

## Critical Reasoning 01 – Arguments



When we act often we do so by instinct, emotion or by gut feel. When we deliberate or think reflectively however on what to believe and why should act, we rely on critical reasoning.

One researcher<sup>1</sup> proposed that critical reasoning involves three elements:

1. An attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experiences
2. Knowledge of the methods of logical inquiry and reasoning, and
3. Some skill in applying those methods.

The fact that you have come to this section suggests that you are already (as per 1. above) “disposed to consider in a thoughtful way the problems and subjects that come within the range of (your) experiences.” If not you would have no interest in Philosophy and your mind would presumably be made up by what you feel from one moment to the next and by what others sway you to accept. This and subsequent Critical Reasoning units will endeavour to provide (as per 2.) some “knowledge of the methods of logical inquiry and reasoning,” while the tasks at the end of each unit will allow you (as per 3.) a chance to develop “some skill in applying those methods.”

When we reason we rely on **inference** to draw **conclusions** from **premises** we known or assume to be true. **Logic** is the formal study of such rules, but we don't all need to be professional logicians to be good at reasoning. At the heart of every inference is an **argument**, either a good one or bad one. An argument itself is a connected series of propositions intended to support a conclusion.

**Propositions** possess a **truth value**, *i.e.* they can be either true or false. While propositions do not belong to any particular language, they can be expressed in many languages such as English, Sign Language or even a computer program language, by means of **declarative statements** *e.g.* “The cat is on the mat” but not interrogatives, “Is the cat on the mat?” nor by imperatives or exhortations, “Put the cat on the mat” or “Let there be cats on mats” nor by exclamations “Wow, a cat on the mat!” Propositions can be thought of as the **content** or **meaning** of the declarative statement that expresses is. So while there are tens of thousands of ways saying that the cat is on the mat in just as

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<sup>1</sup> Edward M. Glaser (1941). *An Experiment in the Development of Critical Thinking*. New York, Bureau of Publications, Teachers College, Columbia University. ISBN 0-404-55843-7.

many languages, they all express just one single meaning. For now we can use “sentences” and “propositions” interchangeably but later we will have to be more circumspect.

Because it is essential that you be able to tease apart sentences that express a proposition from those that don't, see if you can identify the propositions among the following list before proceeding. Remember the test is to ask yourself, “Does it have a truth value? Could it be true or false?”

- a. Philosophy begins in wonder.
- b. Why can't everybody just get along?
- c. Socrates was human.
- d. Let them eat cake.
- e. All this talk of cats on mats is such a cliché.
- f. Nobody knows her true character.
- g. Was it Plato who said, “The unexamined life is not worth living”?
- h. Plato and Aristotle did say, “The unexamined life is not worth living”
- i. Dreams are the royal road to the Unconscious.
- j. Know thyself!

Answers: a, c, e, f, h and i do express propositions because they can be either true or false the rest are either questions or exhortations.

Remember that we defined an argument above as: “a connected series of propositions intended to support a conclusion.” Consider then the following argument:

1. All humans are mortal.
2. Socrates is human.
3. ∴ Socrates is mortal.

If sentence 1 and 2 are both true then together they necessitate that sentence 3 must be true. Therefore we say that 1 and 2 are the **premises** and that 3 is the **conclusion** of this argument. However in the following argument what was premise above becomes the conclusion below. Thus:

1. All animals are mortal.
2. Humans are animals.
3. ∴ All humans are mortal.

So being a premise or a conclusion is relative, depending on the function it serves in each particular case. Helpfully English uses a number of markers or indicators that introduce premises and conclusions.

The following words commonly introduce premises:

since (not “time since” meaning)	may be inferred from
as indicated by	given that
because	seeing that
for	for the reason that
in that	inasmuch as
as (not “comparison” meaning)	owing to

if..

The next list of words commonly introduce conclusions:

therefore	we may infer
wherefore	it must be that
accordingly	whence
we may conclude	so
entails that	it follows that
hence	implies that
thus	as a result
consequently	then...

To complicate matters slightly sometimes one sentence actually expressed more than one proposition either as premises or as conclusions. Also the kinds of argument we encounter outside of academia are unlikely to be set out so explicitly with the conclusion listed below the numbered premises. There may even be missing or unstated premises which we will have to supply or just assume. Such arguments are known as **enthymemes**. Quite often the conclusion may be found somewhere in the middle of such an argument, or even at the beginning.

When practicing to identify premises and conclusions in written arguments you should develop your own technique and then apply it consistently. One method might be to underline and number the premises and perhaps circle and number the conclusions in the case of a complex argument or perhaps use different colour highlighters to highlight different premises while reserving one bold colour for the conclusion(s.) Bracketing or marking premise and conclusion markers in some way is also helpful in revealing the structure of an argument. Remember that some parts of text will contain neither premises nor conclusions. Often they are there as filler or serve as rhetorical devices. The skill then there lies in separating the rhetorical chaff from the argumentative corn. In some cases no argument is present at all, not even a bad one, just a case of hot air.

Examples

Identify the premises and conclusions (including any that are missing) in the following arguments using your own technique, then arrange them in order (numbered premises followed by a numbered conclusion(s.) It doesn't matter at this stage how good or bad the arguments are, just so long as you can tease them apart as follows:

a) If Cuddles is a kitten and a kitten is a cat then Cuddles is a cat

1-(If) **Cuddles is a kitten** (and) 2-**a kitten is a cat** (then)3-**Cuddles is a cat.**

1. Cuddles is a kitten.
2. All kittens are cats.
3. ∴ Cuddles is a cat.

b) If ever life is discovered on Mars, we shall have to revise all our assumptions and life will indeed be discovered on Mars.

1-(If ever) life is discovered on Mars (then) we shall have to revise all our assumptions 2-(and) life will indeed be discovered on Mars. 3-(Therefore) we shall have to revise all our assumptions.

1. If ever life is discovered on Mars we shall have to revise all our assumptions.
2. Life will be discovered on Mars.
3. ∴ We shall have to revise all our assumptions. (Unstated conclusion)

c) Either the ozone layer will be depleted or we shall succumb to global warming. Either way, humanity is doomed.

1-(Either) the ozone layer will be depleted (or) we shall succumb to global warming. (Either way,) 4- humanity is doomed.

1. The ozone layer will be depleted or we shall succumb to global warming.
2. Ozone depletion will doom humanity. (Unstated premise)
3. Global warming will doom humanity. (Unstated premise)
4. ∴ Humanity is doomed.

d) Every species that has a mind has a brain. So if you can express a thought you must be using your brain.

1-Every species that has a mind has a brain. (So if) 3-you can express a thought (then) you must be using your brain.

1. All species that have minds have brains
2. Only brains are used to express thoughts (Unstated premise)
3. ∴ If you can express a thought you must be using a brain.

e) Watch your thoughts for they become words. Watch your words for they become actions. Watch your actions for they become...habits. Watch your habits, for they become your character. And watch your character, for it becomes your destiny! What we think we become. My father always said that... and I think I am fine.

Attributed to Margaret Thatcher

Watch1-your thoughts (for) they become words. Watch 2-your words (for) they become actions. Watch 3-your actions (for) they become...habits. Watch 4- your habits (for) they become your character. (And) watch 5-your character (for) it becomes your destiny! 7-What we think we become. My father always said that... and I think I am fine.

1. Your thoughts become words.
2. Your words become actions.
3. Your actions become habits.
4. Your habits become your character.
5. Your character becomes your destiny.
6. Your destiny is what you become (Unstated premise)
7. ∴ What we think we become.

This sort of argument, while it might sound complex is really just the same kind of argument repeated several times, with the previous conclusion becoming the following premise. The following example is from the trial of Socrates, as recorded by Plato in his *Apology*. Having been found guilty of corrupting the youth and failing to believe in the city's gods and having been sentenced to death, Socrates addresses the jury arguing in a relatively complex manner that death might be a blessing to him. Note that the passage below contains a number of rhetorical flourishes which should be separated from the argument itself and which, although it has only one main conclusion, also supports a number of subordinate conclusions, which you should also highlight. Fortunately this is about as complex an argument you are ever likely to meet at an undergraduate level of study.

Note that the "customary sign" alluded to below was a "voice" which warned Socrates to refrain from certain acts he might contemplate. According to Plato he had never disobeyed this voice. The "great king" of which he speaks was probably Xerxes the great Persian king.

f.) I regard this as a proof that what has happened to me is a good, and that those of us who think that death is an evil are in error. This is a great proof to me of what I am saying, for the customary sign would surely have opposed me had I been going to evil and not to good.

Let us reflect in another way, and we shall see that there is great reason to hope that death is a good, for one of two things: - either death is a state of nothingness and utter unconsciousness, or, as men say, there is a change and migration of the soul from this world to another. Now if you suppose that there is no consciousness, but a sleep like the sleep of him who is undisturbed even by the sight of dreams, death will be an unspeakable gain. For if a person were to select the night in which his sleep was undisturbed even by dreams, and were to compare with this the other days and nights of his life, and then were to tell us how many days and nights he had passed in the course of his life better and more pleasantly than this one, I think that any man, I will not say a private man, but even the great king, will not find many such days or nights, when compared with the others. Now if death is like this, I say that to die is gain; for eternity is then only a single night. But if death is the journey to another place, and there, as men say, all the dead are, what good, O my friends and judges, can be greater than this?

Plato - *The Apology* (Translated by Benjamin Jowett)

I regard this as a proof that what has happened to me (being sentenced to 1- death,) is a good (blessing), (and) that 2- those of us who think that death is an evil are in error. This is a great proof to me of what I am saying, for 3- the customary sign would surely have opposed me had I been going to evil and not to good.

Let us reflect in another way, and we shall see that there is great reason to hope that 1- death is a good (blessing), (for) one of two things: - 4- (either) death is a state of nothingness and utter unconsciousness, (or), as men say, there is a change and migration of the soul from this world to another. Now 5- (if) you suppose that there is no consciousness, but a sleep like

the sleep of him who is undisturbed even by the sight of dreams, (then) 6- death will be an unspeakable gain. [For if a person were to select the night in which his sleep was undisturbed even by dreams, and were to compare with this the other days and nights of his life, and then were to tell us how many days and nights he had passed in the course of his life better and more pleasantly than this one, I think that any man, I will not say a private man, but even the great king, will not find many such days or nights, when compared with the others.] Now 5- (if death is like this, I say that 1- to die is gain; (for)7- eternity is then only a single night. But 8- (if death is the journey to another place, (and) there, as men say, all the dead are, 1- what good, O my friends and judges, can be greater than this?

1. Death is a blessing. (Main Conclusion)
2. If we think death is an evil we are mistaken. (Subordinate conclusion)
3. Supports 2. Socrates' "customary sign" had not opposed his action. (Premise)
4. Either death is nothingness and utter unconsciousness or a migration of the soul (premise) with 5 or 7 then 6 and 1.
5. If nothingness or unconsciousness is like a sleep undisturbed by dreams (premise) then 6.
6. Death will be an unspeakable gain (Subordinate conclusion)
7. If death, on the other hand, is a migration of the soul to where the dead are (premise) then 6 and 1.

Note that the part of the extract between square brackets has been ignored because it contains an appeal to the majority and an appeal to authority, which carry no weight in a proper argument because they don't prove anything - of which more later. Note also the context in which this argument takes place. Socrates is not arguing that death is better than life and that we would all be better off dead. He had already been sentenced to death and was arguing that far from the evil that we usually suppose death to be it might actually be a blessing.

### Tasks

Now attempt to analyse several arguments on your own. The letters page of any newspaper should contain many examples of varying quality. Apply the method you have acquired to identify the premises and the conclusion(s.) You will know if your analysis is correct if the premises express propositions which support the conclusion(s,) either singly or together and which should also be a proposition(s.) Remember the test for a proposition is whether it has a truth value – capable of being true or false. Finally beware of opinion pieces and rants that contain no arguments. Do not bother yourself with these.

Alternatively there are many introductory textbooks to critical reasoning which contain numerous examples that you could consult. The following book which is prescribed for first year UNISA students is well written and highly accessible.

Van den Berg (2010) *Critical Reasoning and the Art of Argumentation* UNISA Press : Pretoria

If you are not yet used to identifying arguments form among everyday texts, here are a few additional examples that can be used. Do not bother with the merits or demerits of each argument at this stage, so long as you can spot an argument when you see one and tell which are the premises and which the conclusion(s):

1. Kylie Minogue's admission that she uses Pond's Cold Cream has sent sales of the traditional beauty treatment through the roof. While she has admitted having Botox injections in the past, she says she now only uses Pond's. Shouldn't you?
2. Oh, The grand old Duke of York,  
He had ten thousand men;  
He marched them up to the top of the hill,  
And he marched them down again.  
  
And when they were up, they were up,  
And when they were down, they were down,  
And when they were only half-way up,  
They were neither up nor down.
3. If fluoride is so good for our teeth, no one should be complaining that they put it in the water.
4. Laptops are more hassle than they are worth. On the rare occasion that you can get a decent public Wi-Fi connection you'd rather be relaxing, not working, and when you do want to work you're a bloody slave to its capriciously oversensitive touch pad. And don't get me started on the battery dying on you...
5. They say ballet dancers live on cigarettes and coffee, but I looked it up. The professionals, I mean the ones in companies and that, expend up to 3000 Calories a day. So where are they getting their energy from?
6. The soul is immortal, so there's no such thing as a dead soul.
7. How can something so bad feel so good?
8. It doesn't matter who you vote for because the government always comes to power.

#### Feedback

1. The explicit premises here express propositions, although not all of them support the conclusion, which is disguised as a question. Also two unstated premises must be supplied, thus:

Kylie Minogue's admission that she uses Pond's Cold Cream has sent sales of the traditional beauty treatment through the roof. While she has admitted having Botox injections in the past, she says she now only uses Pond's. Shouldn't you?

- |                                           |                    |
|-------------------------------------------|--------------------|
| 1. Kylie Minogue uses Pond's Cold Cream.  | (Premise)          |
| 2. She now only uses Pond's (Cold Cream). | (Premise)          |
| 3. She is known for her youthfulness.     | (Unstated premise) |

4. If you want to appear as youthful as she, you should do as she does. (Unstated premise)  
 5. ∴ You should use Pond's Cold Cream. (Conclusion)

Variations on this form of argument are employed in every commercial for celebrity endorsed products or services. Beware! You're probably being sold something you don't already want.

2. This old nursery rhyme is in fact a tautologous argument. A **tautology** is simply a restatement of a proposition such that it is unconditionally true e.g. "What will be, will be" or "Socrates is either mortal or he's not." The premises of tautologous arguments do support their conclusions but they don't give us any new information, so we are none the wiser for them, as we are here:

1. Oh, The grand old Duke of York,  
 He had ten thousand men; (Premise)
2. He marched them up to the top of the hill, (Premise)
3. And he marched them down again. (Premise)
4. And when they were up, they were up, (Tautologous Premise)
5. And when they were down, they were down, (Tautologous Premise)
6. ∴ And when they were only half-way up,  
They were neither up nor down. (Tautologous Conclusion)

It is an interesting idea that parents unconsciously use nursery rhymes as much to teach children about social norms as they might about argumentation. Compare other nursery rhymes that are in the form arguments, such as *Old Mother Hubbard*.

3. If fluoride is so good for our teeth (∴), no one should be complaining that they put it in the water.

This argument with its single premise and single conclusion is actually one against the fluorination of drinking water because of the unstated premise that there are in fact people who do not want to be forced to consume fluoride against their will because it is in the drinking water.

4. This argument begins with the conclusion: Laptops are more hassle than they are worth, followed by several reasons expressed by propositions comprising the premises:
1. On the rare occasion that you can get a decent public Wi-Fi connection you'd rather be relaxing, not working
  2. When you do want to work you're a bloody slave to its capriciously oversensitive touch pad, and
  3. Laptop batteries can lose power un-expectedly. (Implied premise)
5. This form of argument attempts to show that a premise is false such that its denial becomes the conclusion.
1. Ballet dancers live on cigarettes and coffee. (Contested premise)
  2. Professionals dancers expend up to 3000 Calories a day. (Premise)
  3. Cigarettes and coffee are not a source of dietary energy. (Unstated premise)



4. ∴ Ballet dancers must have some other source of dietary energy. (Sub-conclusion)

5. ∴ Ballet dancers do not live on cigarettes and coffee. (Conclusion)

6. This argument comes from Nikolai Gogol classic novel *Dead Souls*. It satirises the petty bureaucrats of his day, in this instance enumerating *all* souls attached to an estate... *including* those deceased because there *are no* dead souls. Thus:

1. The soul is immortal. (Premise)

2. Nothing that is immortal can be dead. (Unstated premise definition)

3. ∴ There are no dead souls. (Conclusion)

7. This argument, or at least its sentiment, in various forms is a favourite in popular lyrics. Although it consists of a single question, essentially it expresses the follows argument:

1. Something good feels good. (Unstated premise)

2. Something bad feels bad. (Unstated premise)

3. ∴ If something bad feels good then it cannot be bad. (Implied conclusion)

8. This argument tries to persuade you that your vote does not matter because the government always comes to power. However it ignores or suppresses the fact that only those voted into office with a sufficient majority get to form a government. So with the explicit inclusion of a single, hitherto ignored premise, the whole argument gets turned around to one that persuades you *to* vote.

Critical Reasoning 04 will be concerned with diagnosing arguments such as this that go wrong and in some cases suggests how they might be remedied. The next Critical reasoning unit will be concerned with well structured arguments of a familiar variety.