（1）

Truth and Validity

- Xiao Ming had a dinner for 100 yuan on the menu in a restaurant. But when he was paying the bill, the restaurant owner asked him to pay 500 yuan. Xing Ming thought it was ridiculous and refused to pay such a high price. In the meantime, the restaurant owner yelled:
- “The man is a thief. He wants a dine-and-dashing. He refused to pay.”

I had known the strange story long before I learned this course. At this time, I would consider the story in the following way:

1. *Xiao Ming had dinner in the restaurant.*
2. *Xiao Ming did not want to pay the bill.*
3. *The restaurant owner thought Xiao Ming did a dine-and-dashing.*

At first glance, I would think the restaurant owner was right since the inference from (1.) and (2.) to (3.) is right. But soon I found that it was the restaurant owner’s problem because he asked the customer to pay an unreasonable price, which was the reason why Xiao Ming did not want to pay the bill. It is the detail that I had not taken into account and left out in (2.). Hence, as soon as I fixed it, I would conclude that it was the restaurant owner’s fault and Xing Ming is innocent. However, there was still a question left on me: *Is it always right that when not all premises true will always give a false conclusion even though the reasoning is right?*

Before learning this course, when I was facing some situations in which I needed to distinguish whether someone’s words are meaningful and true for reality, I would try to judge their words from two steps:

1. *If the supports for their words and the conclusions of their words are convincing?*
2. *If their narratives follow a right way?*

That sounds much like I have realized to separate the arguments (or reasoning) from the premises and the conclusion and analyze them respectively, although sometimes I might not do that successfully. However, even though I have noticed that the process between the premises and the conclusion is essential, I still reckoned it was a subclass of conclusion and to evaluate them in the same way, that is, whether it is true or false. In my cognitive perspective, I was unaware that there exists such a concept as validity, so I always confounded the meaning of truth with the meaning of validity and equated them as the same. I used the same criteria to evaluate them.

After learning this course, I learned the concepts of truth and validity and some relevant content, which are the central concepts in logic. Immediately, I found that they are the different evaluation criteria for different concepts. Argument is contrasting with either premises or conclusion. Simultaneously, their evaluation criteria are widely divergent.

- *Truth* corresponds with any individual proposition or statement but can never be applied to any argument by itself.
- *Validity* corresponds with deductive argument but can never be applied to any single proposition or statement by itself.

- They are both intrinsic attributes of the things to which they correspond.

(Patrick J. Hurley -- A concise introduction to logic)

At this time, I realized that I had made a mistake. There is something wrong with the thought I used to hold. When we are judging some words including deductive argument, we should not only separate the argument from the premises and the conclusion, but also treat them equally and evaluate them in a different way. If I focus on the truth, I should see whether the premises or the conclusion make sense. If I concentrate on the validity, I should look for the logic relation of the argument between the premises and the conclusion, and then reflect on whether the argument can provide conclusive grounds for the truth of its conclusion when the premises are supposed to be true.

What I learned responds to my question perfectly as well:

- *Is it always right that when not all premises true will always give a false conclusion even though the reasoning is right?*

The answer is obvious. The truth of conclusion has no single relation with the truth of premises or the validity of argument. Likewise, the truth of the premises and the conclusion do not determine the issue of validity. What can we affirm only is that if an argument is validity and its premises are true, then its conclusion must be true (by the definition of sound, see the details below). However, for other cases, we should base on the actual condition to analyze the present problem instead of asserting as sure as this time. Hence, the answer of my question is that it may be right sometimes but wrong for another time:

- All animals are people, monkey is a kind of animals → therefore, monkey is a kind of people. (false premises with false conclusion)
- All people are whales, blue whale is a kind of people → therefore, blue whale is a kind of whales. (false premises with true conclusion)

The examples may sound strange, but they are some good instance for me to reply to the question.

In addition to the above, there is a chart in the course that I think is vital.

Premises	Conclusion	Validity
T	T	?
T	F	Invalid
F	T	?
F	F	?

(page 152, JD.Cheng_L_Logic-3, ppt of Dr. Cheng)

In this chart, *T* is true, *F* is false, *?* is unsure. The chart clearly tells us that the irrelevance of premises' and conclusion's truth and argument's validity in deductive argument except a special case constrained by the definition of sound.

Hereinbefore, we may notice that there occurs a new concept: sound.

- A valid deductive argument is said to be *sound* IF all of its premises are true.

(Patrick J. Hurley -- A concise introduction to logic)

This concept connects truth and validity in some extent while deductive argument is

in a special condition. However, we should always remember that generally, knowing the truth of premises and conclusion merely does not conclude the validity of argument.

In a nutshell, validity is usually irrelevant to truth. And validity is a characteristic of deductive argument. When using these concepts, we should pay attention to the application condition.

(2)
1. False. There is no intermediate between valid and invalid. So there is no argument that "almost valid".
2. False. The strength of inductive argument only has two kinds: either strong or weak. No intermediate.
3. False. They are the different concepts. We cannot equate them.
4. True.
5. True.
6. True.
7. False. By the definition of sound, a sound argument must have valid argument and true premises.
8. True.
9. True.
10. False. By the definition of strong, a strong argument must have a probably true conclusion when premises are true.
11. True.
12. True.
13. True.

(3) counterexample: to prove invalid.
1. Isolating the form of the argument: All Q contain B, All G contain B. Therefore, all G are Q.

Counterexample: All men contain hair, All women contain hair. Therefore, all men are women.
2. Isolating the form of the argument: No U are P, Some U are not F. Therefore, some F are not P.

Counterexample: No people are monkeys, Some people are not Yunnan snub-nose monkeys. Therefore, some Yunnan snub-nose monkeys are not monkeys.
3. Isolating the form of the argument: No P are A, No C are A. Therefore, no P are C.

Counterexample: No children are fish, No people are fish. Therefore, no children are people.
4. Isolating the form of the argument: Some S are not O, Some G are not O. Therefore, some S are not G.

Counterexample: Some girls are not cats, Some people are not cats. Therefore, some girls are not people.
5. Isolating the form of the argument: Some I are not E, All C are E. Therefore, some C are not I.

Counterexample: Some people are not politicians, All presidents are politicians. Therefore, some presidents are not people.

6. Isolating the form of the argument: If A, then E is M. Not A. Therefore, E is not M.

Counterexample: If Ben is alive, then America is a country. Ben is not alive. Therefore, America is not a country.

7. Isolating the form of the argument: If E, then either D or C. If D, then I. Therefore, if E, then I.

Counterexample: If Ben graduated from college, then he should either continue to study or work in company. If he continued to study, then he would be master. Therefore, if Ben graduated from college, then he would be master.

8. Isolating the form of the argument: All C with L are either S or I. Therefore, all C are I.

Counterexample: All people with eyes are either men or women. Therefore, all people are women.

9. Isolating the form of the argument: All R that are F are either L or H, All R are H. Therefore, all F are L.

Counterexample: All financial policies that are policies are either promoting the economic development or Stimulating people to spend, All financial policies are Stimulating people to spend. Therefore, all policies are promoting the economic development.