Sean Bruce

Homework for Ch 8/9/10

Assuming a standard context, label each of the following arguments as deductive or inductive. Explain what it is about the words or form of argument that indicates whether or not each argument is intended or claimed to be valid. If itis not clear whether the argument is inductive or deductive, say why.

1. The sun is coming out, so the rain will probably stop soon.

Inductive. While is may be rare that it doesn’t rain when the sun is out, that is not always true.

1. It’s going to rain tomorrow, so it will either rain or be clear tomorrow.

Inductive. It sounds like the inferred meaning is that forecasting the weather isn’t an exact science. So even though it’s supposed to rain tomorrow, it could be clear.

1. No woman has ever been elected president. Therefore, no woman will ever be elected president.

Inductive. The first sentence is a strength claim.

1. Diet cola never keeps me awake at night. I know because I drank it just last night without any problems.

Inductive. The dude is going off a sample size of 1! He is using a very weak strength claim.

1. The house is a mess, so Jeff must be home from college.

Inductive. There is strong evidence to suggest that Jeff is messy.

By asking the preceding questions, specify what, if anything, is wrong with the following statistical generalizations:

Please IGNORE the given instructions and instead use these instructions:

* First, identify the reference class.
* Second, identify the sample class.
* Third, evaluate the Generalizations using the standards we have for S.G.s
  + (sample size, sample bias, bias in investigation, bias in interpretation)
  + Let me know if the argument is meeting the standard or not and *explain* your answers as much as you can (explanation will be key on the exam!).

1. I have lots of friends. Most of them think that I would make a great president. So most Americans would probably agree.

Reference Class: Americans

Sample: “lots of friends”

Not meeting the standard. The sample size of “lots of friends” is far too small compared to the population of Americans. The sample is biased because it is from a specific group of people (friends) and that the group of people are of a group that is predisposed to answering in the affirmative. That being said, it is probably safe to assume that the results were read correctly.

1. In exit polls after people had just voted, most people told our candidate that they voted for her, so probably most people did vote for her.

Reference Class: Voters

Sample: People who just voted at polling stations

Not meeting the standard. The sample size of people who just voted seems pretty good, assuming they able to get a high percentage of people at the polls. There doesn’t seem to be anything that suggest a biased sample. However, the sampling procedure is biased because it does not include absentee or online voting. The difference between people who vote in person versus absentee/online suggests a difference in demographics that could skew that outcome. This could mean the results were misinterpreted.

1. Mary told me that all of her older children are geniuses, so her baby will probably be a genius, too.

Reference Class: Mary’s children

Sample: all of May’s older children

Not meeting the standards. Assuming Mary’s “older children” are all of her kids besides the new baby, that’s a 100% sample size! But since Mary is their mother, that is about as biased a sample as you can get! Who knows what Mary’s procedure for determining genius in her children, but the procedure is certainly suspect. It is also likely that any “polling data” she has would also be misinterpreted.

1. When asked whether they would prefer a tax break or a bloated budget, almost everyone said that they wanted a tax break. So a tax break is overwhelmingly popular with the people.

Reference Class: Taxpayers

Sample: Almost Everyone?

Not meeting standards. Sample size? Who is almost everyone? I guess everyone they talked to? Hard to say if this was a good sample size or not. It is hard to say if the bias exists in the sample due the ambiguity of the sample itself. But there is certainly bias in the sample procedure due to the phrasing of the question. The question should be restated to remove the negative connotations of the alternative to tax breaks. Given that the phrasing of the question probably produced skewed results, the interpretation becomes moot. But there isn’t any reason so suspect interpretation bias.

1. When hundreds of convicted murderers in states without the death penalty were asked whether they would have committed the murder if the state had a death penalty, most of them said that they would not have done it. So most murders can be deterred by the death penalty.

Reference Class: convicted murderers

Sample: hundreds of convicted murderers in states without the death penalty

Not meeting standards. Hundreds, even if that means just 200 is not a terrible sample size. Even if we’re talking about the US prison system which currently holds about 179,000 convicted murders (thanks google). I do think that there is some bias in the sample. It is very likely that inmates are remorseful what their crimes and may skew that results. The procedure is also biased as the sample is comprised of people who were caught, and thus can assume they would receive a death sentence.

For each of the following statistical applications, identify the reference class, and then evaluate the strength of the argument in terms of the percentages or proportions cited and the relevance of the reference class.

* First, identify the reference class.
* Second, identify the subset class.
* Third, evaluate the Applications using the standards we have for S.A.s
  + (whether the ratio cited in the argument is acceptable, the relevance of the reference class)
  + As before, explain your evaluations here!

4. Three percent of socialists with blue eyes voted for McCain.

Maureen is a socialist with blue eyes.

∴Maureen did not vote for McCain.

Reference: Socialists with blue eyes

Subset: Maureen

3% of Fs voted for McCain. Or, 97% of Fs did NOT vote for McCain. Maureen is F so she probably did NOT vote for McCain. Though the bit about blue eyes is probably irrelevant.

5. Ninety-eight percent of what John says is true.

John said that his father is also named John.

∴John’s father is named John.

Reference: what John says

Subset: said his father was also named John

98% is very close to 100%. John’s father probably is also named John. It probably goes without saying that John tells the truth most of the time. It would be more significant if it was the opposite and John was a compulsive liar.

6. Ninety-eight percent of what John says is true.

John said that the Giants are going to win.

∴The Giants are going to win.

Reference: things John says

Subset: John says the Giants will win

Again, John speaks the truth 98% of the time! What a great record! But this seems irrelevant to the performance of the Giants. Unless John somehow knew that outcome of the game beforehand.

8. Most people do not understand quantum mechanics.

My physics professor is a person.

∴My physics professor probably does not understand quantum mechanics.

Reference: people

Subset: my professor

“Most people” is too ambiguous, it could mean anywhere from 51% to 99%. The argument is potentially very weak. Not to mention the professor is teaches physics and that is not mentioned in the conclusion.

9. Almost all birds can fly.

This penguin is a bird.

∴This penguin can fly.

Reference: all birds

Subset: this penguin

“Almost all” is a bit ambiguous so it as a little difficult to gauge the strength of the argument. The relevancy is tough here since “birds” is a pretty broad category and we’re talking about a single penguin. I think it might make more sense if we were talking about species of birds.

Which of the following claims are true? Which are false?

1. Being a car is a sufficient condition for being a vehicle.

True, all cars are vehicles.

2. Being a car is a necessary condition for being a vehicle.

False, there are many other classes of vehicles like trucks, vans, motorcycles, etc.

3. Being a vehicle is a sufficient condition for being a car.

False, same as 2

4. Being a vehicle is a necessary condition for being a car.

True, all cars are vehicles.

14. Driving seventy-five miles per hour (for fun) is a sufficient condition for violating a legal speed limit of sixty-five miles per hour.

True, anything above 65 mph is sufficient for violating the speed limit and 75 mph > 65 mph.

15. Driving seventy-five miles per hour (for fun) is a necessary condition for violating a legal speed limit of sixty-five miles per hour.

False, since anything above 65 would also violate the speed limit, 75 is not necessary.

16. Cutting off Joe’s head is a sufficient condition for killing him.

True, humans cannot (with current medical science) live with a severed head.

17. Cutting off Joe’s head is a necessary condition for killing him.

False, there are many things that are fatal to humans aside from decapitation.

18. Cutting off Joe’s head and then holding his head under water for ten minutes is a sufficient condition for killing him.

True, since both methods would probably do the job, drowning Joe after decapitation is overkill (pun intended).

For each of the following tables determine

a. Which, if any, of the candidates—A, B, C, or D—is not eliminated by the sufficient condition test as a sufficient condition for target feature G?

b. Which, if any, of the candidates—A, B, C, or D—is not eliminated by the necessary condition test as a necessary condition for target feature G?

c. Which, if any, of the candidates—A, B, C, or D—is not eliminated by either test?

EXAMPLE:   
Case 1: A B ~C D ~G

Case 2: ~A B C D G

Case 3: A ~B C D G

a. Only C passes the SCT.

b. Only C and D pass the NCT.

c. Only C passes both tests.

Please IGNORE the instructions here and instead use these:

* List the conditions that FAIL the SCT for feature “G” and provide all the cases that prove that they cannot be sufficient conditions.
* List the conditions that FAIL the NCT for feature “G” and provide all the cases that prove that they cannot be necessary conditions.

1. Case 1: A B C D G

Case 2: ~A B ~C D ~G

Case 3: A ~B C ~D G

Case 2 shows that B and D are not enough for G

Case 3 shows that B and D are not required for G

All cases show that C is sufficient for G

2. Case 1: A B C ~D G

Case 2: ~A B C D G

Case 3: A ~B C ~D G

Case 1 shows D is not required by G

Case 2 shows A is not required for G

Case 3 Shows B is not required for G

Nothing is shown to be sufficient in these cases.

3. Case 1: A B C D ~G

Case 2: ~A B C D G

Case 3: A ~B C ~D G

Case 1 shows that nothing is sufficient for G

Case 2 shows that A is not necessary for G

Case 3 Shows that B and G are not necessary for G

4. Case 1: A B ~C D G

Case 2: ~A ~B C D G

Case 3: A B ~C ~D ~G

Case 1 shows that C is not necessary for G

Case 2 shows that A and B are not necessary for G

Case 3 shows that A and B are not sufficient for G

5. Case 1: A ~B C D ~G

Case 2: ~A B C ~D ~G

Case 3: A ~B ~C D G

Case 1 shows that A, C and D are not sufficient for G

Case 2 shows that B and C are not sufficient for G

Case 3 shows that B and C are not necessary for G

6. Case 1: A B ~C D G

Case 2: ~A ~B C D ~G

Case 3: A ~B C ~D ~G

Case 1 shows that C is not necessary for G

Case 2 shows that C and D are not sufficient for G

Case 3 Shows that A and C are not sufficient for G

7. Case 1: A B ~C D ~G

Case 2: ~A B ~C D ~G

Case 3: A B ~C ~D ~G

Case 1 Shows that A, B and D are not sufficient for G

Case 2 Shows that B and D are not sufficient for G

Case 3 Shows that A and B are not sufficient for G

Nothing so shown to be necessary

8. Case 1: A B C D ~G

Case 2: ~A ~B C D G

Case 3: A ~B ~C ~D ~G

Case 1 shows that A, B, C and D are not sufficient

Case 2 show that A and B are not necessary

Case 3 shows that A is not sufficient

Imagine that your desktop computer system won’t work, and you want to find out why. After checking to make sure that it is plugged in, you experiment with a new central processing unit (CPU), a new monitor (MON), and new system software (SSW) in the combinations on the table below. The candidates for necessary conditions and sufficient conditions of failure are the plug position (in or out), the CPU (old or new), the monitor (old or new), and the software (old or new). For each candidate, say (1) which cases, if any, eliminate it as a sufficient condition of your computer’s failure and (2) which cases, if any, eliminate it as a necessary condition of your computer’s failure. Which candidates, if any, are not eliminated as a sufficient condition of failure? As a necessary condition of failure? Does it follow that these candidates are necessary conditions or sufficient conditions of failure? Why or why not?

Plug CPU Monitor Software Result  
Case 1 In Old CPU Old MO Old SW Works  
Case 2 In Old CPU Old MO New SW Works  
Case 3 In Old CPU New MO Old SW Fails  
Case 4 In Old CPU New MO New SW Works  
Case 5 In Old CPU Old MO Old SW Works  
Case 6 In Old CPU Old MO New SW Works  
Case 7 In Old CPU New MO Old SW Fails  
Case 8 In Old CPU New MO New SW Works  
Case 9 In New CPU Old MO Old SW Fails  
Case 10 In New CPU Old MO New SW Works  
Case 11 In New CPU New MO Old SW Fails  
Case 12 In New CPU New MO New SW Works

Fails SCT

Plug Case 3, 7, 9, 11

CPU Case 9, 11

Monitor Case 3, 7, 11

Fails NCT

CPU Case 1, 2, 4, 5, 6, 8

Monitor Case 1, 2, 5, 6, 10

Software Case 1, 5

For each of the following explanations, specify which standard of a good explanation, if any, it violates. The standards require that a good explanation be explanatory, deep, powerful, falsifiable, modest, simple, and conservative. A single explanation might violate more than one standard.

Deep – the explanation should not be obscure or need its own explanation

Powerful – Explanation covers wide range of cases

Falsifiable – has the capacity to be proven wrong

Modest – do not claim too much

Simple – the simplest answer is usually the solution

Conservative – does ask you to give up too many well-established beliefs

1. Although we usually have class at this time in this room, I don’t see any-body in the classroom, because a wicked witch made them all invisible.

Deep – the idea of a witch deciding to make everyone in class invisible brings up a lot of questions. Why would the witch do that?

Powerful – The explanation is not very powerful as it does not cover even simple cases like, what is class is being held outside or class is cancelled for whatever reason?

Modest – The speaker is saying both that witches and magic are real. Those are both big claims

Simple – This is a pretty complicated explanation. Class being cancelled is a much simpler explanation.

Conservative – We are being asked to believe witches and magic are real. Witches are real enough but it is well-established that magic is not.

2. Although we usually have class at this time in this room, I don’t see any-body in the classroom, because they all decided to skip class today.

Deep – We are not told why an entire class decided to skip class or where the teacher is.

Powerful – Even if all of the students skipped class, if doesn’t explain why the room is empty. Where did the staff go?

Modest –Why would you jump to the conclusion that everyone skipped class?

Simple – Again, class being cancelled is a similar explanation.

3. Although we usually have class at this time in this room, I don’t see any-body in the classroom, because it’s Columbus Day.

Deep – You could argue that Columbus Day could require more explanation, but it is probably passable.

4. My house fell down, because it was painted red.

Deep – This is weird because of the wording. The phrase “fell down” is confusing in the context of a house. Does that mean it collapsed, or fell off a cliff? And why would the paint make the house fall down?

Conservative – This seems to suggest that red houses fall down. That is not a well-established belief.

5. My house fell down, because of a powerful earthquake centered on my property that did not affect anything or anybody else.

Deep – This opens a lot more questions than it answers. How did an earthquake target only your house?

Modest – This explanation is claiming that earthquakes can only effect tiny areas.

Simple – A more simple explanation is that the house was old and the foundations gave out.

Conservative – It is a well-established belief that earthquakes are massive in scale and never targeted.

6. My house fell down, because its boards were struck by a new kind of sub-atomic particle.

Deep – A new kind of sub-atomic particle is very obscure and would lead to many questions.

Falsifiable – It seems impossible that you could test for a brand new sub-atomic particle or whether it had been there to cause the damage.

Modest – This is claiming that there is a newly discovered, violent sub-atomic particle that can knock down houses. That is a pretty big claim.

Simple – The speaker seemingly made up a new sub-atomic particle to explain a house falling down. This is a very complex explanation.

Conservative – It is going against well-established beliefs to suggest that sub-atomic particles can knock down houses.

7. Although I fished here all day, I didn’t catch any fish, because there are no fish in this whole river.

Deep – Why isn’t there fish in the river?

Modest – It is a big claim to assume that a river system is devoid of fish.

Simple – It is quite a stretch to postulate that a person’s experience in one part of a river is true of the entire river system.

8. Although I fished here all day, I didn’t catch any fish, because the river gods don’t like me.

Deep – Wait, there are river gods?

Falsifiable – I’m not sure how you would go about pleasing the river gods to prove they will let you catch fish.

Modest – The claim that the gods are stopping you from catching fish.

Simple – The speaker postulates that there is a pantheon of gods that determine your success are catching fish.

Conservative – It is not a well-established belief that gods oversee the rivers, at least not in contemporary US culture.

9. Although I fished here all day, I didn’t catch any fish, because I was unlucky today.

Falsifiable – I do not know of a good way to prove luck or the lack thereof.

10. That light far up in the night sky is moving quickly, because it is the daily United Airlines flight from Boston to Los Angeles.

Modest – It would be too difficult to know specifically which flight is being witnessed if you could only see the light.

11. That light far up in the night sky is moving quickly, because it is an alien space ship.

Modest – The view is claiming too much by saying they know what the light is.

Simple – Postulating that the light is an alien ship when it could easily be a satellite or shooting star breaks simplicity.

Conservative – Depending on who you ask, it is not a well-established belief that alien ships are flying around our atmosphere.

12. That light far up in the night sky looks like it is moving quickly, because there’s something wrong with my eyes right now.

Deep – This would beg the question; what eye disorder causes you to see quick moving lights in the sky?

Falsifiable – It is hard to falsify someone else’s perception.

Using the criteria mentioned above, evaluate each of the following arguments as strong or weak. Explain your answers. Be sure to specify the properties on which the analogy is based, as well as any background beliefs on which your evaluation depends.

1. This landscape by Cézanne is beautiful. He did another painting of a similar scene around the same time. So it is probably beautiful, too.

There is an element of subjectivity as observing any art form. But considering Cézanne is famous in the art world and considered and his work is considered important for the transition into 20th century art, we can accept the sample size of one. With the conclusion adding guarding phrase, it makes it much easier to accept this argument.

2. My aunt had a Siamese cat that bit me, so this Siamese cat will probably bite me, too.

The first part of the statement makes me ask the question, “what were the circumstances of the cat biting you?”. There could be an explanation that would make me question the validity of the conclusion. Also, being that the speaker has a single sample of an entire line of cat breed, it is a very weak conclusion.

3. The students I know who took this course last year got grades of A. I am a lot like them, since I am also smart and hardworking; and the course this year covers very similar material. So I will probably get an A.

The sample size of previous students is compelling but inconclusive as it is hard to say how many that is. But since they do share similar traits and the course is comparable, the argument becomes a bit stronger. I would say the argument is strong but could be stronger.

4. This politician was caught cheating in his marriage, and he will have to face similarly strong temptations in his public duties, so he will probably cheat in political life as well.

What is this position, the secretary of parting down?! The equivocation seems bad; how is the speaker comparing the politician’s past life experiences with that of public duties? This doesn’t seem falsifiable. There is also the claim that being caught cheating has not changed the politician’s behavior. There seems to be some bias against the past behavior that is influencing the conclusion. The argument is not strong.

5. A very high minimum wage led to increased unemployment in one country. That country’s economy is similar to the economy in a different country. So a very high minimum wage will probably lead to increased unemployment in the other country as well.

I am far from an economist, so this might skew my answer. With economics being as complex as it is, my first question is if “similar” is enough of a justification for the conclusion. This also seems to suffer from a sample size problem. The speaker is only mentioning one country as an example. I think more research would be needed to move this from a weak argument to as strong one.

6. I feel pain when someone hits me hard on the head with a baseball bat. Your body is a lot like mine. So you would probably feel pain if I hit you hard on the head with a baseball bat. (This is related to the so-called “Problem of Other Minds.”)

Removing the action of being hit on the head, the sample size is one and based on a single event. It is also impossible to falsify the speaker’s feelings in the event. The speak is also suggesting that they will know how the listener will feel which is also not falsifiable. The only thing that holds this argument together is that being hit hard on the head is a well-established belief. Replace the action with something more obscure and the argument seems weak.

7. It is immoral for a doctor to lie to a patient about a test result, even if the doctor thinks that lying is in the patient’s best interest. We know this because even doctors would agree that it would be morally wrong for a financial adviser to lie to them about a potential investment, even if the financial advisor thinks that this lie is in the doctor’s best interests.

Why are we asking doctors their opinions on an unrelated field? This strikes me as a shallow argument. What’s more, the argument seems to be suggesting that the principles that make up a doctor’s morality are the same as a financial advisor. This is quite a claim as principles very from person to person let alone a whole subset of people. This is a weak argument.

8. Chrysler was held legally liable for damages due to defects in the suspension of its Corvair. The defects in the Pinto gas tank caused injuries that were just as serious. Thus, Ford should also be held legally liable for damages due to those defects.

The two companies being compared have a similar situation. The end results of both cases are serious injuries. Regardless of the specific issue with the vehicle, the results were the same. This is a strong argument.