- Friendly environment vs. large variety of majors?
- Right size vs. good location?
- Trade-offs
- Most virtues, or most important virtues.



Choosing a College

- Why did you end up at Virginia Tech?



Forming New Beliefs

- “Choosing” a spouse.
- “Virtues” of spouses:
- Physically attractive, intelligent, trustworthy, fun-loving, nice, focused, spontaneous, etc.
- Can you “have it all”?
- Trade-offs

Forming New Beliefs

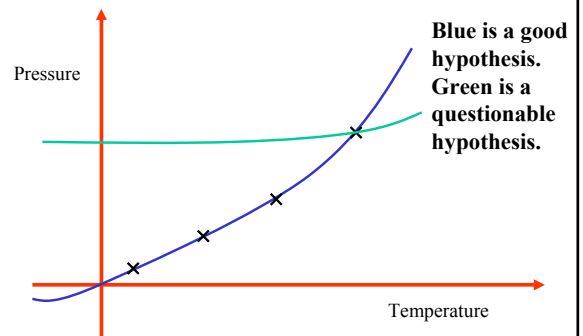
- “Choosing” a hypothesis:
- What are we looking for in a hypothesis?
- Fits well with what we know.
- Helps make sense of what we know.

hypothesis

Quine’s 6 Virtues of Hypotheses

Conservatism

Conservatism



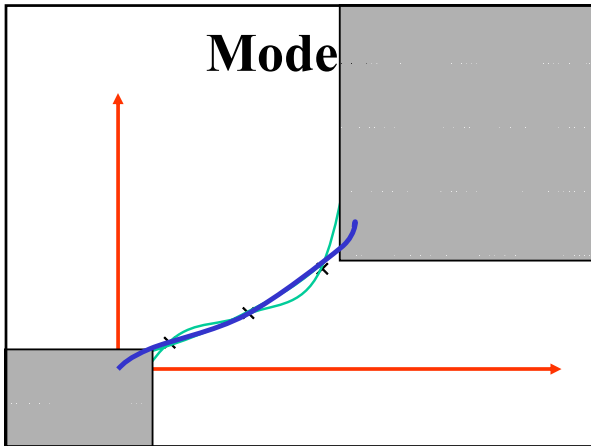
Quine’s 6 Virtues of Hypotheses

Conservatism: Don’t deviate from your established evidence or beliefs unnecessarily.

Quine’s 6 Virtues of Hypotheses

Conservatism

Modesty



Quine's 6 Virtues of Hypotheses

Conservatism

Modesty: Don't get carried away too much beyond the evidence you have to work with.

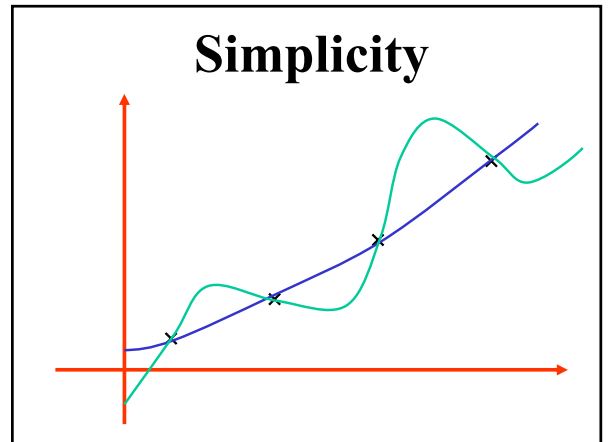
Extrapolate carefully.

Quine's 6 Virtues of Hypotheses

Conservatism

Modesty

Simplicity



Simplicity

Quine's 6 Virtues of Hypotheses

Conservatism

Modesty

Simplicity: Don't add things beyond what's necessary to account for the evidence you are working with.

Interpolate carefully.




Pierre LaPlace (1749-1827)
French mathematician

"I have no need of that hypothesis!"

Quine's 6 Virtues of Hypotheses

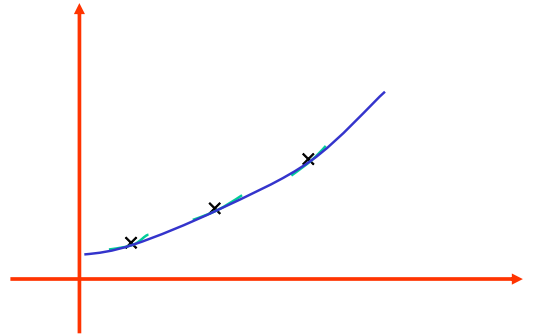
Conservatism

Modesty

Simplicity

Generality

Generality



Quine's 6 Virtues of Hypotheses

Conservatism

Modesty

Simplicity

Generality: **Don't make hypotheses so specific that they only cover the evidence at hand.**

Avoid "ad hoc" hypotheses.

Quine's 6 Virtues of Hypotheses

Conservatism

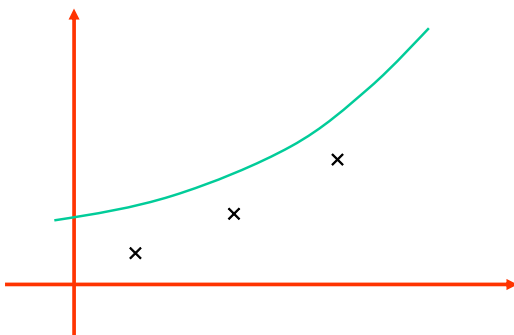
Modesty

Simplicity

Generality

Testability = Refutability

Testability



Testability

- Testability is more a matter of how the hypothesis is treated by the person who holds the hypothesis.
- Is the person willing to consider contrary evidence, or is potentially contrary evidence *always explained away*?
- Article of *Faith*, rather than hypothesis.

“The Dead Parrot Sketch”



Testability

- Religion: Problem of Evil
- Santa Claus brings us presents.
- Horoscopes: “You can make progress if you deal with the *right* individuals.”
“Hidden assets can be doubled if you play your cards *right*.”
- Psychics: If it didn’t happen, it’s because other factors intervened.

Quine’s 6 Virtues of Hypotheses

Conservatism

Modesty

Simplicity

Generality

Testability: **Don’t be dogmatic.**
Take contrary evidence seriously.

Quine’s 6 Virtues of Hypotheses

Conservatism

Modesty

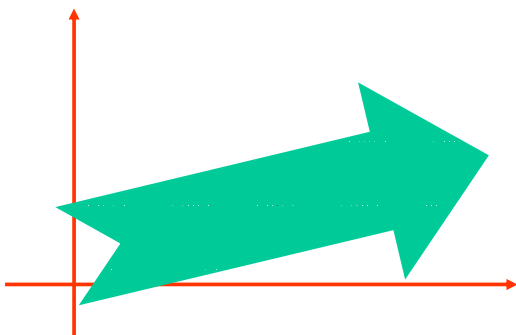
Simplicity

Generality

Testability

Precision (p. 98.)

Precision



Precision

- Horoscopes:
- “Love *can* be yours if you get out today.”
- “Observe and you will learn.”
- “Pleasure trips will *promote* romance.”

Quine's 6 Virtues of Hypotheses

Conservatism

Modesty

Simplicity

Generality

Testability

Precision: Don't be excessively vague.

Quine's 6 Virtues of Hypotheses

A good hypothesis is one that does well in light of the six virtues of hypotheses.

God exists?

All my experiences are part of a dream?

Computer-robots could think?