2. Evaluating Causal Claims
2.1 Differentiating among opinions, reasoned arguments and facts

Compare the following two statements:

1. Japan is a great nation.
2. Japan is a great nation because it integrates traditional culture with modern technology.

The first statement expresses a personal subjective opinion. I think Japan is a great nation. This is my opinion and I do not need to explain it.

If asked, “Why do you say so?”, then I would use the second statement to explain.

“Japan is a great nation because it integrates traditional culture with modern technology.”

In this statement, I put forth a reasoned argument to support my opinion. My friend wants me to explain why I think Japan is great, so I offer a supporting fact: “In the city, you can experience the convenience of modern technology; in the suburbs, you can feel a well-preserved traditional culture.”

Facts are things that can be objectively verified. They are different from personal subjective opinions.
Read the following statements carefully and determine whether they are:

- personal opinion (purely personal subjective thinking or preference with no supporting reason),
- reasoned argument (thinking supported by reasons; or abbreviated as argument), or
- fact (objectively exists; can be shown to be true).

A. Biology is the most difficult subject.
   - Personal opinion
   - Reasoned argument
   - Fact

B. Lynn passed the external mathematics examination.
   - Personal opinion
   - Reasoned argument
   - Fact

C. Gordon basketball shoes are the best choice for professional players.
   - Personal opinion
   - Reasoned argument
   - Fact

D. This cold medicine works faster than the others.
   - Personal opinion
   - Reasoned argument
   - Fact

E. Charlie is the best pitcher in the baseball team.
   - Personal opinion
   - Reasoned argument
   - Fact

F. In this team, Charlie is the batter who has hit the most home runs.
   - Personal opinion
   - Reasoned argument
   - Fact
G. Charlie is the best pitcher in the team. He is the only pitcher who has pitched a no-hitter.

- Personal opinion
- Reasoned argument
- Fact

H. Women have higher tolerance for pain.

- Personal opinion
- Reasoned argument
- Fact

I. The interest rate has dropped three percent altogether since March.

- Personal opinion
- Reasoned argument
- Fact

J. Vegetarians don’t have a high cholesterol level. It appears that a vegetarian diet can reduce cholesterol levels.

- Personal opinion
- Reasoned argument
- Fact
2.3 Identifying and analysing common fallacies

Do you know that as the sales of ice cream cones increase, so does the number of shark attacks?

It is true!

After hearing this, a classmate said, “So, eating ice cream may increase our chance of a shark encounter.”

Wait a minute! Is this way of thinking correct?

If you analyse it carefully, you may have doubt about this type of causal claim because it uses a cause and effect relationship to link several concurrent events together.

In fact, both trends (the sales of ice cream cone and the number of shark attacks) are affected by another event. In other words, a common factor causes the rise of both.
Can you think of a possible common factor? Please write it down and explain:
2.5 Understanding cause and effect relationship

We make many decisions every day like how to prioritise our work or study, what to buy, and whom and what we should support. Our friends, our family and ourselves must have faced the following situations: How should we respond to the advertisements on TV, radio and in the market? Which recommended CD should we buy? Which audio system should we buy for our car? Which brand of drinks should we buy? Strolling in a shopping mall, we could be approached by three different mobile phone sales persons, all saying that they can offer us the best and the cheapest deal. We need to use critical thinking to evaluate these products and the claims made by the sales persons.

Do you apply critical thinking in everyday situations where you need to make important decisions? Do the following exercise to test whether you can think critically about the claims of a new product.
You and your good friend Flora took an introductory psychology course taught by Dr. Chan. Having just attended a lecture on how to memorise things, Flora said, “Wow, it was a great lecture! Very interesting! But how could Dr. Chan spend the whole lesson talking about memory yet without a single word on that new drug from the health food store? I am talking about the new drug that can enhance memory. It says on the label that it enhances memory, a feature which has been tested by doctors and is proven clinically.”

Think about the information Flora has so far provided:

A. Let us assume that Flora is a very good friend of yours. She is honest and sincere and she would do anything for you. She firmly believes in the effect of this wonderful drug. How important is the opinion of your honest and sincere friend to you in considering the effect of this drug?

☐ not important
☐ quite important
☐ very important

B. How important is the sales outlet, such as a health food chain store, a high end supermarket or other kinds of shops, to you in considering the effect of this drug?

☐ the sales outlet is not important
☐ the sales outlet is quite important
☐ the sales outlet is very important

C. In considering whether you would buy this drug or not, how important is it that it has passed the clinical testing conducted by doctors?

☐ passing the clinical testing conducted by doctors is not important
☐ passing the clinical testing conducted by doctors is quite important
☐ passing the clinical testing conducted by doctors is very important
Flora shared with you her beliefs about the drug’s claim to improve memory:

“The package says that a housewife, Mrs. Li, living in Sham Shui Po who used to have a very poor memory, took this drug for three weeks and her memory has greatly improved.”

“Also there is a student of our age who often had difficulty memorising what he learnt at school. His memory has improved since he started taking this drug. This is very important to us since we also have a lot of information to memorise. Perhaps this drug will work for us as well!”

“I was very worried about the chemistry examination. Although I tried very hard, there was just too much material to memorise. I was afraid that I might fail so I took two tablets of this wonderful drug. Guess what? I got a B! This is my proof of its effectiveness. Without this drug, I do not think I could perform so well.”

D. What is your opinion? Do you believe that the drug helped to improve Flora’s memory? Is there any clear evidence to prove that this drug is effective?
E. Flora believes that the drug has helped her learn and memorise the materials from her chemistry textbook. However, we don’t know how she would have performed in her examination if she hadn’t taken the drug. We would need to conduct an experiment to determine if the drug does help to improve memory. Think of the kind of experiment that can test the effectiveness of the drug in improving memory.

F. After obtaining the results of the experiment, what are the questions that you will raise to determine the credibility of the results?
G. Based on the information we have so far, what conclusion can we draw about the effect of this memory drug?
2.7 Scientific evaluation of product claims

Do you apply critical thinking in everyday situations where you need to make important decisions? Do the following exercise to test whether you can think critically about the claims of a new product.
You may have seen similar advertisements like the one below in newspapers and magazines. This “miracle body-slimming product” claims to have certain effects and guarantees the quality of its components. Read the advertisement carefully and complete the exercise.

Decide whether the following statements are true or false:

A. This body-slimming product is available in three different dosages.
   ☐ True ☐ False

B. “Rapid body slimming” is the fastest way to burn fat.
   ☐ True ☐ False

C. Guarana consumes calories and specialises in fat dissolution.
   ☐ True ☐ False

D. “Easy body slimming” may be most suitable for people who only need to burn a small amount of fat.
   ☐ True ☐ False
E. This body-slimming product is safe (made of 100 percent natural ingredients), even though it may not be effective.

☐ True ☐ False

F. The Guarana mentioned in the advertisement is 100% natural because it does not contain pesticide or herbicide.

☐ True ☐ False

G. Now take a closer look at the advertisement. The pills have little tails. What type of effect is the advertiser trying to create? Write your answer in this box.


H. The cautionary statement “please consult your doctor” in the advertisement indicates that the manufacturer of this body-slimming product is at least concerned about consumer safety.

☐ True ☐ False
2.9 Examples of leading people into thinking from a particular perspective

Example 1

Handguns don’t kill people, people kill people!

In some countries, including some states in America, adults can obtain a gun easily. A lot of people think that handgun ownership should not be restricted. On the other hand, there are also many who believe that handguns should be strictly controlled. Both sides have their reasons to support their arguments and they will continue to disagree because they find their own reasons more compelling.

You may have heard of a saying “Handguns don’t kill people, people kill people”. Using this argument to support the view that people should have the unrestricted freedom to own guns is inappropriate and makes a poor inference.

The important point here is not to tell you which side is right. When you have to decide your stance on a controversial issue, you need to collect information and acquire sufficient evidence. Do not be misled by popular slogans like “Handguns don’t kill people, people kill people”.

Example 2

Uploading doesn’t infringe upon the copyright, downloading does cause the infringement!

You may have heard about this from people who often upload films, songs or TV programmes onto the internet. The fact is that any unauthorised copying, transmitting or unlawful gain of interests through the use of unwarranted products constitute infringement of copyright, even when concerned parties have not engaged in the selling or trading of such products.

Therefore, both uploading and downloading copyrighted products are illegal by definition.
This practice is prevalent in Hong Kong. Many people hold that uploading should not be deemed illegal or criminal. On the other hand, there are also many people who support prison terms for such behaviour, especially people from the relevant industries such as filmmakers, singers and composers. We should carefully weigh these reasons.

When you have to take a stand on a controversial issue (such as copyright infringement), you need to collect relevant information and acquire sufficient evidence. Do not be misled by popular slogans like ‘Uploading doesn’t infringe upon the copyright, downloading does cause the infringement!’

The following are all common fallacies used to lead people into thinking from a particular perspective.
2.10 Four types of common fallacies

Fallacies are arguments that often seem correct, but actually contain invalid reasoning.

There are many types of fallacy. We will first look at four common fallacies in daily life. These fallacies are often seen in the mass media. Politicians, advertisers and people who intend to persuade others to take a specific stance often use these tactics.

Guilt by Association / Virtue by Association

Guilt by Association

If a news report mentions that a student from a certain school has committed shoplifting, parents of children studying in that school will certainly be very upset. This is because other people will associate the wrongdoer with the rest of the students. The disgrace is not limited to the offender, but will further spread to the rest of the students or even to the entire school.

The above is an example of guilt by association. A person's bad reputation affects those around him/her. Intentionally or unintentionally, people tend to think about others in connection with the people related to them. Plenty of similar examples occur in political parties, companies, institutions or associations. Once their reputation is damaged, related people or organisations inevitably suffer as well.

Virtue by Association

Virtue by association, just as its name implies, refers to building a positive image of one person through the good reputation of another person. If you excel in a certain area such as in sports or in the academia, then your friends will tend to think that your brothers or sisters will be equally remarkable. This is the fallacy of virtue by association.
Popularity and Testimonials

The tactic of popularity is also referred to as “following the trend or do as others do”. In general, people tend to judge whether an affair is right or wrong based on whether others are pursuing it. If most people are doing it, then it must be right. The tactic of popularity is extremely persuasive and is frequently used by advertisers to encourage consumers to buy apparently fashionable products. Indeed, people do follow the trend.

Testimonials are very convincing at first sight. To distinguish the truthfulness of a product’s testimonial, you need to ask yourself the following questions:
1. Has the person endorsing the product received any financial or other benefit from the product promotion?
2. Is s/he a reliable source of information?

If you can answer “no” to the first question, and “yes” to the second, then the product testimonial will usually be more convincing. Still, detailed confirmation is warranted.

Weak Analogies

When we try to understand new things, we often compare them with those we are familiar with. Analogy can play a significant role in situations like this.

In biology class, the teacher often compares the cell system to the operation of a factory: Every part has a specific function and every function is controlled by the cell nucleus or the control centre of the factory. This is a proper analogy and it helps students understand cell structures and their functions.

However, weak or improper analogies may be used to mislead people. For example, the American Government proposed to ban the use of Chlordane, a potent pesticide that could cause severe diseases in humans or cancer in animals. A legislator used the prohibition of private automobile use as an analogy to the proposed ban on the grounds that people get injured or killed in automobile accidents.
Let us examine the weaknesses in this analogy. The societal impacts of prohibiting private automobile use and banning a specific pesticide are fundamentally different. The danger of the pesticide is also much greater than that of automobiles. Moreover, there are other alternatives to pest control besides using Chlordane.

**Appeals to Tradition**

We are all familiar with remarks such as “We have always done it this way”. Although we may like to do things in the conventional way, it does not necessarily mean that there are no better alternatives. Many Hong Kong people think that there is no need for a regular physical check-up. They tend to believe that this is necessary only when they have a health problem. People argue that their parents did not receive that kind of regular physical checkup either, so it is not a problem at all. However, we might claim in response that prevention is better than cure. If we see the doctor only when we have obvious symptoms and problems, it will be too late and we are likely to regret it.

As we learn about critical thinking, we see how it is necessary to make careful analysis and investigation. When others make a proposition, we must pay attention to whether their supporting reasons and their methods of reaching the argument are reasonable or not.
Evaluate the following remarks and decide which kind of common fallacies has been committed: guilt by association or virtue by association / popularity / weak analogy / appeal to tradition.

A. Many people support the right of people to own guns. If many people think that there is no problem with introducing such a law, then it must be a reasonable thing to do.

- Guilt by association or virtue by association
- Popularity
- Weak analogy
- Appeal to tradition

B. Undoubtedly this is the best form of government. It has been in place for more than two hundred years. Time is the best proof of its efficiency.

- Guilt by association or virtue by association
- Popularity
- Weak analogy
- Appeal to tradition

C. May is considering whether she should vote for Winnie or Jack in the class chairperson election. Her friend told her that Jack used to hang out with some delinquents in the past. May decided that she would not vote for Jack if indeed that was true.

- Guilt by association or virtue by association
- Popularity
- Weak analogy
- Appeal to tradition
D. The fast food industry tries very hard to sell people an unhealthy lifestyle. As it did with the tobacco industry, the government should make the fast food industry compensate for the additional health cost associated with eating their food by paying people to lose weight.

- Guilt by association or virtue by association
- Popularity
- Weak analogy
- Appeal to tradition

E. Many people claim to have seen ghosts. Therefore, ghosts must exist.

- Guilt by association or virtue by association
- Popularity
- Weak analogy
- Appeal to tradition
Among the common fallacies, weak analogies are the most prevalent. Analyse the following analogies and decide whether their use is proper or not.

A. We go to an orthopaedic doctor for a broken arm. So, why don’t we go to a love doctor for a broken heart?

□ Proper
□ Improper

Explain why this analogy is proper / improper.
B. It is legal to smoke and drink despite their serious impact on health. Yet, it is illegal to consume marijuana even though there are no substantial research findings on the impact of marijuana on health as in the case of tobacco and alcohol. Therefore, marijuana consumption should be legalised.

- Proper
- Improper

Explain why this analogy is proper / improper.
C. A judge once made a remark on the use of illegal drugs, “If people can gradually cease to use butter, they should also be able to reduce the intake of cocaine.” (“Should drug use be legalised?” by W. Bennett, Reader’s Digest, March 1990, No. 136, p.90)

□ Proper
□ Improper

Explain why this analogy is proper / improper.
Analyse the following statements and decide whether they contain fallacies. If yes, what kind of fallacy is it? Please explain in your own words.

A. I wanted to buy a sports car made in Germany but I could not afford it. So, I had to buy a Japanese one.
   □ The sentence contains no fallacy.
   □ The sentence may contain a fallacy:

B. I am sure that the new council member belongs to the People’s Party since both his parents are members of the Party.
   □ The sentence contains no fallacy.
   □ The sentence may contain a fallacy:
C. No one can prove the existence of extra-sensory perception (ESP), so we may infer that no such thing exists.

☐ The sentence contains no fallacy.
☐ The sentence may contain a fallacy:

D. “Your Honour, this little girl should be judged not guilty because she came from a broken home.”

☐ The sentence contains no fallacy.
☐ The sentence may contain a fallacy:
E. The Hong Kong SAR University suits you most. It has a better computer department than Kowloon University and it offers more scholarships than the New Territories University.

☐ The sentence contains no fallacy.
☐ The sentence may contain a fallacy:

F. The United States can continue to send troops to the West Asia or it can also withhold its troops. Which approach do you think is better?

☐ The sentence contains no fallacy.
☐ The sentence may contain a fallacy:
G. Illegal drugs constitute a major threat to society. In recent years, with the ever increasing rate of illegal drug use, college admission rates continue to drop. Both illegal drug use and college admission increases and decreases in a comparable rate.

☐ The sentence contains no fallacy.
☐ The sentence may contain a fallacy:

H. He is a poor writer because his writings are poorly written.

☐ The sentence contains no fallacy.
☐ The sentence may contain a fallacy:
You may not find obvious fallacies in the following sentences. However, they may contain words that will mislead your thinking. Read them carefully and point out the misleading parts.

A. Why should I learn argument analysis to decide whether an argument is clear or not? Aren’t there enough arguments in this world already?

How does the sentence mislead our thinking?

B. It is not true that the head of the country is not opposed to prohibiting the sales of this drug.

How does the sentence mislead our thinking?

C. This song is a hit in Taiwan.

How does the sentence mislead our thinking?
D. Why would you ever want to make friends with that “idiot”?

How does the sentence mislead our thinking?

E. The best way to overcome your shyness is to reshape your character.

How does the sentence mislead our thinking?

F. Did you see the car running a red light just now?

How does the sentence mislead our thinking?

G. This minced beef is seventy-five per cent fat-free.

How does the sentence mislead our thinking?
H. This minced beef contains twenty-five percent fat.

How does the sentence mislead our thinking?

I. All patriotic Canadians will consent to it.

How does the sentence mislead our thinking?

J. Only health maniacs and dictators will support a smoking ban.

How does the sentence mislead our thinking?
2.15 Summary

Let’s review the contents of this section:

• Information from friends is not necessarily reliable. Recall the example of Flora and the wonderful memory-enhancing drug.
• What about customer testimonials? Generally speaking, these people are paid to promote the product. Do you think their views are unbiased?

On the other hand, even though the product you intend to buy and use has passed clinical testing, you should still have a good understanding of the testing method.

Researchers like to use the “double-blind” method. A control group and an experimental group are involved in the testing of the product. The control group is given a placebo without the intended effect whereas the experimental group is given the real product or therapy. Subsequently the researcher compares the two groups’ average scores to determine if the therapy is effective or not.

It should be noted that the product and the effect may be related, but this does not necessarily mean that the effect is a direct result of the product or that there is a cause and effect relationship between the two. [Note: Other than the double-blind method, we have to take care of a lot of research design details in order to address the causal relationship between the product and its effects.]

In addition, fallacies can lead you into believing or doing certain things. Fallacies are commonly seen in daily living, ranging from the opposition to gun control to the sales of sneakers.

We hope that you will think seriously about the main points of this section. Also, think carefully about what the advertisers or even common people are saying and how their remarks are influencing your thoughts and behaviour.