Symbolic Logic
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Lecture - 03
Recognizing Arguments
Diagramming Logic Flow

We will start the Module 3 of the NOC course Symbolic Logic. Module 3 will introduce you how to recognize arguments, whether there are any guidelines for identifying a set of claims as arguments. Then we will also look into how to do the diagramming of the logic flow given in the argument. Each of these are important skills, so we will try to get it clearer as we go into the… through the lecture.

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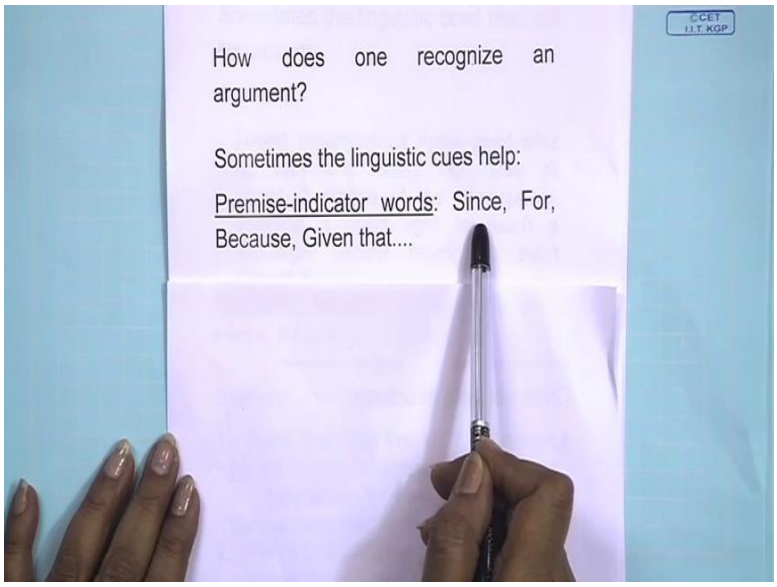

So, first thing is how does one recognize an argument? Are there any tips to be given for recognition of an argument? And so on. Well, the first thing is that, you know, remember the definition of an argument. In our previous module, I have already explained that arguments are special set of claims. So if you do not know what claims are, then set of claims you will not be able to identify. So, better that you clarify what is it that you know about the claims. Second, any set of claims cannot be an argument. That also we have established. There has to be a certain internal structure. And that

structure would be the conclusion is going to be supported by the remaining claims, which will act as premises.

So, that definition is going to be your basic guideline for understanding, or for identifying, an argument. But then, there are also some tangible signs. Sometimes these tangible signs, or cues, may come from language itself. So, remember to read the argument carefully. Sometimes the *linguistic cues* may help. Linguistic cues as in some words, some phrases that might be there in the passage, or in the state of claims itself.

What kind of language words ? Well, there are known, you know, some indicator words. For example, there are some premise indicator words. These words typically, usually indicate that what follows is a premise. When you say '*since* this is the case, therefore that has to be the case', that 'since' is a premise indicator since. Or , 'for', you are giving a reason, so you say 'for, this has to be the case'. 'Because': that is a give-away, clear ndicator, premise indicator word. 'Given that'. You know, there are many such words. So, just to give you an idea that read the passage carefully, and try to identify, or locate, premise indicator words. So that you know what follows must be acting as; these are claims which are acting as, premises.

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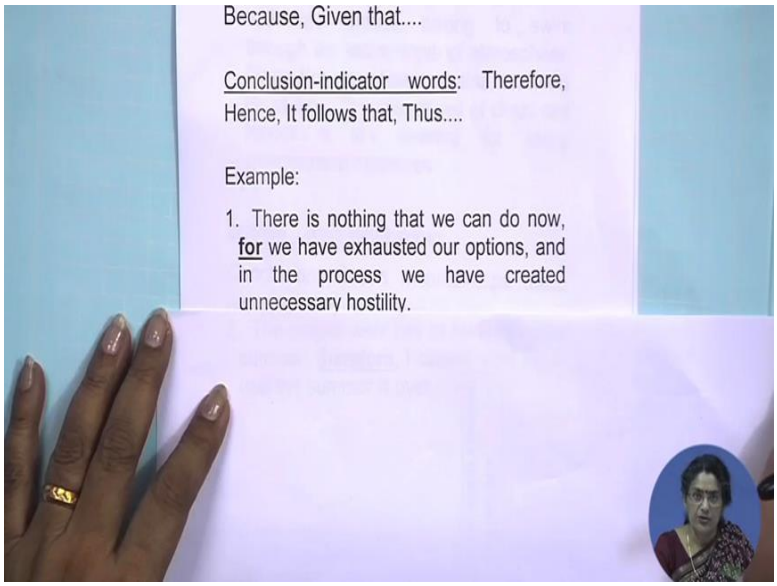

Similarly, there are also conclusion indicator words. So, words which indicate that what follows has to be a conclusion. For example, a clear indicator word is 'therefore'. What follows the 'therefore' has to be the conclusion. 'Hence', 'it follows that', 'thus', 'so',

etcetera. So, these are not exhaustive list, but this is just to open your eyes that it is important to read the arguments carefully, or the passage carefully, to see whether there is an argument in it or not.

So, I said that first of all the definition itself is going to matter, and then I said there also might be linguistic cues, and the language has to be carefully read and re-read in order to identify this. When I say this, I also say this with responsibility that sometimes none of these words may be there. And we will take some example of that also. But right now, let see when we say that if there are linguistic clues, how they can help.

So, first example comes to you like this. Here is a small passage. What we are asking ourselves, does it contain an argument ? Is this an argument or not? Let us read it first. "There is nothing that we can do now, for, we have exhausted our options, and in the process we have created unnecessary hostility".

You are asking yourself: Is it a set of claims? First question, and the answer is yes, there are number of claims. For example here, for example here, for example here. Then next the question is: Is there a certain kind of relationship? Is there a main claim and supporting claim sort of relationship? You can also ask instead of that: Are there any indicator words here? We have found one which is : 'for'. So, this is the case, for, that... What does that tell you? That what follows the 'for', is being offered as a supporting reason why this has to be the case.

So, here the 'for' is acting up as the premise indicator word, and that should tell you that this is an argument. And then if you do the close reading, you will find that indeed what follows the 'for' are two reasons what is being given as the reason why the person is saying there is nothing we can do now. That is a rather argument in despair, but still the structure, the necessary structure remains. So have you understood this? This is the premise indicator word that sometimes helps us to identify an argument. Let us take another example.

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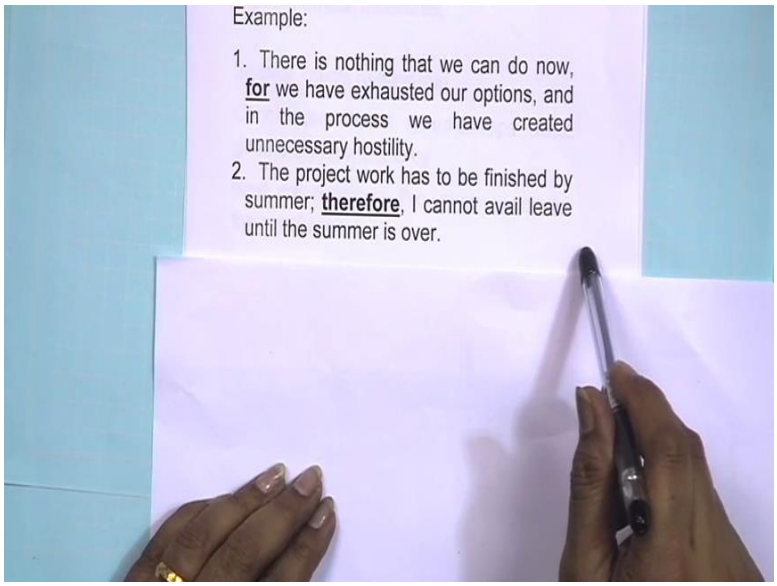

This is what we are looking at: 'The project work has to be finished by summer, therefore, I cannot avail leave until the summer is over.' Is this an argument? First question: Is it a set of claims with a certain specific relationship among the claims inside? Answer is: Yes on both counts. Moreover, there is this conclusion indicator word which is 'therefore'. So what follows the 'therefore' is being proposed as a conclusion of this argument. What is the conclusion? 'I cannot avail leave until the summer is over'. Question is: Why? That answer is given here: Because 'the project work has to be finished by summer'. So, in a way you can see what I was talking about that you can get help if you read the argument rather closely, and look for this kind of linguistic clues that are often left inside the passages.

Having said that I will further add, that I also said that, you know, that there are these kinds of linguistic clues given in the passage by the original user of the argument. But sometime there is nothing. But trust your logic sense, and you will find that there you can still identify the logical relationship that should be, or supposed to be there, in the set in order for it qualify as an argument. Let me show you an example.

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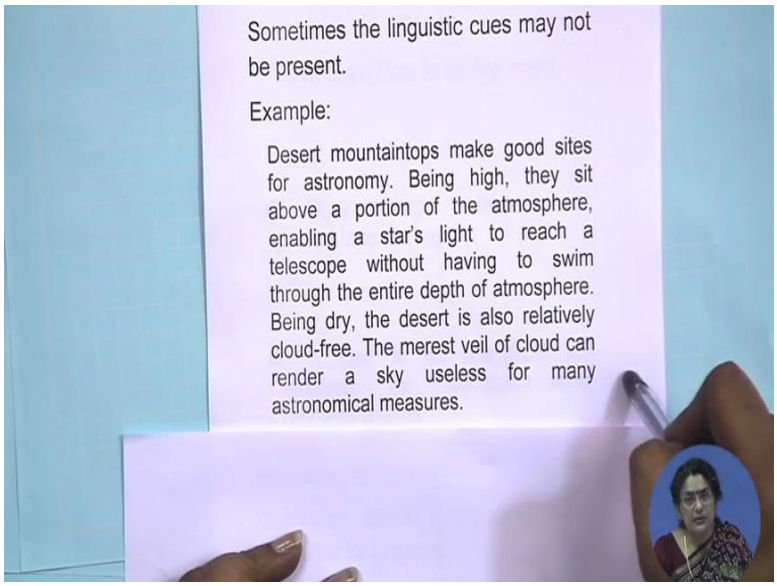

See, we should not become too dependent on the language cue; that is the whole point. So, let me show you this particular example, as we say that sometimes there may not be linguistic cues because, you know, people write in a different sort of ways, people speak in different sort of ways, and sometimes it is understood. So, here is sample of what I am saying. Here is a passage, and the passage looks a little long. So, I will read out with you.

'Desert mountaintops make good sites for astronomy. Being high, they sit above a portion of the atmosphere, enabling a star's light to reach a telescope without having to swim through the entire depth of atmosphere. Being dry, the desert is also relatively cloud-free. The merest veil of cloud can render a sky useless for many astronomical measures.' Again the question is: Is this is an argument? Or, is it just a passage? Or, is it just a set of claims?

Let us read through. First of all, please note that there are no tell-tale linguistic clues here. So, there is no premise indicator word, there is no conclusion indicator word. But without these, can we survive? Can we just find out whether this is an argument or not? Let us try to find that out. Let us read the argument once more and rather closely. Is it a set of claim which has a main claim? Is it trying to push one point as its principle or main point? The answer is: If you read it again is yes. The whole passage is trying to establish that 'the desert mountain tops make good sites for astronomy'. If you are

thinking about where to put an astronomy lab, the answer is better sites are desert mountain tops.

And the remaining, whatever you get to see here, are reasons being given why this has to be the case. For example, here, being high, so there is altitude thing, remember, it is a mountaintop, it is not a flat desert; it is a top of the mountain where you are putting it. So, being high there is a certain advantage, and that is what is being talked about in this part. Then, there is the further point we made that it is also dry and that has certain advantages for astronomical observations. So, these are the two reasons why desert mountaintops make good sites for astronomy.

What does it shows us? That what we have here is a main claim or a conclusion. And the remaining claims are acting as evidentiary basis, or supporting base, for adducing or putting forth that main claim, which is why they are premises. And that alone, that relationship alone is sufficient to establish why this has to be an argument totally. We did not get any to see any linguistic clues here. So we did not get to see, for example, any premise indicator word, or a conclusion indicator word, which is what I was talking about. But as I said, learn to read carefully, and learn to trust your innate logic sense , and you will find relationship. Remember that relationship is the very basic condition that has to be filled out before you can call a set of claims an argument. Ok? So, there are both ways are acceptable. If you are lucky, you will have the linguistic clues; if not, even then you can survive by trusting and by reading closely.

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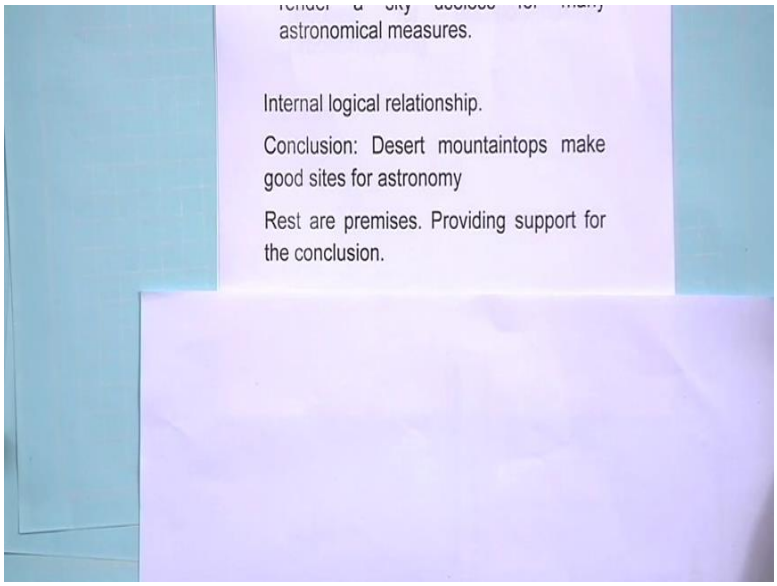

So, here we can lay it out like this: That we are not using the standard format, but still we can separate out the components of this argument. The conclusion is, 'desert mountaintops make good sites for astronomy'. The rest are premises, providing the support for this main claim. Ok?

So, this is how we can actually try to recognize an argument. It will take practice and I suggest that you try to read newspapers, that you try read some small passages, or look at different texts to see whether you can apply this skill there. Remember the definition of a claim, remember the definition of an argument, and remember that there are this kind of linguistic clues also. And that should help you to recognize an argument.

Next is, for this module, as I said, that we will learn how to capture the logic flow in the argument. Remember that in the argument there is always a logical relationship among the components. There is a certain kind of a structure. So, to visually represent tha,t we can do certain kind of flow chart or some kind of diagram, and that is what we are trying to learn here.

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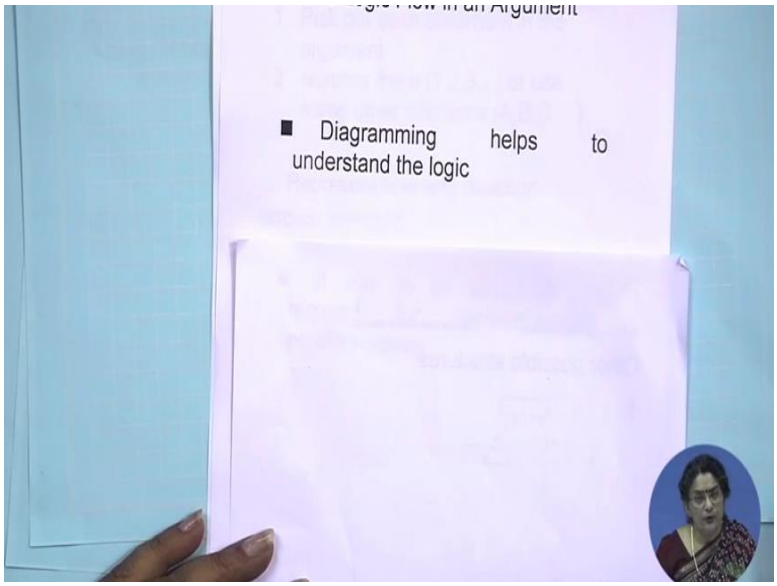

But why is diagramming needed? Well, diagramming is needed, first of all, to understand the logic in the given in the argument. Remember, we will finally talk about whether this is the correct reasoning, or incorrect reasoning. But first we have understand the logic given in the argument. So, diagramming sort of helps to reveal the logic that has been put forth in the argument.

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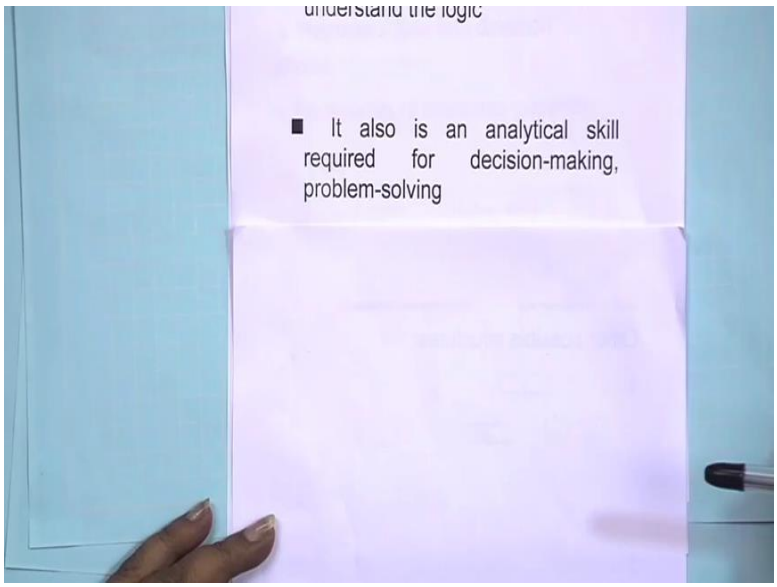

Also it is a basic analytical tool. So, if you are trying to understand somebody else's argument, in a way it helps if you can lay it out like this, and then sort of look into how

does the logic flow. And then you can make comments on whether this was sufficient or insufficient, or this is credible, or this is providing the right kind of supporting base or not.

So, I have made this point. There is a reason why we will looking into the diagramming of the logic flow. It is a skill that can be practiced also.

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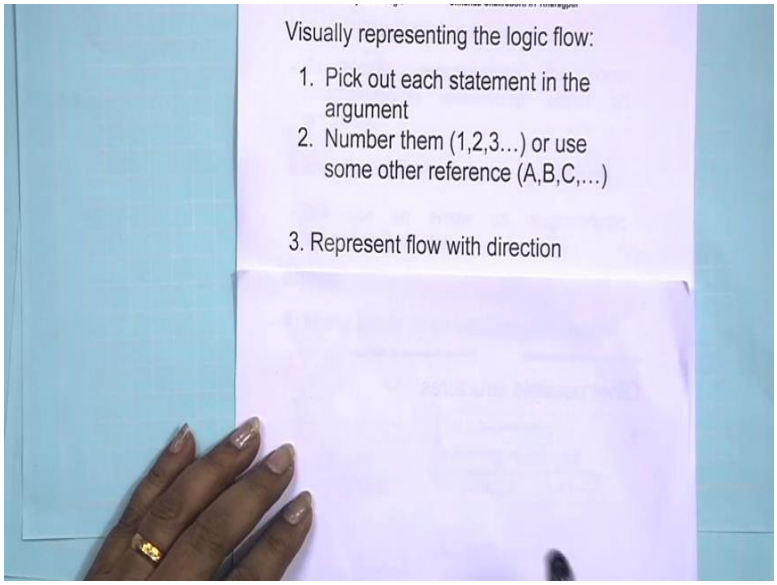

So, overall the logic flow diagram is a visual representation of the logic inside an argument. We are going inside the argument and trying to capture the logic flow. What do we have to do? Well, first of all, now you know what claims are, or what statements are. So, pick out each statement in the argument; each one regardless of whether it is premise or conclusion; in the order they come, in the sequence in which the statements are made; pick out each statement in the argument.

And then you do what? You put a number against them, or some sort of a reference system. So, you might put 1, 2, 3, or you can also use other referencing A, B, C; but some way. We are not going to use the entire, whole statements, but we will refer to them by this numbers, or by these symbols. And then we will try to capture the flow with certain directions. Directions means, where does the support coming and what is it supposed to support.

Remember the whole argument is supposed to be about a main claim, and then the remaining claims are trying to provide support. So, the flow is, the logic flow is the direction from the premises to the conclusion. Ok? So, that we are going to capture with arrow, arrow diagram. We will show you in a second, but we are going to use arrow signs to show how the logic is flowing from premises to conclusion.

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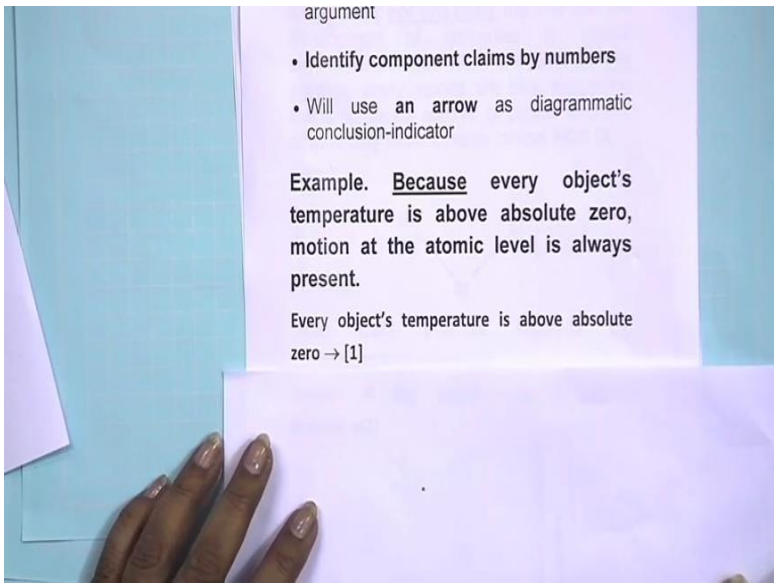

We will take an example, and then may be that whole structuring will become clearer. Say, here is a small example: 'Because every object's temperature is above absolute zero, motion at the atomic level is always present'. Is this an argument? The answer is yes. You have the premise indicator word also, plus you can see that this is supposed to provide the support to this claim, that is your conclusion.

So it is clear. Now what we have to do that we need to pick up the component claims from this passage. So, we will number them like so. For example, this statement we are going to number it as 1.

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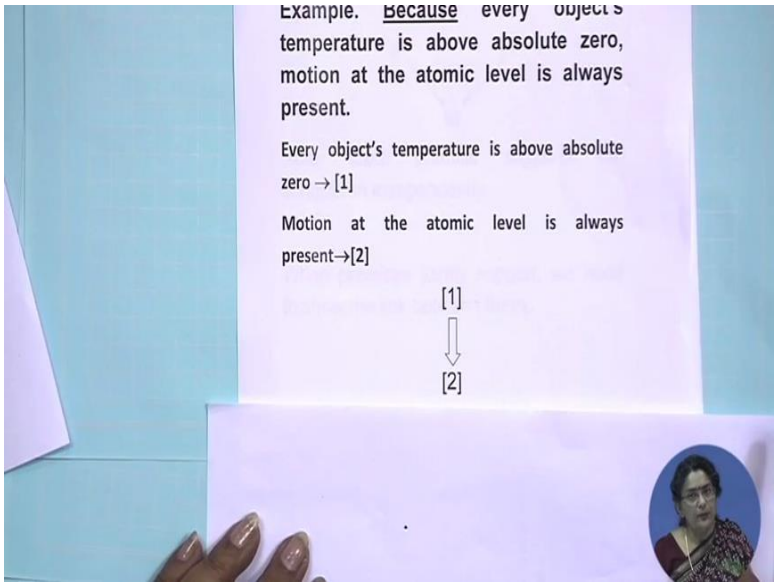

There are only two claims, and then, here is your second one. And we number it as two. So, we are not going to refer to the whole statement anymore; we will simply use one and two in our diagram. And let me ask you then, we know how the logic is flowing, where, which one is your premise, which one is your conclusion, you have already identified by now. So that is what we will try to capture. Because of 1, 2 is being put forth as the statement that has to be true.

So, here is your simple diagram. A simple linear arrow that shows this is the premise, and from this the logic is flowing towards, or the support is flowing towards, this conclusion. Alright? This is what we call capturing the logic flow inside an argument. Now, this is very simple, I understand. This is one premise, one conclusion situation, and that too not a very complicated one. But you can imagine that there can be many complexities involved in this.

Let me show you some of the structures that are available. See, it is not, I told you that there are many kinds of relationships possible. The way the premise supports the conclusion can also be different. Let me show you.

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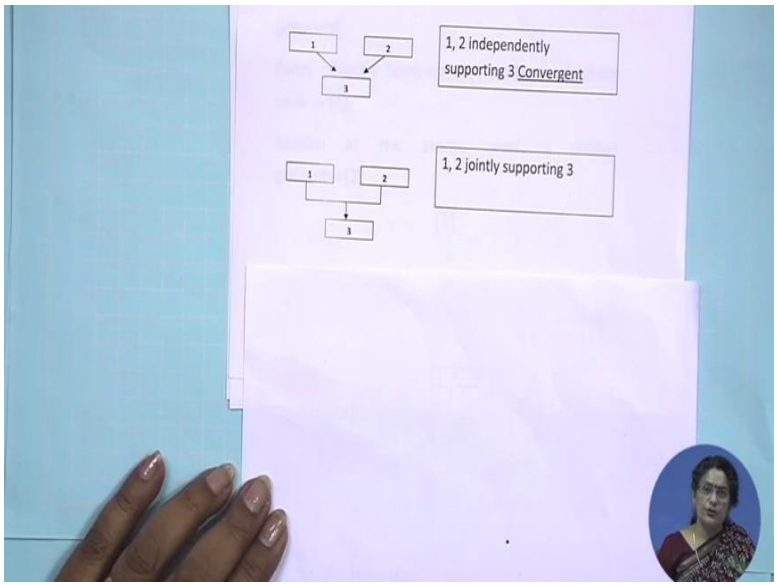

Through structures, these relationships will become very clear. Many kinds of structures possible, because of the way in which premises support the conclusion. Here, is the small sample, for example. See, we have identified the components. Obviously, 3 is the conclusion in some argument. And these are the premises, but look in which way they are supporting 3. 1 is supporting 3, 2 is also supporting 3. Note that they are supporting 3 *independently*. That is from 1 also 3 follows, from 2 also 3 follows. And they are converging; they are independently supporting, but their support is converging in 3, and look, the way it is represented here.

So, when this situation, this kind of structure happens, you know that there is no connection, not necessarily present, between 1 and 2. Nonetheless, each of them is acting as a premise towards 3. This is one kind of a structure. Now compare that, we will show you actual examples in a second, compare that with this structure, the second one. Here also we have three components, but look at the way the premises are supporting the conclusion. So, 1 and 2they are the premises, and they are *jointly* supporting 3. How to indicate that? Well, that is why we have connected them like so. This is a structure that shows that 1 alone is not supporting 3, 2 alone is not supporting 3, but they are *jointly* supporting 3. So, in a way the diagram captures more than what you can simply say by saying that 1 is a premise, 2 is a premise. The nature of that support will be captured also in your structure, in your flow diagram. So, let me show you the actual examples that we were talking about.

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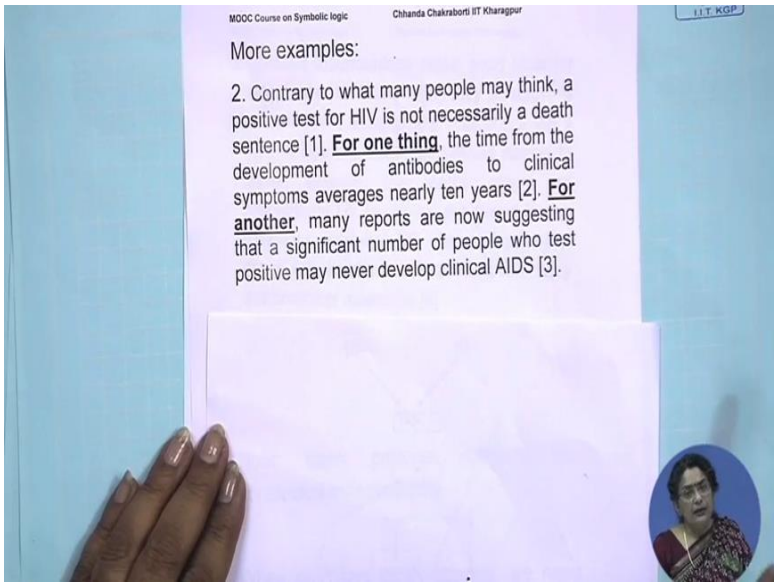

Here is one. This is a passage. So, let us take a look, 'contrary to what many people may think, a positive test for HIV is not necessarily a death sentence'. That is a claim. 'For one thing the time from the development of antibodies to clinical symptoms averages nearly ten years': That is claim 2. 'For another, many reports are now suggesting that a significant number of people who test positive may never develop clinical aids': That is claim number 3. So, there are three claims, and what we have done is to number them like so. The question is: What is the relationship among them?

By now, you know enough to say that the first sentence has to be the conclusion. What we are claiming is that, a positive, if you are HIV positive, that does not necessarily mean that you are going to die. It is not necessarily a death sentence; that is the conclusion. Why? And then we have these two premises coming up. 'For one thing', that is a linguistic clue; a premise indicator, 'for another', that is a linguistic clue also for your premise indicator. So far so good; but how do I represent this in our flow diagram? The question is: How do you see the premise, say this one, the what we are calling the number 2, how is it supporting the conclusion? And then, the premise, this what we are calling 3, how is it supporting the conclusion? For one thing, this; for another thing, this. That should tell you that they are supporting it *independently*. From this also this follows, from this also this follows.

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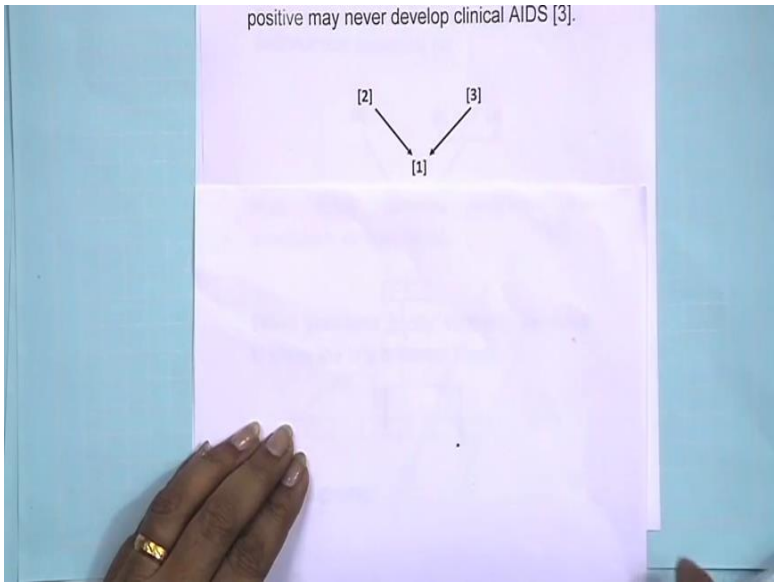

So, the structure that is going to capture the relationship is going to look like so. From 2, 1, from 3, 1. Remember, we said that if it is independently supporting, then we do not have connect them. This in itself is sufficient, this in itself sufficient, but somebody is using both of this reasons to support this in this argument. So that is our diagram for this argument.

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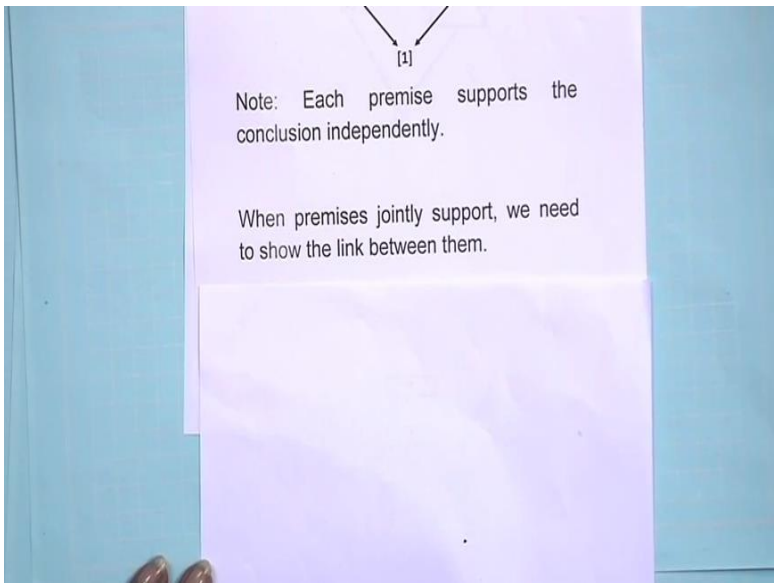

Let us take another example. So, *independent* support and we do not join it together, but when we find that the premises are *jointly* supporting, or that there is some internal

connection between the premises, then we need to show the link between the premises. And that is another example that we will try to look into.

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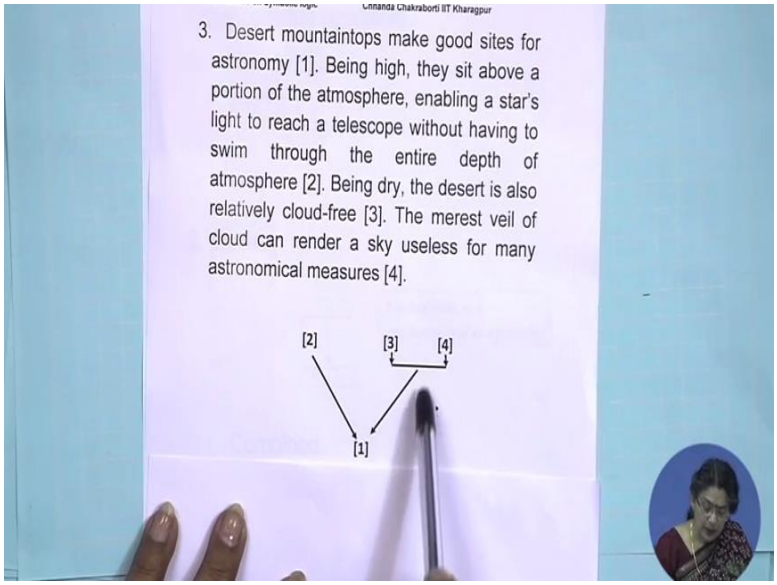

This is something that we have encountered earlier, so this passage is rather longish, but we have seen this earlier. So, 'desert mountaintops make good sites for astronomy. Being high, they sit above a portion of the atmosphere, enabling a star's light to reach a telescope without having to swim through the entire depth of atmosphere.' This whole thing is your claim number 2. 'Being dry, the desert is also relatively cloud free': 3. 'The merest veil of cloud can render a sky useless for many astronomical measures': that is your 4. So, there are 4 total components in this passage. And we have already, in earlier module we have talked about this has to be the conclusion. The remaining are all premises giving support to this.

So, the question is now how are they supporting the conclusion? And the way to represent this would be something like this. That one, that this being high, that in itself is a reason why desert mountaintops make good sites for astronomy. So here is this link. Then there is this 3 and 4. 3 says being dry, it is also, the desert is also relatively cloud free. And then comes a somewhat, sort of an explanation, of this dryness, why this cloud freeness is required; is because the merest veil of cloud can render a sky useless for astronomical purposes.

So, in a way they become a *joint*, sort of linked premises, and then they support 1 also. What did we just notice? That here is a reason why 1 has to be the case; here is another reason why it has to be the case. These two are independent reasons, but within this independent reason there is a *linked sort of a support* among the claims of this group. So, this little nuances within the argument you can capture by this kind of logic diagram.

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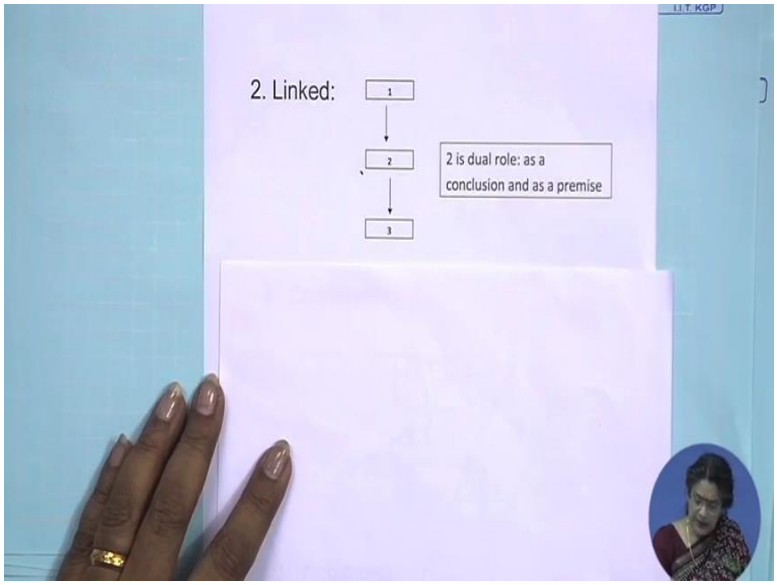

Let me conclude this module by showing you other possible structures. You know, sometimes that you can imagine the complexities that might be there in any argument. Here is an interesting one. For example, sometimes you might feel that there is a chain sort of an argument, within the same argument, that first there is this point, which leads to a sub-conclusion, and then it leads to the main conclusion. So, 3 is your main conclusion and 2 has a dual role to play. So, it is both a premise, as well as a conclusion. And in a way what you have a *linked argument* going. So, that is one kind of structure.

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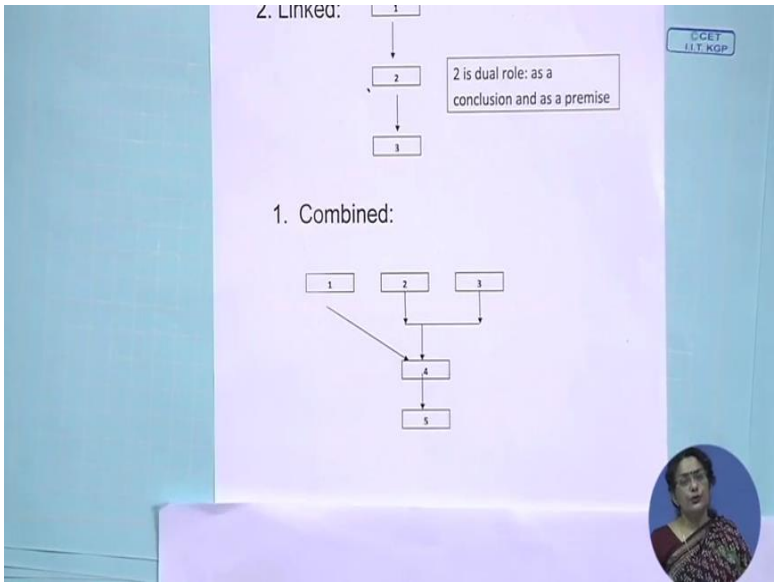

And here is, I mean, this is an arbitrary case, of course, but you can see the complexity that you can capture like this. Here is: 5 is the main conclusion, but it is coming through the support of 4; 4 is a important premise. And for 4, there are many supports; 1 is supporting 4 *independently*, 2 and 3 are *linked* and that is how they are supporting 4, but all together, all of them are supporting 5.

So, this is just to show you that there can be, the internal dynamics within the argument is sometimes very interesting, and what the logic flow diagram does, is to capture that internal relationship. This is where I will end this Module 3.

Thank you.