Logic and Computers
• New Logic Problem set up on Blackboard.
• Questions?
• Please read fallacy detective 25-27
• Quizzes return in 2 weeks (Tuesday before thanksgiving)
  – Final on Dec 12 in this class(really early)
  – Look at calendar
Analogies

- Last time we talked about analogies
  - Just like equivocation is sometimes used for humor purposes,
  - Poetic analogies are analogies that are clearly not good and meant for poetic/humorous purposes to make a point but not argue a point
  - Eg:
    - “The difference between java and javascript is the difference between car and carpet”
Analogies

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  - Eg:
    - “The difference between java and javascript is the difference between car and carpet”
    - Makes point that the two sound the same but are completely different.
      - Ode to one in your book from mark twain
Strong vs Weak Analogy

- Analogy is strong if the two things are alike in bigger important ways and unlike and minor ways.
- Analogy is weak if the two things being compared are similar only in less important things.
  - What is important partly depends on “the question”
Let's see how 'the question' affects things

- Look at this picture:
  - These two are alike in some ways but quite different in others.
  - Give me a ‘question’ we could use these two with a strong analogy?
  - And now a weak analogy?
Lets see how ‘the question’ affects things

• Look at this picture:
  - These two are alike in some ways but quite different in others.
  - Mine:
    - Strong: Dr. Ishiguro has a mole on his left arm, I’ll be the geminoid does as well.
    - Weak: Dr. Ishiguro has a daughter, I’ll be the geminoid does as well.
Weak Analogy

- Claims that items with minor similarities are the same in nearly everything else
- Sometimes analogies can be made stronger or weaker by additional information
- Weak Analogy also called
  - False Analogy
  - Questionable Analogy
Defeating Weak analogies

- Often can defeat weak analogies by simple extending
  - Glenn Tropicana is an investment adviser and he is giving a sales pitch to a couple of prospective clients, Sheila and Dennis. Glenn is trying to persuade them to sign up for a regular monthly contribution to an investment scheme. The scheme may or may not be suspect – that is not the issue here.
  
  - During his spiel, Glenn states: "You know what happens with a steady drip of water into a bucket... before you know it the bucket's full. If you invest only $200 a month, in no time you will have a great nest-egg."
  
  - Dennis replies: "That's all very well, but what if there's a hole in the bucket that we don't know about?"
Exercises

- In these tell me what two things are being compared by analogy, what the relevant similarities are and finally if it is a strong or weak analogy
  - People who cannot go without their coffee every morning are no better than alcoholics.
Exercises

- In these tell me what two things are being compared by analogy, what the relevant similarities are and finally if it is a strong or weak analogy
  - People who cannot go without their coffee every morning are no better than alcoholics.
  - **Two things compared:**
    - People who are coffee addicts
    - People who are alcohol addicts
  - **Similarities**
    - People who often consume an excess of a beverage
  - **Weak analogy**
    - Though both are beverages that affect brain functions, differences in the way they affect the brain are just too big
Exercises

- In these tell me what two things are being compared by analogy, what the relevant similarities are and finally if it is a strong or weak analogy
  - People who cannot go without their coffee every morning are no better than alcoholics.
  - "I think people who use the toilet stall designed for people with physical disabilities should be fined. After all, that's what we do to people who use their parking spaces."
Exercises

- In these tell me what two things are being compared by analogy, what the relevant similarities are and finally if it is a strong or weak analogy
  
  "I think people who use the toilet stall designed for people with physical disabilities should be fined. After all, that's what we do to people who use their parking spaces."

  - Compared:
    - Parking spaces reserved for those with physical disabilities
    - Bathroom stalls that accommodate folks with physical disabilities

  - Similarities:
    - Both designed to accommodate those with physical disabilities
Exercises

• In these tell me what two things are being compared by analogy, what the relevant similarities are and finally if it is a strong or weak analogy

The new animal is like a sheep:
Therefore:
It’s a suitable addition to the flock!
Next longer

- This next analogy requires setup
- When we see the whole thing let's talk about strong weak/what is being compared etc.
Ascii and Character Sets

- American Standard Code for Information Interchange
  - original universal character set for computing
  - developed in early 1960s
  - mandated for all computers sold in US by Johnson in 1968
  - remained dominant till mid-1990s
  - 7-bit character set
    - 127 total characters possible
    - see printed chart of ascii characters
Ascii and the world

- US was largest consumer of computers in world in 1960s-1980s.
  - ASCII on all of them
  - many seminal programming languages developed in that time
  - what is the side effect?
Ascii and the world

- US was largest consumer of computers in world in 1960s-1980s.
  - ASCII on all of them
  - many seminal programming languages developed in that time
  - what is the side effect?
    - English became the de facto language for programming for a long time.
    - and for computer use
- issues?
Maybe some from book

- p159
Post Hoc Ergo Propter Hoc

- So now we are dealing with Milspecs never die phenomenon
  - Lets talk about US railroads
  - Once all logic in western world was done in latin (and all scholarship)
  - Now English
  - This name Post Hoc Ergo Propter Hoc developed then and stuck
Post Hoc Ergo Propter Hoc

- Literally Post Hoc Ergo Propter Hoc translates to “After this, therefore because of this”
- In more modern language:
  - A came before B therefore I think A caused B
- Sometimes just called post hoc fallacy
  - Eg:
    - Radio came before television, therefore Radio caused television to be invented
    - When we take it to extremes it is apparently how silly this is
Examples

• Post Hoc, Similar to assuming correlation leads to causation
  – Kevin's dog scratched his leg, and that night he had a fever. Kevin concluded that his dog must have infected him with something.
  – And the ever popular:
    • My favorite team lost for a long time, one time I went to see them in my lucky <fill in clothing here> and they won, I wear my lucky {underwear/socks/hat/etc} at every game now
Exercises

- For these Post Hoc Fallacies give another possibly overlooked reason for the events in question
  - “I’ve been looking into the history of wars. It seems as if just before any war, all the countries involved build large armies. I think building a large army causes war”
Exercises

For these Post Hoc Fallacies give another possibly overlooked reason for the events in question

- “I’ve been looking into the history of wars. It seems as if just before any war, all the countries involved build large armies. I think building a large army causes war”
- Armies often raised during periods of hostility
- Poland in world war II an example of what happens when you don’t have a large army when hostilities commence
  - Half of nominal army demobilized
  - Much of equipment sold – expected battle to start ‘42
  - Defeated in a month
An Aside

- Lets consider the arguments here
  - The Question: Should we allow autonomous ‘killer robots’ that can decide to pull the trigger on their own
  - Consider:
Again – what other explanation could there be

- Malaria was for centuries a baffling plague. It was observed that persons who went out at night often developed the malady. So, on the best post hoc reasoning, night air was assumed to be the cause of malaria, and elaborate precautions were taken to shut it out of sleeping quarters.
What is the fallacy here?

- Communist government always end in failure. Just look at what happened to the Soviet Union
What is the fallacy here?

- Communist government always end in failure. Just look at what happened to the Soviet Union
  - Post hoc
What is the fallacy here?

- Some from your book:
- Communist government always end in failure. Just look at what happened to the Soviet Union
  - Post hoc
- Either I marry her and she drives me crazy with all her talking or I don’t marry her and I go crazy the rest of my life thinking about her
What is the fallacy here?

- Some from your book:
- Communist government always end in failure. Just look at what happened to the Soviet Union
  - Post hoc
- Either I marry her and she drives me crazy with all her talking or I don’t marry her and I go crazy the rest of my lift thinking about her
  - Either-or fallacy
- If you think we are too secluded in this town, why don’t you commit a crime and go to prison? I’ll bet you meet some pretty varied people in there
What is the fallacy here?

• Some from your book:
  
  • Communist government always end in failure. Just look at what happened to the Soviet Union
    – Post hoc
  
  • Either I marry her and she drives me crazy with all her talking or I don’t marry her and I go crazy the rest of my lift thinking about her
    – Either-or fallacy
  
  • If you think we are too secluded in this town, why don’t you commit a crime and go to prison? I’ll bet you meet some pretty varied people in there
    – strawman
Correlation

- Correlation
  - Means that two occurrences A and B often happen together.
  - Can often lead to post hoc fallacies if we aren’t careful
  - I notice that whenever public schools are closed, the snow plows are working 12 hour shifts, I think closing the schools leads to lots of snow plows showing up in my neighborhood
Correlation

- When you have a correlation 4 possibilities
  - A causes B
  - B causes A
  - A and B are both caused by a third event (like in previous example)
  - A and B are unrelated but randomly have occurred at the same time in observations so far.
Post Hoc and Statistics

- Example from page 174 in book
- And
Or even
Exercises

- The ones on page 175 are humorous – let's have a look
Rational Decisions

- Economics, AI, and Philosophy are full of discussions of “the rational”
  - Will use available evidence and come to the best (optimal) decision.
  - Philosophy one step further:
    - “Rationality is the habit of acting by reason, which means in accordance with the facts of reality.”
    - Of course we are not omniscient so what is rational to believe can change
      - https://global.handelsblatt.com/politics/the-battle-that-created-germany-841255
    - What was rational to believe before the discovery less now
In Science (and life) we sometimes have to work with incomplete evidence.

Sometimes we use ‘razors’
- Principle or rule of thumb to shave off (eliminate from consideration) an unlikely explanation

Occam’s Razor: when the evidence supports two explanations equally, the simplest is most likely to be correct.
- Note additional evidence might invalidate an earlier rational conclusion. Eg. the article on Germany last slide
Razor for the INTERNET age

- Hanlon’s razor:
  - “Never attribute to malice that which can be adequately explained by stupidity.”
Rational Decisions

- Is it rational to claim that contract killers can now sit in a cafe overseas and do their work today rather than being the fit, strong and/or dexterous people they had to be in yesteryear?
Rational Decisions

• Is it rational to claim that contract killers can now sit in a cafe overseas and do their work today rather than being the fit, strong and/or dexterous people they had to be in yesteryear?

• How about
  • three years ago
    – https://www.youtube.com/watch?v=oqe6S6m73Zw
  • Two years ago
    – https://www.youtube.com/watch?v=MK0SrxBc1xs
    –
  • This year