Chapter 3: True or False

1 Quick Review

Dear Diary,

It is late morning and I noticed that it had snowed all night; the bright sun has made the bright snow even whiter, making me want to take a long walk. I opened the window just now to let in some fresh, cold, and invigorating air. I was told breakfast will be ready soon, so in the meantime, I will quickly jot down the main ideas from the previous discussions.

In the first discussion, we reached the conclusion that deductive logic is the foundation of all logic, since its capacity to preserve truths is highly valuable. One could say, reasoning that is based on deductive logic is always valid.

But what is unclear is whether this elementary form of deduction is useful in complex cases? I should ask them later when the time is suitable.

We also discussed what an argument is: a collection of at least two but up to n true premises or valid reasons, that satisfy the conclusion; conclusions are claims that must be relevant to the premises, and all premises must be true and relevant to the conclusion.

Finally, we also discussed that the main benefit of logic in all its forms was to enable us to think clearly, correctly, and critically, to improve our minds' capacities for abstract concepts and exercises. But what is the benefit of a training in abstract concepts outside of its own field? This will be my second question.

2 Either True or False

What a long day! I am finally back. And now I must write all this before I lend my body to that shadow of death, from which we miraculously wake up every morning, still almost the same person, and with our memories still intact.But I am digressing.

When we were having breakfast, my Persian cousin, Ayar, answered my first question by saying that although Aristotlean deduction is elementary and restrictive, it is the foundation of the modern symbolic logic.

He said just like algebra developed as an abstraction to simple arithmetic, so did modern deductive logic advance upon the foundations laid by Aristotle.

My German cousin who is equally well-read said: "But you see, although we can add numbers like $4+4+4+4$, we prefer an abstraction like $4*4$; we save time and prevent errors when we use the abstraction (here multiplication), but this does not totally invalidate addition."

Wantumski then completed the answer: "Or just as $2ab^6+5x^9$ is an algebraic binomial (has two terms), it is still based on the fundamentals like exponents and use of variables instead of numbers, and use of numbers as coefficients of variables, all of which, finally rest on exponentiation, which itself rests on multiplication to self, and multiplication on addition. It goes all the way back to addition."

So I understood from this that although the Greeks laid the foundation to modern logic, using their methods today would be as facetious as using pure addition when the problem requires algebraic manipulations! Or although Newtonian physics is valid for a certain

class of problems observable by humans, it becomes the wrong tool when the class of problems become too complex for humans.

In the afternoon we decided to do whatever we pleased, so I headed to the local tavern: I wanted to taste the famous Slav (black-bread and honey drink) Kvass. Right there I noticed a drunk man who was talking to himself and smiling at me for no reason.

At first I thought he must be a mental case and ignored him. After some time though, my ignoring him seemed to have annoyed him, and he stood up with some difficulty and slowly approached me. He had clearly drunk one too many. I looked at him and asked:

"Good afternoon, Sir. But do we know each other? I did not think so."

His crazed eyes appeared shocked at my good English manners. I also sensed that he understood English. Without saying anything, he drew his sword from his side and meant to attack me. But I had already anticipated this and surprised him with a counter-attack that unarmed him, and also made him fall.

I said: "This is not correct. You don't know me, and I have done you no harm. What reason could you possibly have for attacking me?"

But he did not say anything and merely blinked. I then continued to enjoy my Kvass. After a while I noticed he had fallen asleep.

I mention this here because, in addition to objective statements, we also have subjective reasons for our actions. In other words, because words and reasons appear differently to different people, there is a need for a unifying and standard and objective method of reasoning that should act as a benchmark.

But how do we achieve this? Ayar said that we do this when we differentiate between statements and non-statements. He said:

"A statement can either be true or false, but never both. Anything that is not so, is a non-statement."

I asked Karl: "Could you pass me the cookies please? Thank you. Now, is my request for cookies a statement? It appears not."

Karl: "Genau. (Exactly). Statements are either false or true, and they are actually assertions. A question is not an assertion."

Wantumski added: "Commands are also not assertions. 'Come here!' is not a statement."

Then I asked: "Can a false assertion be a statement?"

Wantumski: "Indeed. All statements are either true or false. Sometimes we may know if a statement is true, or false. But there are times when we may never know whether a statement is T or F. Simply because we can't know the T/F state of a statement does not mean the statement does not have a T/F state, or does not mean it is not a statement."

That was something! Wantumski knows how to pack the densest ideas in a simple paragraph. So then I said:

"'I'm a Lion.' Is this a statement?"

Ayar replied: "Indeed. But its truth-value is false."

"What do you mean truth-value is false?" I asked.

Wantumski laughed: "It is a fancy way of saying it is false."

Then we discussed teleportation. Before we had arrived in this world of 17th century Little Russia, where Ayar and Wantumski lived, we were all living

in the year 2200, where teleportation was as common as was internet in 2020.

But the people who were living in this 17th century world would not believe us if we told them this. Had we asked them whether teleportation to a different time and place were possible, they would have said no.

So the interesting thing was that although teleportation was objectively true, believing that it was not did not make it any less truer. This is what is meant by truth-values of statements: they are either true or false, but this is irrespective of whether we know they are so, or irrespective of whether we think they are true or false.

That drunkard at the tavern, for instance, may have thought that he was stronger than me; he must have entertained such a statement: "I can defeat the young man because I am older and therefore an experienced fighter." This is what he thought, even though his strength does not increase just because he says so or thinks so.

Since I am objectively stronger than him, then the truth-value of the statement will be:'Sydney is stronger than the tavern drunkard.' The spectators may not have known this, but their lack of knowledge does not decrease my strength.

If we look at the argument the drunkard may have entertained, we will also have found a problem: age does not automatically guarantee experience, and experience does not automatically guarantee wisdom and skill.

A donkey may have spent n years carrying burdens, but we can hardly call this experience, since it was the same thing every day. It is therefore possible

that a younger person have more experience than an older person, simply because the younger person may have had many varied experiences, if the older one had but the same monotonous lifestyle.

So the drunkard's argument is false because its premises' truth-values are false, and therefore his conclusion is false. Had he some knowledge of logic, he would have analyzed the situation *a priori* (in advance) and avoid the *a posteriori* humiliation in the little altercation he attempted.

I enjoyed the day and learned about the importance of objective truths, valid argumentation, and the need for complex and abstract reasoning based on simple building blocks inherited from Aristotle.