Topic 11 Study Guide Exercise *"Solutions"*

Note: The following exercises allow you to independently explore the biases and productive skills from this topic. You might find they're a bit different in style from previous chapters. Remember, critical thinking is best learned through practice!

1

1a) Go through the following examples and circle the correct answer. Try to do this as quickly as you can—use your snap judgment!

1.   All fish can swim. Tuna are fish. Therefore, Tuna can swim.

Valid OR invalid

2.   Anything made of wood can be used as fuel. Petrol is not made of wood. Therefore, petrol cannot be used as fuel.

Valid OR **invalid**

3.   All African countries are hot. Antarctica is not an African country. Therefore, Antarctica is not hot.

Valid OR **invalid**

4.   All things with four legs are dangerous. Sheep are not dangerous. Therefore, sheep do not have four legs.

Valid OR invalid

5.   A bat and a ball cost $1.10. The bat costs one dollar more than the ball. How much does the ball cost?

Answer: $0.05

6.   If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?

100 minutes OR **5 minutes**

7.   In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

24 days OR **47 days**

8.   Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations.
Which is more probable?
  a) **Linda is a bank teller.**
  b) Linda is a bank teller and is active in the feminist movement.
9.   Which scenario is more probable?
  a.   **A massive flood somewhere in North America next year, in which more than 1,000 people drown.**
  b.   An earthquake in California sometime next year, causing a flood in which more than 1,000 people drown.
10.   Which scenario is more probable?
  a.   **Mark has hair.**
  b.   Mark has blond hair.

1b) Don't look at the answers yet! Now go through the same examples slowly and think about the validity the way we've learned in this course.

1c) Now compare your results. Was there a difference between doing these exercises quickly and doing them slowly? If yes, how do you think this difference can be explained?

2

Here's a puzzle to test your problem solving. The solution as well as an explanation will be provided once you have finished.

Follow this link: https://www.nytimes.com/interactive/2015/07/03/upshot/a-quick-puzzle-to-test-your-problem-solving.html?WT.mc_id=2015-KWP-AUD_DEV&WT.mc_ev=click&ad-keywords=AUDDEVREMARK&kwp_0=22769&kwp_4=152993&kwp_1=162996&_r=0

3

Watch this short video, in which Daniel Kahneman explains the distinction between 2 systems of reasoning, System 1 and System 2. https://www.youtube.com/watch?time_continue=1&v=PirFrDVRBo4&feature=emb_logo

- What are the main differences between the two systems?
    - System 1 is fast, automatic, and effortless
    - System 2 is slow and effortful

- Consider your results when you did the exercises in 1 quickly versus slowly. Why might doing these exercises quickly lead to characteristic System 1-style mistakes?
    - System 1 produces quick answers. These answers draw from past experiences and memories, and they often do so in an unsystematic manner. For example, if you already know the conclusion to be true, it's easy to overlook that the argument is invalid. Or if you can easily think of examples—for instance, for earthquakes in North America, California comes to mind—this can cloud probability judgments (this is called the availability bias).

- What would it take to avoid these mistakes?
    - Slow down, take a step back
    - Evaluate truth and validity separately
    - As suggested by Kahneman, skill (as in the example of the chess player) can make intuitive judgments more reliable. This is a tricky matter: on the one hand, experience can make us feel overly confident; on the other hand, an expert will be able to make more reliable snap judgments than a non-expert
    - Identify situations in which you are prone to System 1-style reasoning
    - Identify cognitive biases, preconceptions and prejudices to which you are prone

- What types of tasks, problems, and decisions might System 1 be particularly good for? And what about System 2?
    - System 1 is good for fast reactions—any situation that doesn't allow for thinking but requires an immediate reaction. E.g., does this bear think I'm his lunch? Is this a safe place to be? What's the quickest way to get home? In such

cases, speed is more important than precision, and a quick and dirty response is better than none at all or one that comes too late. System 2 is better for anything that requires a more balanced assessment—including any situations that require argument evaluation and critical thinking skills.

- Can you think of any actual examples where you have been guided by System 1-style reasoning in the past? You might want to think about big decisions you have made— for example about where to live, which university to study at, or whether to go on a big trip. Which strategies did you use to make these decisions? Do you think these were good strategies, and why / why not?

4

Are you biased? And if you were, would you know?

Knowing about your own cognitive limitations, preconceptions, and biases is the first step towards avoiding them. This knowledge will give you a sense of the situations in which your judgment is prone to be corrupted—and with practice and some effort, you might be able to reach a more balanced position. The problem is that often, biases are implicit and we aren't aware that we have them. So we would like to invite you to take a test on implicit bias.

Below is some information from the Project Implicit website. Read it carefully before you start. You can choose from a wide range of tests on topics such as race, skin color, gender, weight, age, religion, and disability. Our suggestion is to think about which topics you care about deeply. For example, if you care about gender equality, take the tests that focus on those issues. The results might surprise you. But beware: if you find your reactions were biases in a way you never thought possible, this might be unpleasant. We think it will still be valuable information for you to have. But it's up to you to decide!

That said, as always with these things, don't take the results too seriously. The IAT is a research and educational tool. It's not a tool for decision making. And while it can help foster awareness, there is no guarantee that its results are always on track.

What is implicit bias, and how can you test it?

"The Implicit Association Test (IAT) measures attitudes and beliefs that people may be unwilling or unable to report. The IAT may be especially interesting if it shows that you have an implicit attitude that you did not know about. For example, you may believe that women and men should be equally associated with science, but your automatic associations could show that you (like many others) associate men with science more than you associate women with science." (https://implicit.harvard.edu/implicit/education.html)

And before you get started, some further considerations:

"Because the Implicit Association Test (IAT) sometimes reveals troubling aspects of human nature, it poses the possibility of causing discomfort. If you are considering using the IAT in your research, your research plan should take this possibility into account. Project Implicit urges careful consideration of the costs associated with misuse. The IAT has potential for use beyond the laboratory; however, there are problems with using it outside of the safeguards of a research institution.

First, people may use the IAT to make decisions about themselves (e.g., what should I buy, where should I go to school?). Second, people may use it to make decisions about others (e.g., does this potential job candidate have racial bias?).

On the surface these might seem like acceptable uses; however, we assert that the IAT should not be used in any such ways. We cannot be certain that any given IAT can diagnose an individual. At this stage in its development, it is preferable to use the IAT mainly as an educational tool to develop awareness of implicit preferences and stereotypes. For example, using the IAT to choose jurors is not ethical. In contrast, it might be appropriate to use the IAT to teach jurors about the possibility of unintended bias. Using the IAT to make significant decisions about oneself or others could lead to undesired and unjustified consequences." (https://implicit.harvard.edu/implicit/ethics.html)

Now, follow this link and choose one (or several) of the tests on the website, depending on your interest and time.

https://implicit.harvard.edu/implicit/australia/takeatest.html

Once you have finished, consider the following questions. You can also, if you want, comment on the questions in the discussion forum. To do this, you do not (!) need to reveal anything about which tests you did or about your results—again, this is really just food for thought.

- First of all, consider your results. Were they in line with what you expected? Or were the results surprising, and if yes, in what way?

- Next, can you think of any cases where these (implicit) biases might have affected decisions you made or things you did in the past?

- Finally, what, if anything, do you think can be gained from knowing about these biases? For example, do you think that having these results might help you make more balanced decisions in the future, and how?

For further information and background, have a look around the site. A list of frequently asked questions can be found here:
https://implicit.harvard.edu/implicit/australia/background/faqs.html

5 Challenge! Your own arguments in the wild

No solutions are provided for this activity.

This activity is very good for practicing both critical thinking and critical writing. Your responses don't have to be lengthy to be useful. Feel free to post your response on the discussion forum and make sure to post a link to the original article. If you see someone else's

post, engage with their discussion of the article, rather than how accurately they have completed the task – can we get closer to the truth as an intellectual community?

Find an argument from a news site, or in social media. Remember, not all text contains an argument! If you're not sure where to find an argument, don't just google 'argument'. We're looking for something that tries to *say* something interesting and relevant to our lives or understanding of the world. It would be especially good to choose one that you don't already agree with!

Try these websites for a start if you can't find anything from sites you regularly visit-

https://theconversation.com/au (news and opinion written by academic experts for the public)

https://www.theage.com.au/topic/the-age-letters-1rf (short letters to the editor from the Age)

https://www.bbc.com/ (independent news from the UK)

With the argument you have found –

    a) Identify the conclusion
    b) Standardise the main argument – what reasons are given to support the main conclusion?
    c) Try mapping the argument.
    d) Write a paragraph which explains the argument to a friend who has not read the original source.
    e) Write a second paragraph which identifies any flaws in the argument. Remember you can consider both validity and truth!
    f) Write a third paragraph suggesting ways of improving the argument. Discuss whether the reformulation solves the issues you identified in the second paragraph.