

Exercise 4.1

(A)

1. Yes
 - (P1) Most students in this class pass this class
 - (P2) You are in this class
 - (C) You will pass the class
2. Yes
 - (P) Many Pundits agree that prison reform is necessary
 - (C) Prison Reform is probably necessary
3. No
4. Yes
 - (P) The chances sperm making it to egg are in millions.
 - (C) Most sperm could not make it
5. No
6. Yes
 - (P) Most months end with "er".
 - (C) Your birth month probably ends with "er"

(C)

1. Reference Class = American Residents, Attribute Class = White People. It's well-known that Obama is the first US Black president.
2. Reference Class = Physicist, Attribute Class = People who believe Global Warming. If we know more about what specific area Freeman Dyson focuses on, we could probably get a narrower reference class with different probability.
3. Reference Class = Inner-city Residents, Attribute Class = People who vote. If we know more about Chara's job, we could probably get a narrower reference class with different probability.
4. Reference Class = Me, Attribute Class = People who miss party.
5. Reference Class = Hubbard's assertion, Attribute Class = Exaggerations / Lies. If we know more details about his assertion, we could probably define a narrower reference class.
6. Reference Class = People who go to beer-only reception & Me. Attribute Class = People who drink Dos Equis. If we know more about the details of the speaker's drinking history, and the reception one goes to, then we could probably define a narrower reference class.

Exercise 4.2

(B)

1. Reference Class A = Snake, Narrow Reference Class B = Poisonous Snake. Attribute Class: Having venom.
2. Most people need to urinate every day. He hasn't drunk water for 2 days..

3. Since I haven't heard any sound when I knock the door, there is probably no people in the room. You are listening to loud music in your headphone, so you could hear any sound made by others.

Exercise 4.3.1

(A)

1. Large population survey from popular women's magazine --> Most married people. There is a selection bias. Most respondents are likely be women, it's a women magazine after all. The married man might have different idea
2. The people's political opinion I listen on radio --> People's political opinion in this country. There is a hasty generalization, the sample size that you have -- all the people you listen to -- might be too small.
3. His interaction with me --> His interaction with everyone. There might be a sample bias here, because people interact with different people differently, so his interaction with you might be special / different from others.
4. Copper worked in laboratory, and other places over thousand years --> All copper. It seems that the above sample indeed covers most case of the copper.
5. A African American kids going to Harvard in this country --> Country is meritocracy. There is a hasty generalization & selection bias. That is only one sample (too small), and that kids you know might not represent the overall population.
6. Sheryl Sandberg & Hillary Clinton's near success -> No glass ceiling in politics and business for everyone. There is a hasty generalization & selection bias. That are only two sample (too small). Also, these two people might be talented, or their family have backgrounds for them to be successful. They could represent everyone.

(B)

- Mertens conjecture. (You could see its wikipedia. It was conjectured by [Thomas Joannes Stieltjes](#), in an 1885 letter to [Charles Hermite](#) (reprinted in [Stieltjes \(1905\)](#))). Also the Euler's sum of powers conjecture. (<https://books.google.com/books?id=M4-zUnrSxNoC&pg=PA220>) It's believed because so many combination has been tested and they all seems to be true. The defects are obvious in mathematics. You couldn't do any generalization as that will count as a selection bias, the counterexample found in the end just have some special properties that all the number you have tried doesn't have. (i.e. your sample doesn't reflect the whole population (in this case it are infinite combinations))

Exercise 4.3.2

1. Fallacy. It's an argument from counterinstances.
2. Fallacy. Also an counterinstances
3. If you choose a lot of figs with good representation of all the figs on the tree. Then it's good reasoning, otherwise it might be an counterinstances and selection bias, and it's probably fallacious reasoning.
4. Good reasoning. If you seen most of his matches. (without too much bias in your choices)
5. Fallacy. Also an counterinstances. (Drawn from personal experiences, sample size too small)
6. Fallacy. Also an counterinstances.

7. Fallacy. Also an counterinstances.
8. Fallacy. An counterinstances
9. Good Reasoning. It points out the selection bias the speaker has.
10. Fallacy. An counterinstance with fallacy of misleading vividness.
11. Fallacy. An counterinstances & availability heuristic.
12. Fallacy. An counterinstances

Exercise 4.4

(B)

1. Similarity: They have parts adapted to each other. The clock has parts that adapt to each other to accurately tell the time. The universe could be described in physics formula with adapted to each other, but it's unsure whether there is a purpose for that. This might be that dissimilarity, and it undermines the analogy.
2. Similarity: The situation in training video and in the sea, they both faced a shark. The speaker did the thing that the people in the video didn't do, so he survives by making the shark ignore / overlook him. The potential undercutter might be that different sharks have different behavior, and the shark that the speaker faces is just not interested in humans anyway, and doing the thing is not the reason for his survival (he will survive anyway)
3. Similarity: The chemical composition of both samples. Since they both have the same chemicals, so their chemical reaction should produce the same results. A potential cutter might be that the reaction is determined by the purity of two samples, and one sample might have a different level of purity.
4. Similarity: The biological similarity between weed and hemp. Since the weed and hemp are similar biologically, they might have similar psychoactive effects. Potential defeater: only weed, a kind of hemp, has this psychoactive effect, other hemp doesn't have this effect
5. Similarity: Two chefs in the same place. The assumption is that they always have excellent meals, so they will hire chefs that are capable of making excellent meals. Potential defeater: the HR department there unfortunately hired a bad chef this time who seems to make good meals.
6. Similarity: Both have a budget, and could have debt. The assumption might be that debt will both have a detrimental effect on individual / government, so they shouldn't have it. Potential defeater: government works differently than individual / family, and having a deficit won't have the detrimental effect.

(C)

1.
 - (P1) Taxation is no different from theft.
 - (P2) No one has a right to steal
 - (C) No one has a right to do taxation

Theft is stealing your property without doing anything else. The taxation has been used by government in many public affairs, so it's different from theft
2.
 - (P1) Cows are similar to humans in a way that they have a capacity to suffer and an interest in not suffering.
 - (P2) It's morally wrong to kill and eat humans
 - (C) It's immoral to eat cows.

The main reason that it's immoral to kill and eat humans is because human is socialize animals, and we have a nature tendency to not kill other humans. The human has the capacity to suffer and an interest in not suffering is not the reason that killing and eating humans is morally wrong, so it's not the reason for cows too.

3.
 - (P1) A baby conceived 15 minutes ago is same as a baby conceived 8 months ago.
 - (P2) It's not okay to terminate an 8-month-old baby
 - (C) It's not okay to terminate a 15 minutes-old baby

The a baby conceived 15 minutes ago might be different from from a baby conceived 8 months ago. A baby only 15 minutes ago is still an fertilized egg and doesn't have the feeling, brain activity and all other biological indication that a 8 months baby does.

4.
 - Gay marriage is same as people marry their dog
 - No person will / and should marry their dog
 - Gay marriage should not happen

Gay marriage is different from people marry to their dog. Human-to-human marriage and relationship is reasonable and acceptable, while human-to-animal marriage is weird. That's the difference. So the analogy is ill-formed.

5.
 - We should not rape.
 - Sex between man and woman is rape. (By coercion. Analogy to victim in rape cases)
 - Only sex permissible is gay sex (other sex we shouldn't do)

The victim / woman in rape cases is different from the woman in consensual sex. The woman do this because of love or happiness. So there is no coercion thus no rape.

6.
 - The current economic system is a glorified forms of feudalism (Analogy of serfs to feudal masters as workers to business owners).
 - The feudalism economic system is unjust
 - So the current economic system is unjust

The serfs had no choice but to work. The workers today has guild that could help them get better salary from business owners. They are different. So the economic system is not another form of feudalism.

Exercise 4.6

1. F = This is a car for extensive touring. F-making: (1) Roomy and comfortable (2) Pulldown-able backseats. F-ruining: (1) fuel consumption too high (2) Very unreliable / hard to drive
2. F = This is a good economic policy. F-making: (1) Increase GDP (2) reduce unemployment. F-ruining: (1) reduce import / export (2) Lower the expectation in stock market
3. F = This is a good course for me, F-making: (1) contribute credits (2) Homework and exam is easy. F-ruining: (1) takes a lot of time (2) has time collision with other course that I also want to take
4. F = Wagnerian operas are loathsome things to watch. F-making: (1) performances are long (2) hours without anything dramatic. F-ruining: (1) Very aesthetic (2) Have deeper and symbolic meaning