



Critical Thinking

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LECTURE 2

Arguments



Summary

In this week's lectures, you will learn ...

(1) **Argument**

(Collection of statements, some of which (the **premises**) are put forward as reasons to support one other (the **conclusion**))

(2) **Inference**

(To make an inference is to move from the premises to the conclusion)

(3) **Inference indicators**

(Words or phrases that indicate the direction of inference)

(4) **Putting arguments in Standard Form**

(5) **Drawing Argument Maps**

(6) **Simple Argument vs. Complex Argument**

Part I. What is an argument?

Argument =_{df} **Set of statements**, some of which (the **premises**) are put forward as reasons to **support** one other (the **conclusion**).

Example #1: The following passage contains an argument.

a **b**

“**The reason why** we should not eat meat from battery farms **is that** battery farming is cruel **and** we should not encourage any cruel practice.”

c

Three statements (labelled as “a”, “b”, “c”) are being put forward in the argument.

Question: Which statements are put forward (i.e., *intended by the author*) as the **premises** and which statement is put forward as the **conclusion**?

Answer: We need to look for *inference indicators* (i.e., words or phrases that indicate what the author intends to be reasons to support what).

1st 2nd 3rd

The phrase “**the reason why ... is that ... and ...**” indicates that the statements in the 2nd and 3rd positions are intended as the premises (i.e., reasons) to support the statement in the 1st position, the conclusion.

Consider the inference indicator again:

1st 2nd 3rd

“**The reason why** **is that** **and**”

In fact, any statements occupying the 2nd and 3rd positions are the premises, and any statement occupying the 1st position is the conclusion.

Example #2

t

m

w

“**The reason why** today is Tuesday **is that** yesterday was Monday **and** tomorrow will be Wednesday.”

Premise: *m*

Premise: *w*

Conclusion: *t*

Example #3 (Descartes’s “Cosmological Argument for the existence of God”)

g

i

“**The reason why** it is true that God exists **is that** I am an imperfect being who has a clear and distinct idea of God as a perfect being **and** only a perfect being can put the idea of a perfect being in an imperfect being.”

p

Premise: *i*

Premise: *p*

Conclusion: *g*

Important

The **same** argument can be put in different ways – where the **order** in which premises and conclusions are put forward **can vary** – using different inference indicators.

Examples

- (1) **The reason why** we should not eat meat from battery farms **is that** battery farming is cruel **and** we should not encourage any cruel practice.
- (2) **Because** we should not encourage any cruel practice **and** battery farming is cruel, we should not eat meat from battery farms.
- (3) Battery farming is cruel. **So**, we should not eat meat from battery farms, **as** we should not encourage any cruel practice.

- All three passages express the **same** argument.
- The conclusion comes **before** the two premises in passage (1), but **after** them in passage (2), and **between** them in passage (3).

Part II. Inference Indicators

As we have seen, in order to decide which statements in an argument are premises and which the conclusion, we need to look for **inference indicators**. They indicate what the author intends to be reasons to support what.

- **Premise indicators** indicate the presence of a premise.
- **Conclusion indicators** indicate the presence of a conclusion.

Premise Indicators:	Arguments formulated using premise indicators:
Since	Since <u>it is raining outside</u> (<i>premise</i>), we should stay inside.
because	We should stay inside because <u>it is raining outside</u> (<i>premise</i>).
Given that	Given that <u>it is raining outside</u> (<i>premise</i>), we should stay inside.
For	We should stay inside. For <u>it is raining outside</u> (<i>premise</i>).

- The statement appearing after a premise indicator is a premise.

Conclusion Indicators:	Arguments formulated using conclusion indicators:
Therefore ...	He is a pathological liar. Therefore <u>you should not trust him</u> (<i>conclusion</i>).
So ...	He is a pathological liar. So <u>you should not trust him</u> (<i>conclusion</i>).
It follows that ...	He is a pathological liar. It follows that <u>you should not trust him</u> (<i>conclusion</i>).
Accordingly ...	He is a pathological liar. Accordingly , <u>you should not trust him</u> (<i>conclusion</i>).

- The statement appearing after a conclusion indicator is a conclusion.
- But some inference indicators indicate the presence of **both** premises and conclusion.
For example (as we have seen): “ **the reason why ... is that ... and ...** ”.

Case 1: Is an argument being put forward?

“Yesterday was Monday. Today is Tuesday. Tomorrow will be Wednesday.”

Ans: **No**

Or at least: there is no indication that the author intends to use any of the statements as reasons to support any other. So, we do not need to treat it as an argument.

Case 2: Is an argument being put forward?

“Your cat is dead. Therefore, your cat is dead.”

Ans: **Yes**

This argument is circular and therefore a bad argument.
But a bad argument is still an argument.

Case 3: Is an argument being put forward?

“God exists. **Therefore**, Hell exists.”

Ans: **Yes.**

The first statement “God exists” is put forward as a reason to support the second statement “Hell exists” – as indicated by the inference indicator “therefore”.

Case 4: Is an argument being put forward?

“If God exists **then** Hell exists.”

Ans: **No.**

- To put forward a **conditional statement** (i.e., an “**if ... then ...**” claim) is not the same as putting forward an argument.
- In Case 3, when the author puts forward the argument, the author is committed to two claims “God exists” (the premise) and “Hell exists” (the conclusion).
- In Case 4, the author only puts forward a **single** statement, a conditional one. The author is committed only to the whole if-then claim “*if* God exists *then* Hell exists”, but not committed to the if-clause “God exists” itself, nor the then-clause “Hell exists” itself.

Part III. Standard Form

conclusion

premise

premise

“The reason why we should not eat meat from battery farms is that battery farming is cruel and we should not encourage any cruel practice.”

After identifying the premises and conclusion in an argument, we can put the whole argument in **Standard Form**.

Instructions

- Draw a **line** to separate the premises and the (final) conclusion: premises above and conclusion below the line.
- Label the premise using the capital letter “**P**”, or “**P1**”, “**P2**”, ... etc., if there are more than one premise.
- Label the (final) conclusion using the capital letter “**C**”.
- Put a **bracket** at the end of the conclusion to indicate from where it gets support.

Standard Form

P1. Battery farming is cruel.

P2. We should not encourage any cruel practice.

C. We should not eat meat from battery farms. **(from P1 & P2)**

Part IV. Argument Map

Standard Form

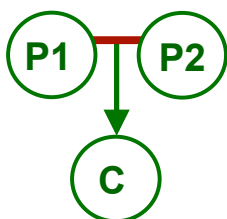
P1. Battery farming is cruel.

P2. We should not encourage any cruel practice.

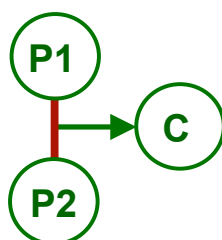
C. We should not eat meat from battery farms. (from P1 & P2)

After putting the argument in standard form, we draw an **Argument Map** for it.

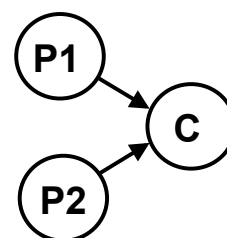
Argument Map



- It is up to you to draw an argument map vertically or horizontally.
- The arrow represents the direction of inference.
- The line joining P1 and P2 indicates that the two **jointly** (not individually) support C.



≠



Question: What is it to make an argument (or put it forward, advance it, or endorse it)?

Answer: That involves doing two things at the same time:

- (1) To claim that all the **premises** and **conclusion** are **true** (or more likely to be true than false), **AND**
- (2) To claim that the premises give good reasons to support the conclusion (i.e., to claim that the **move** from the premises to the conclusion is **legitimate**).

We call the move from premises to conclusion an “**inference**” .

- When you use statement A as a reason to support statement B, we say that you *make an inference* from A to B, or that you *infer B from A*.
- By definition, premises are those statements used as reasons to support the conclusion. So, the direction of inference always goes from the premises to the conclusion.
- If an inference from A to B is legitimate, we say that B is **inferable** from A, or that B **follows from A**.

Note: One can make an inference from A to B without endorsing A or B.

- From “Barack Obama lives in London”, you can legitimately infer “Barack Obama lives in UK”. But you don’t need to endorse either statement as true. In fact, both statements are false.
- To infer B from A is only to claim that B follows from A. Whether A or B itself is true is a separate matter.
- Hence, making an argument is more than making an inference.
- To make an argument from A to B, one needs to claim that A supports B **and** that both A and B are true.
- To make an inference from A to B, one **only** needs to claim that A supports B.

Recall our earlier definition of “argument”:

Argument =_{df} Set of statements, some of which (the **premises**) are **put forward as reasons to support** one other (the **conclusion**).

Given the concepts of “inference” and “following from”, we can also define “argument” in the alternative ways below:

Argument =_{df} Set of statements, one of which (the **conclusion**) is meant to be **inferable** from the others (the **premises**).

Argument =_{df} Set of statements, one of which (the **conclusion**) is meant to **follow from** the others (the **premises**).

Question: What is it to **accept** an argument ?

It is to ...

(1) accept all the **premises** and **conclusions** as **true** (or more likely to be true than false) **and**

(2) accept the **inference** from the premises to the conclusion as **legitimate**.

Question: What is it to **reject** an argument ?

It is to ...

(1) reject at least one of the **premises** or the **conclusion** as **false** (or more likely to be false than true)

or

(2) reject the **inference** from the premises to the conclusion as **illegitimate**

or

do both (1) and (2) above.

Note: You may do both if you wish, but that is **not necessary** in order to reject an argument. Just doing one of the two is **sufficient** to reject the **entire** argument.)

A **simple argument** is one that contains **only one** inference. A **complex argument** is one that contains two or more inferences. The simpler arguments within a complex one are called “**sub-arguments**” .

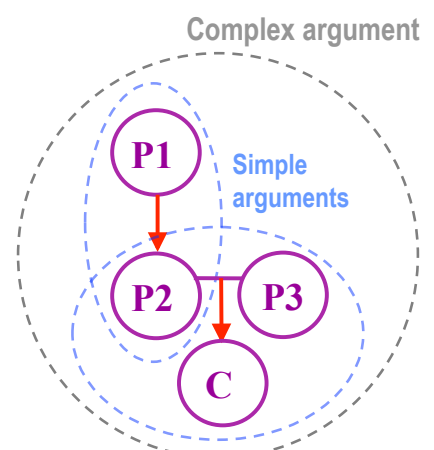
Example #1: The following passage contains a complex argument.

“**Any reasonable person will agree with** the **creationist theory** that some benevolent being created the universe. Why? **Because** this theory can explain the universe’s being full of **'bright and beautiful'** things (e.g., little flowers, little birds). Now, the word ‘God’ refers to whoever created the universe. So, **it further follows that** God exists.” (Rebuttal: '**All things dull and ugly**' - *Monty Python*)

Standard form

- P1. The creationist theory that some benevolent being created the universe can explain the universe’s being full of bright and beautiful things.
- P2. The creationist theory, that some benevolent being created the universe, is true. (**intermediate conclusion**, from P1)
- P3. The word “God” refers to whoever created the universe. (**definition**)
-
- C. God exists. (**final conclusion**, from P2 & P3)

Argument Map



Example #2: The following passage contains another complex argument.

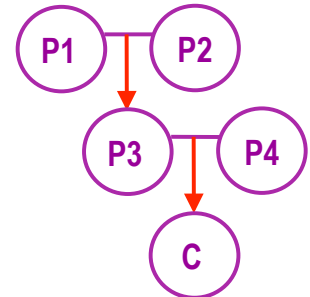
“There are two facts. First, ^① abortion is the killing of the fetus. Second, ^② the fetus is an innocent human being. Clearly, from these two facts **it follows that** ^③ abortion is the killing of an innocent human being. But we all know that it is always wrong to kill an innocent human being. **As a result,** ^④ abortion is wrong.” ^⑤

The passage makes five claims:

- (1) “Abortion is the killing of the fetus.”
- (2) “The fetus is an innocent human being.”
- (3) “Abortion is the killing of an innocent human being.”
- (4) “It is always wrong to kill an innocent human being.”
- (5) “Abortion is wrong.”

Given the inference indicators (marked in red), we can see that statements (1) and (2) are put forward as supportive reasons for statement (3), which are then put together with statement (4) to support statement (5).

Argument Map



Standard form

- P1. Abortion is the killing of the fetus.
- P2. The fetus is an innocent human being.
- P3. Abortion is the killing of an innocent human being. (*intermediate conclusion*, from P1 & P2)
- P4. It is always wrong to kill an innocent human being.

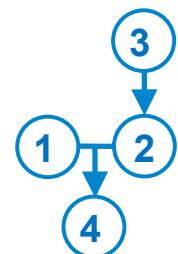
- C. Abortion is wrong. (*final conclusion*, from P3 & P4)

Example #3 Reporter: “Rumour says that you hope to take part in Donald Trump’s reality show. Is that true?”

“Well, you know, ¹ only people who are desperate to get rich or famous would want to take part in that show. But ² I am not desperate to get rich or famous **because** ³ I already am. **So,** ⁴ why would I want to appear in that show ? Ha-ha ...”

- Label all the statements used in the argument.
- Look for inference indicators and identify the premises and conclusion.
 - The position of the word “because” indicates that (3) is used to support (2).
 - The position of the word “so” indicates that (4) is the final conclusion.
- Rewrite the argument in Standard Form.
 - Clarify **references**.
 - All premises and conclusions must be put in the form of **statements**.

Argument Map



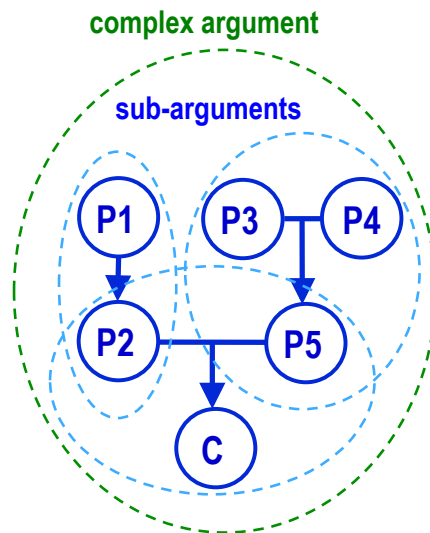
- (3) I am already rich and famous.
- (2) I am not desperate to get rich or famous. (*intermediate conclusion*, from (3))
- (1) Only people who are desperate to get rich and famous would want to take part in Donald Trump’s reality show.

- (4) I would not want to take part in Donald Trump’s reality show. (*final conclusion*, from (1) & (2))

Example #4

P1 "In morality, isn't one's intention all that matters? **Therefore** P2 if an action is accompanied by a good intention then it is a right action. Clearly, P5 euthanasia is accompanied by a good intention, P3 (for) its intention is to end suffering, P4 and it is a good intention to end suffering. C So, why shouldn't euthanasia be permitted!?"

- P1. In morality all that matters is one's intention. (rewritten as statement)
- P2. If an action is accompanied by a good intention then it is a right action. (intermediate conclusion, from P1)
- P3. The accompanying intention of euthanasia is to end suffering.
- P4. It is a good intention to end suffering.
- P5. Euthanasia is accompanied by a good intention. (intermediate conclusion, from P3 & P4)
-
- C. Euthanasia should be permitted. (rewritten as statement, from P2 & P5)



Summary: How to detect arguments

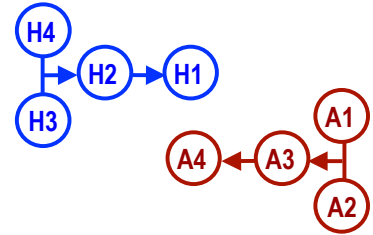
- When you try to decide whether a passage contains an argument, **look for inference indicators**. They help you identify what the author intends to be premises and conclusions.
- An argument is made up of statements (premises and conclusions) which can be true or false. But sometimes a premise or conclusion is put in the form of a rhetorical question or disguised in some other way. When you put an argument in Standard Form, **rewrite any disguised premise or conclusion in the form of a statement**.
- Not all words in the passage are relevant to the arguments being presented. **Ignore the irrelevant words** when you rewrite the arguments in Standard Form.
- You may be given a passage which contains multiple complex arguments for different conclusions. For example, one passage may start by presenting an argument for a certain view, and then somewhere along the way offers a counter-argument against that view. You need to be able to **tell one argument apart from another**.

Example #5

“According to Holmes, **H1** all natural things are good **H2** because God loves them. Why does God love all natural things? According to Holmes again, that is **H3** because all natural things are created by God and **H4** God loves all his creations. However, **A1** Holmes is wrong. Some natural things (e.g., natural disasters) **A2** are actually created by Satan. But we all agree that **A3** everything created by Satan is bad. It follows that **A4** some natural things are bad. So, sorry Holmes, **A4** not all natural things are good.”

There are **two separate complex arguments** in the above passage.

- The first one argues **for** the claim that all natural things are good.
- The second one argues **against** the claim.



- H4.** God loves all his creations.
 - H3.** All natural things are created by God.
 - H2.** God loves all natural things. (from H1&H2)
-
- H1.** All natural things are good. (from H3)

- A1.** Some natural things are created by Satan.
 - A2.** Everything created by Satan is bad.
 - A3.** Some natural things are bad. (from A1&A2)
-
- A4.** **Not all natural things are good.** (from A3)

Example #6: The Corey Delaney Worthington interview



About This Video

Corey Delaney (or Worthington - I don't know) being an absolute dickhead on A Current Affair (Channel 9) after he started a party that saw more than 500 people gatecrash his home whilst his parents were on a holiday. The result saw more than \$20,000 in damage towards the community including the police....

But Corey is more of a smart ass than a dickhead, as analysis of his responses will show

Finding the arguments

I: Are you sorry?

Genuine question

Corey: Yeah, yeah, ... I am.

Answer = statement

I: You don't sound very sorry.

Statement

Corey: Well **1** I can't be exactly blamed for everything that happened, **1** because **2** it wasn't in the house. **3** It was out in the street. **3** and **4** I didn't do it, like. **5** The police said: You stay inside so you don't get in trouble and **6** I did what he said so... [shrugs]

Premises

2 3 4 5 6

Argument

Conclusion

Corey can't be blamed for everything that happened

Look for any more premise or conclusion ... elsewhere in the interview.

Corey: Yeah, but I don't think it's fair they'll be fined it, because what happened – it was my party – but it could have just been any random person walking in the street doing it. {What?} it happens all the time.

There are two more statements here important to the argument.

Start by listing the statements

- 1** Corey can't be blamed for everything that happened **Intermediate CONCLUSION**
- 2** It didn't happen in the house
- 3** It happened in the street **The damage to cars and property**
- 4** Corey didn't do it
- 5** The police told Corey to stay inside so as not to get into trouble
- 6** Corey obeyed the police instructions
- 7** Some outsider could have done the damage
- 8** It's not fair to fine Corey or his parents **Final CONCLUSION**

Next, tidy them up by clarifying reference of pronouns....

and add in the extra statements.

Next, try to identify the conclusions and premises.

If there is no best way to do this because there are not enough inference indicators, then use your good sense to give the argument the most convincing interpretation.

OK - are we getting there?

- 1 Corey can't be blamed for all the damage
- 2 The damage didn't happen in the house
- 3 The damage happened in the street
- 4 Corey didn't do the damage
- 5 The police told Corey to stay inside so as not to get into trouble
- 6 Corey obeyed the police instructions
- 7 Some outsider could have done the damage
- 8 It's not fair to fine Corey or his parents

Now you can map out the argument as a series of **SUB-ARGUMENTS**

4 and 7 independently support statement 1,
from which the final conclusion, statement 8, follows

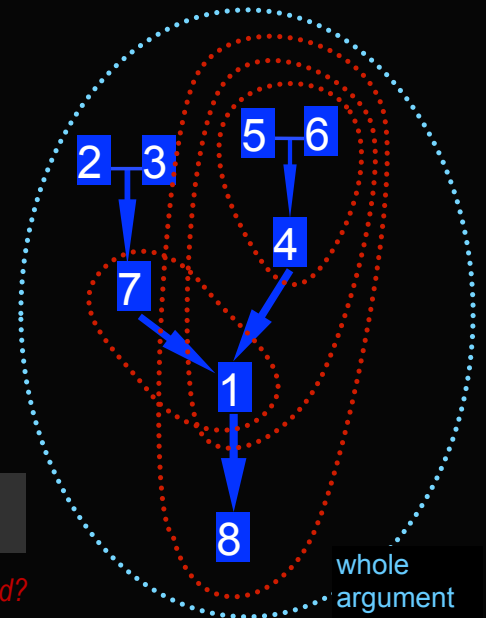
Corey isn't such a dickhead after all

11 sub-arguments in total, some of which are atomic/simple while some others are compound/complex.

Can you identify the rest, and tell which is atomic, which is compound?

Reminder:

- An **atomic/simple** argument contains only 1 inference.
- A **compound/complex** argument contains more than 1 inference.
- An **inference** is represented by an arrow in an argument map.



Summary

In this week's lectures, you have learnt ...

(1) **Argument**

(Collection of statements, some of which (the **premises**) are put forward as reasons to support one other (the **conclusion**))

(2) **Inference**

(To make an inference is to move from the premises to the conclusion)

(3) **Inference indicators**

(Words or phrases that indicate the direction of inference)

(4) **Putting arguments in Standard Form**

(5) **Drawing Argument Maps**

(6) **Simple Argument vs. Complex Argument**

Discussion Question #2

Please answer the following question in **at most 280 words**.

Question #2: For each passage below, determine and state whether it contains an argument. If the passage contains an argument, then identify the **final conclusion** and put the whole argument in the **Standard Form**. If the passage doesn't contain an argument, then **explain** why it doesn't. If you think that it cannot be determined whether the passage contains an argument, then **explain** why not.

(Passage I) "We know three things about God by definition of the term "God". First, God is all-knowing. It follows that if God exists then God must know that there is unnecessary suffering in the world. Second, God is all-loving. It follows that if God knows that unnecessary suffering exists then God must want to eliminate it. Third, we know that God is all-powerful. It follows that if God wants to eliminate any unnecessary suffering in the world then God must have done that by now. Therefore, we can conclude that if God exists then there cannot be any unnecessary suffering in the world. But the fact is that the world is full of unnecessary suffering. Doesn't this show that God does not exist?"

(Passage II) "It is raining outside. Some people are carrying wet umbrellas."

(Passage III) "If it is raining outside, then some people are carrying wet umbrellas."

Extra Question

In the news article "Europeans lead the push to wave the waif goodbye" ([click here](#)), David Brown, owner of a model agency, defends the fashion industry against the view that it is a promoter of anorexia. What is his argument? Put it in the Standard Form. Is it a good argument? Why? Or why not?



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