THE UNIVERSITY OF MELBOURNE

Introducing Argument Mapping and MindMup

Session 1

Goals for the sessions

1. Introduce you to argument mapping.
2. Learn how to evaluate arguments with argument maps.
3. Improve your essay writing through argument mapping.

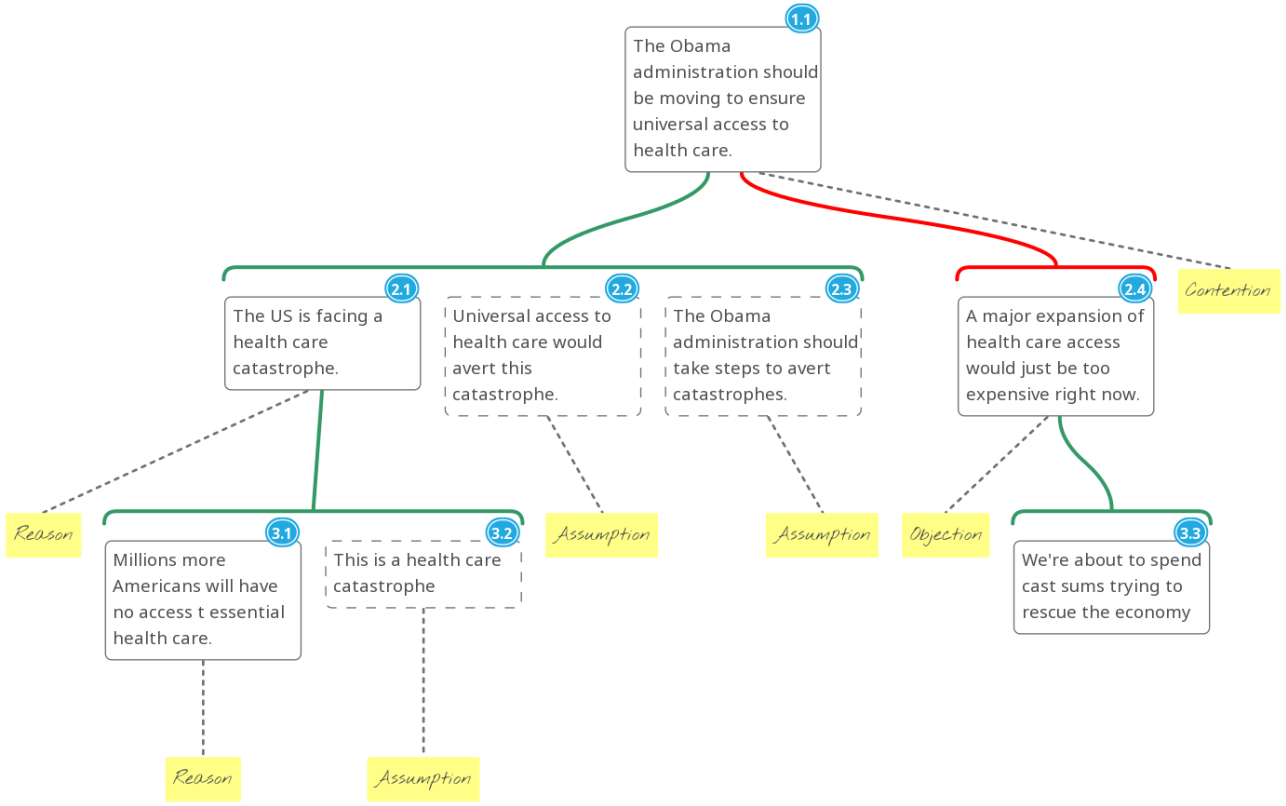
Outline of sessions

Session	Description
1	Introducing argument mapping and argument mapping software
2	Argument mapping improvements
3	Bridging claims and the ‘Rabbit Rule’
4	Mapping sample essays
5	Mapping course material

Argument mapping is a way to visually represent your argument

Using a few conventions, we can diagram an argument:

- Box and line diagrams
- A box represents a proposition or claim/contention
  - *"The Obama administration should be moving to ensure universal access to health care"*
  - *"The US is facing a health care catastrophe"*
- A colored line indicates the relationship between boxes
  - Green for supports, red for objects
- Labels to indicate proposition/claim types
  - Reasons/arguments, assumptions, objections



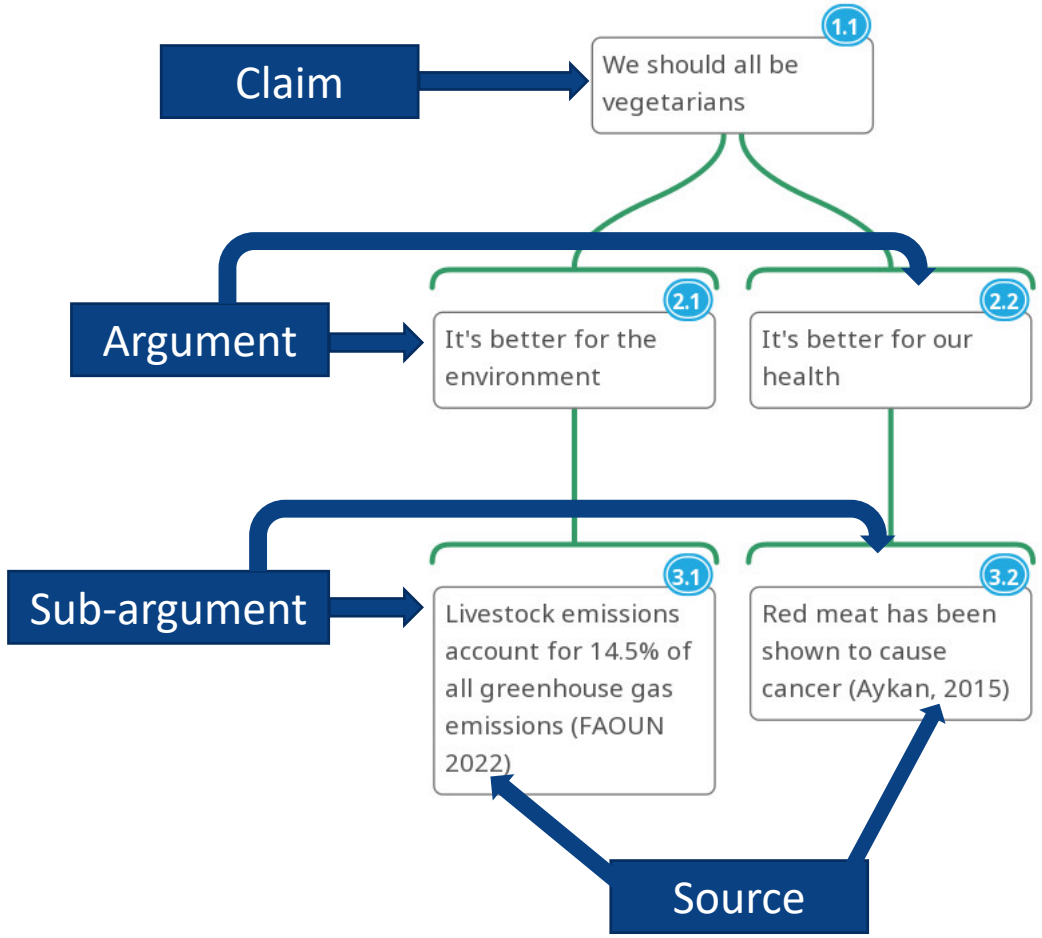
Note that there are arguments and sub-arguments

Claim is supported by arguments, which are supported by subarguments

Additional conventions

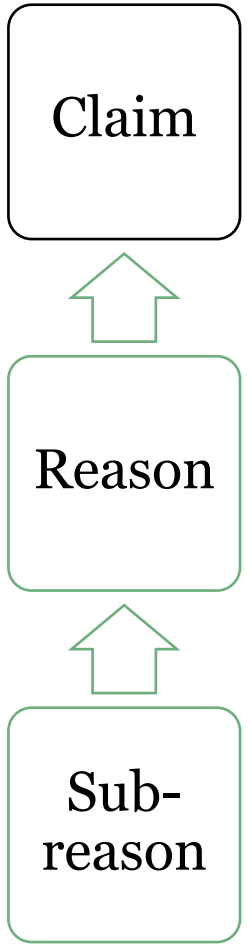
- Start with a *claim*
- Next layer is the *argument*
  - Arguments consist of '**reasons**' and '**objections**'
  - These can be supported by subarguments
- Making sure the evidence is properly *sourced*.

We should all be vegetarians. It's better for the environment and better for our own health. Livestock emissions account for 14.5% of all GHG (FAOUN 2022), and red meat has been shown to cause cancer (Aykan, 2015).



Labelling claims and arguments

A contestable proposition.



The Prime Minister is in trouble.

A general argument supporting to that proposition

The opposition is more popular.

Information supporting the reason

The opposition is ahead in the polls.

Labelling claims and arguments

A contestable proposition.

New Zealand should change their flag.

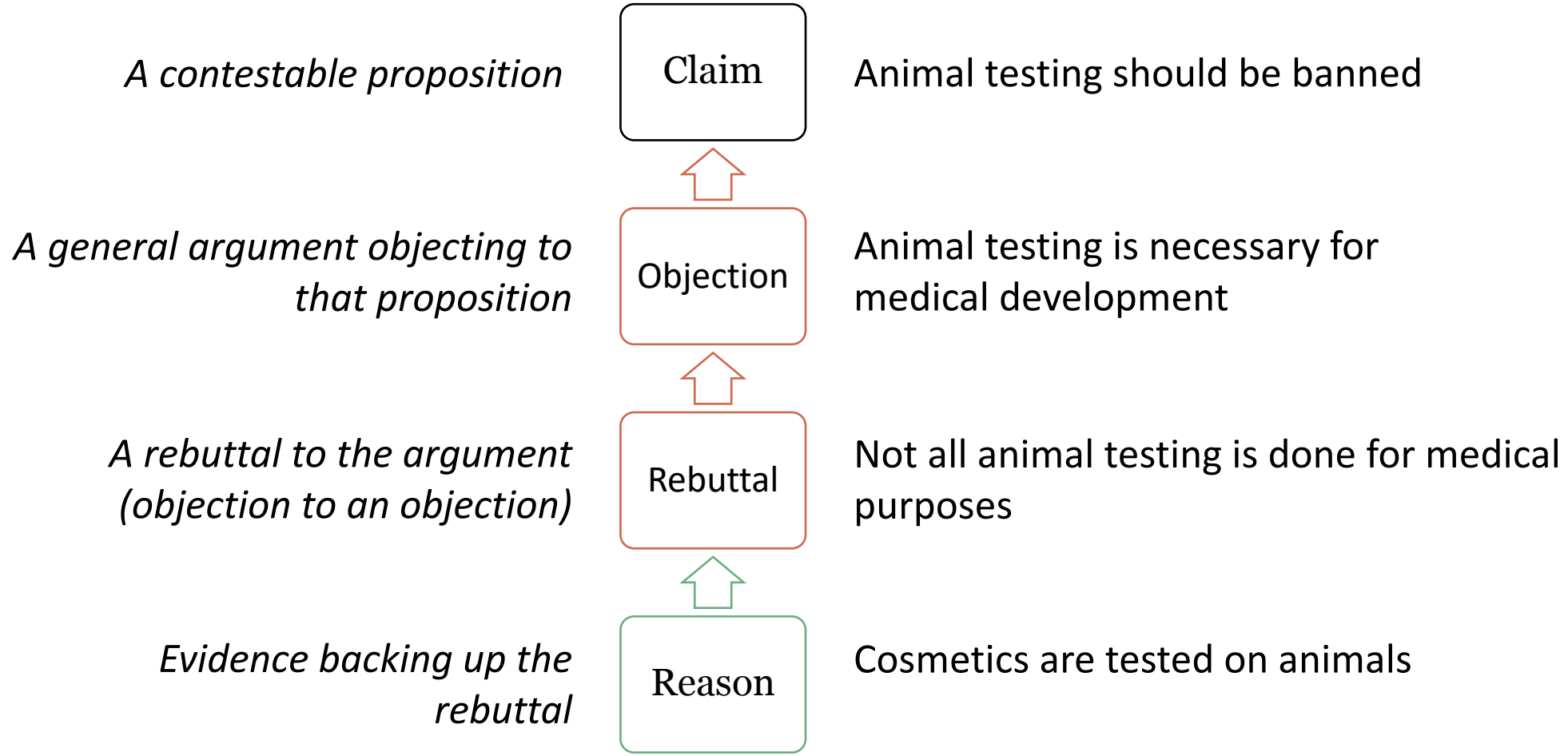
A general argument objecting to that proposition

New Zealanders don't want the flag to be changed

Information supporting the Objection

Keeping the current flag was voted for in a referendum.

Labelling claims and arguments



Map the examples in the handout

Argument	
The Case for Nuclear Power	• Claim • Argument(s) • Sub-arguments for the argument(s) • Source(s)
Should home-schooling be banned?	• Claim • Argument(s) • Objection • Sub-arguments supporting the Reason & Objection • Source(s)
Sudden oak death	• Claim • Argument • Objection • Sub-argument supporting the Argument • Rebuttal (objection to an objection)

- Draw lines connecting the elements to show support for, or objections to, claims

Solution: The Case for Nuclear Power

We should be building more nuclear power plants because nuclear power has very low greenhouse gas emissions and is one of the most reliable sources of electricity in the world. According to the IPPC, nuclear power has lower life-cycle C02 equivalent emissions than solar PV. Also, according to the US Department of Energy, our 104 nuclear power plants operate on average more than 90% of the time.

What is the claim? What are the arguments/sub-arguments? Any objections, rebuttals?

Solution: The Case for Nuclear Power

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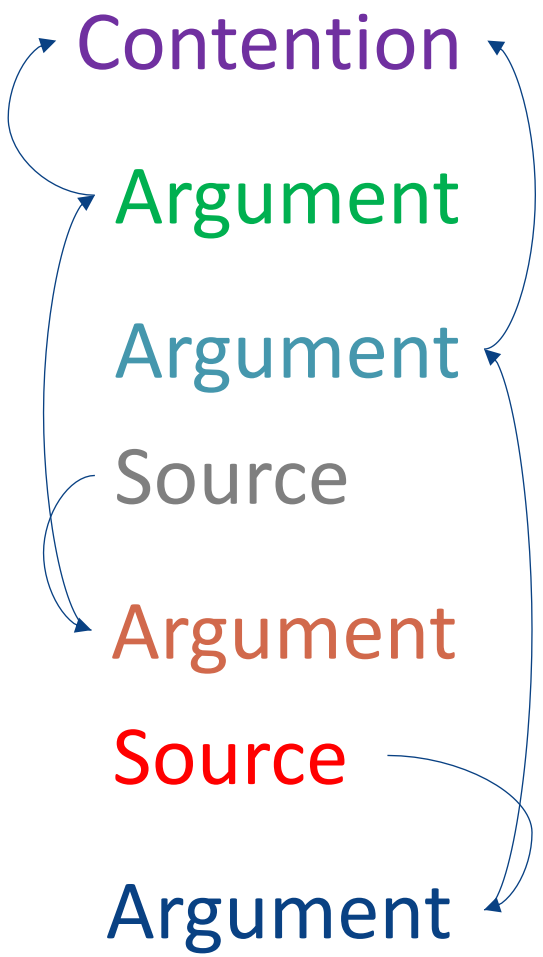
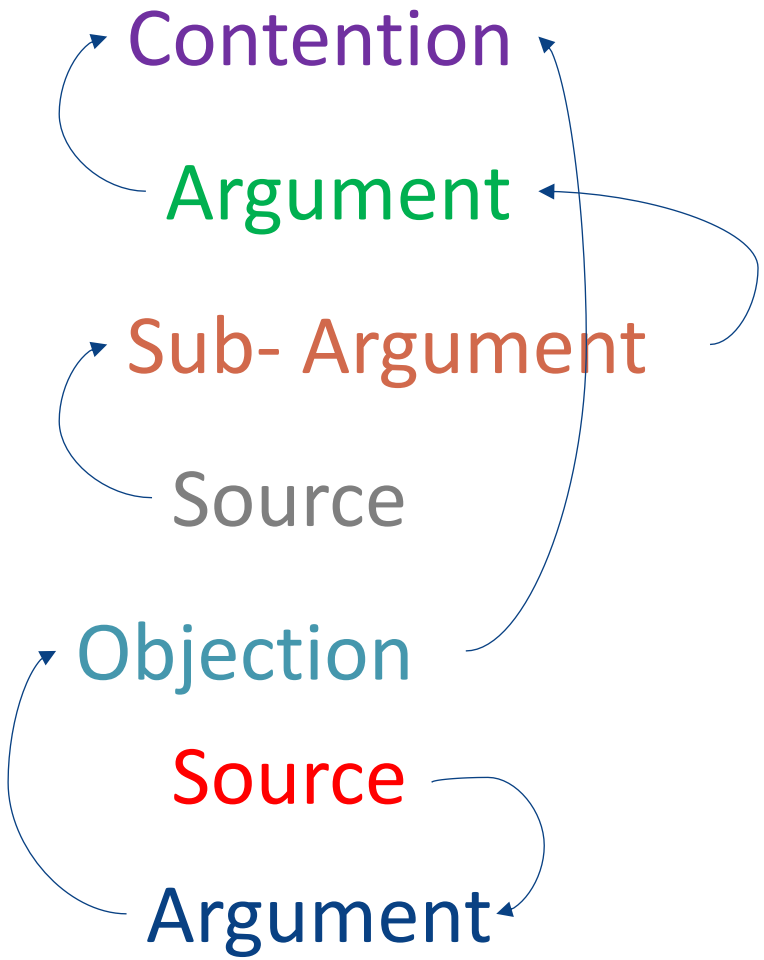


Solution: Should home-schooling be banned?

Recently, there has been some controversy over home-schooling which revolves around whether home-schooling should be banned. Those that believe it should argue that home-schooling gives children a biased education. 75.3% of respondents to a survey of adult home-schooled alumni reported that they were taught the superiority of a particular political ideology (HARO 2014 Survey of Home-schooled Alumni).

On the other hand, banning home-schooling would infringe upon the most basic freedoms of liberal democracies; one of which (according to the US supreme court) is the right to oversee the raising and education of one's own children.

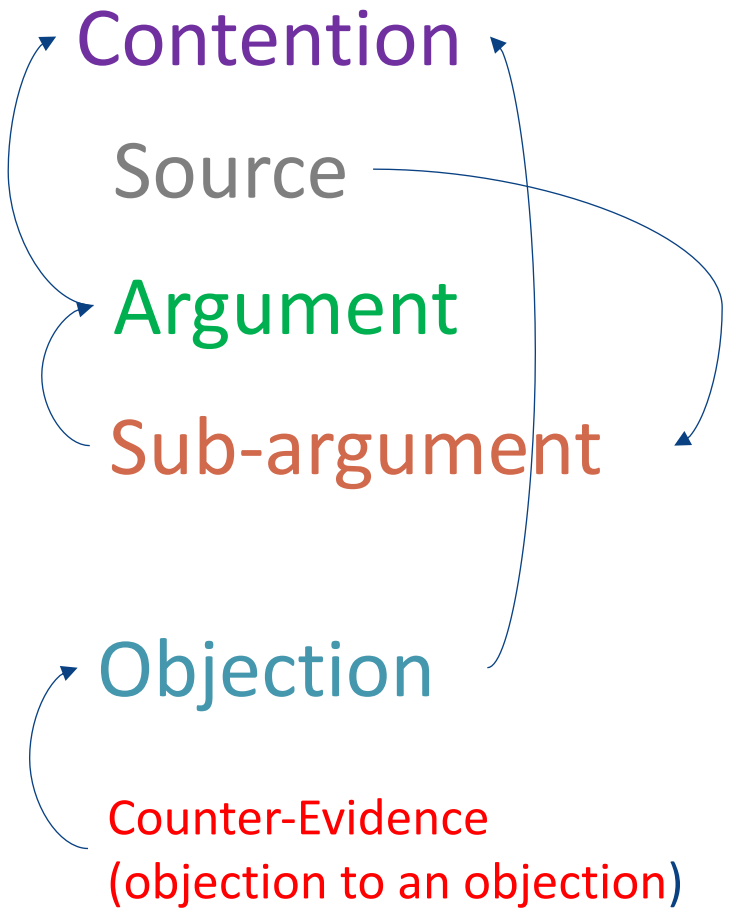


Solution: Sudden Oak Death

Slowing the spread of sudden oak death (P.ramorum) is now not possible, and has been impossible for a number of years, according to a new study. The research was led by Nik Cunniffe of the University of Cambridge, in collaboration Richard Cobb from the University of California, Davis.

There's so much pathogen mass now in California forests that the study's model finds that it will just spread, and spread. As pathogen biomass increases, says Cobb, "the rates of spread accelerate, and so does cost." More specifically, the study found that unchecked, sudden oak death will grow to affect close to ten times the current area — from around 1,550 square kilometres today to 14,000 square kilometres by 2030.

Some people think you could stop the spread of sudden oak death by going in and removing infected trees across a large area. However the study also found that an attempt to manage the problem by removing infected trees over 200 square kilometres annually, at a cost of $ 100 million, would make little dent in this spread.



We use argument mapping to help our readers understand our argument and to help us to evaluate it

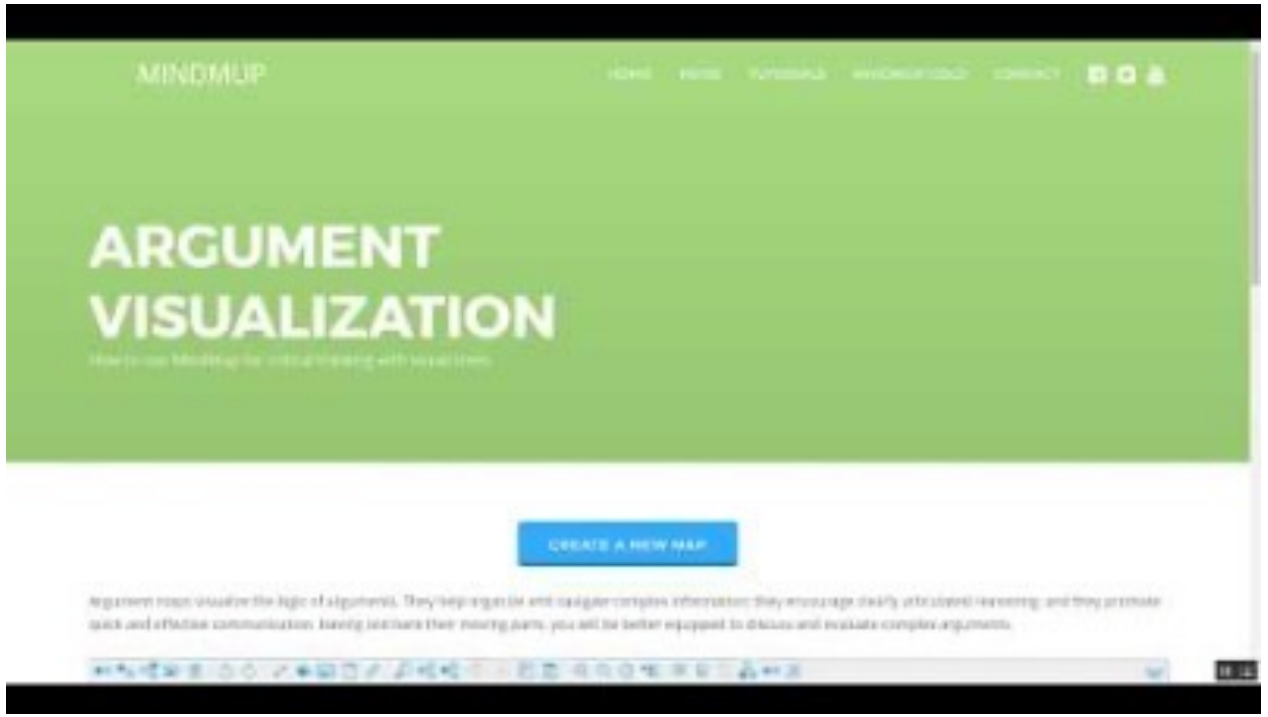
- It helps us structure our arguments when it comes to writing essays or articles.
- If this structure is obvious, then the reader will have an easier time understanding our reasoning.
- Readers don't need all the finer detail to get to grips with what your argument is, just the high-level points.
- It gives us a clearer view of exactly what our reasoning is.
- We can then more easily see problems (with the help of some principles we'll learn later)
- If we can see the problems, we can fix them.
- Practicing this technique can help build critical thinking skills.

We'll be using the MindMup software to map arguments

Access instructions:

1. Link to access is on pg.3 of your workbook.
2. At the top of the page, click 'sign in'
3. Enter your email to receive a 'one time password'
4. Submit the password you were sent to log in.
5. Then click 'file' then 'new' and finally '**Argument Visualisation'**

Whenever you create a new map, ensure that you create a new 'Argument Visualisation'. Otherwise, you won't have access to the features you'll need.

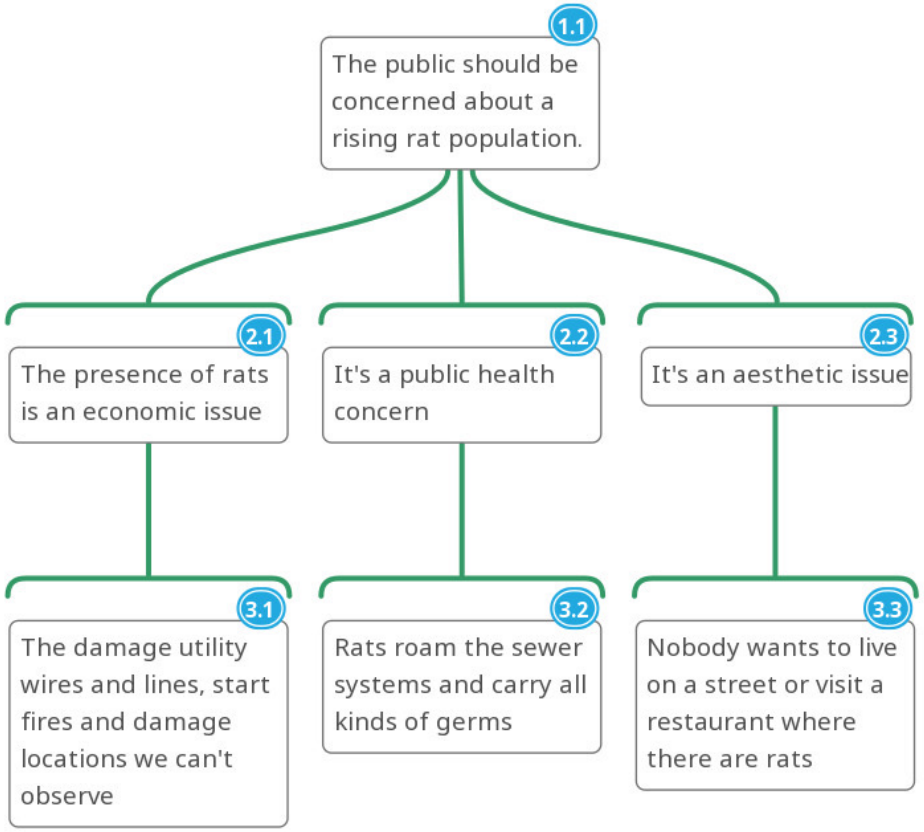


Now it's your turn! Try using MindMup to map these arguments

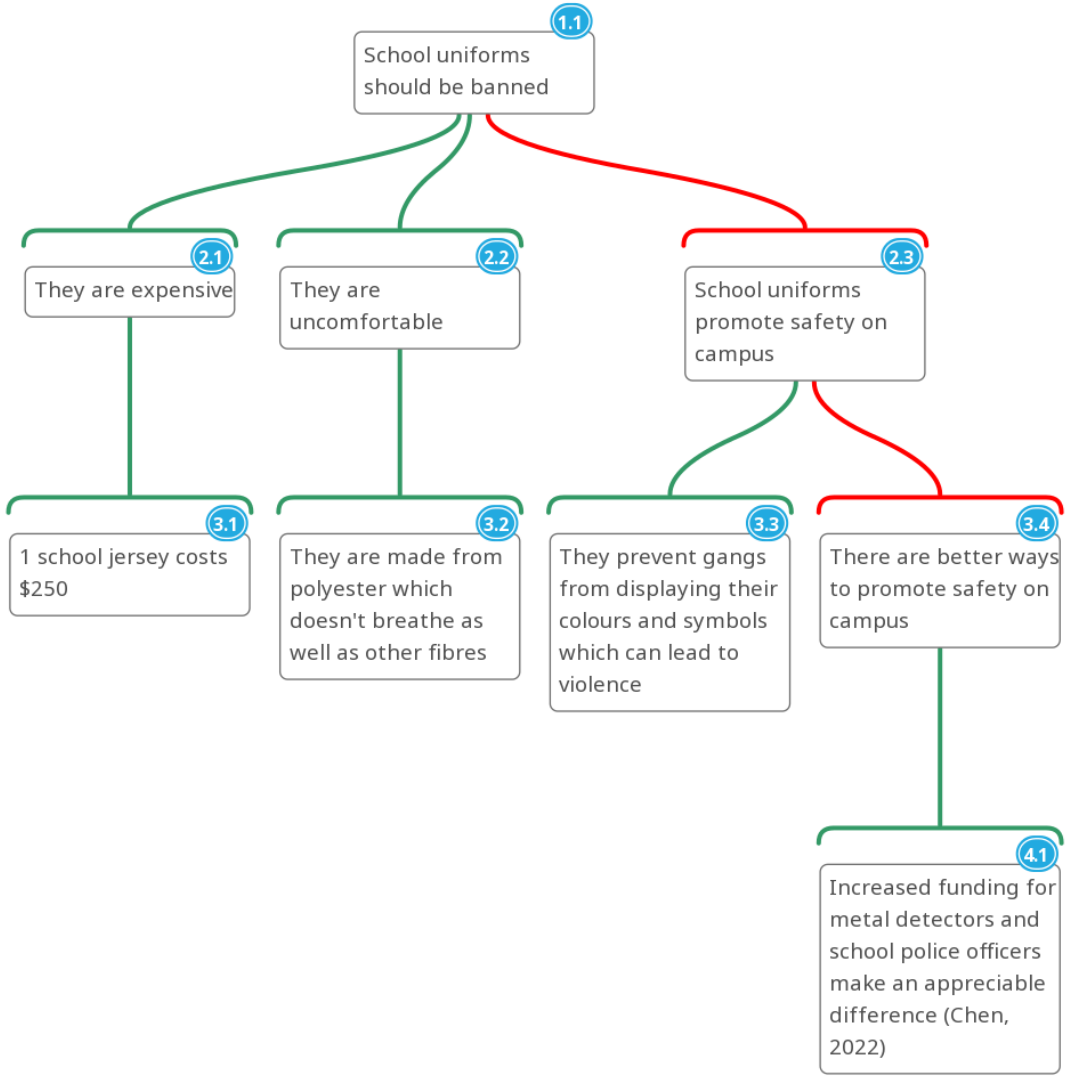
Check your handouts for the following arguments and try to map them:

- Rats
- School Uniforms
- Drug Legalization

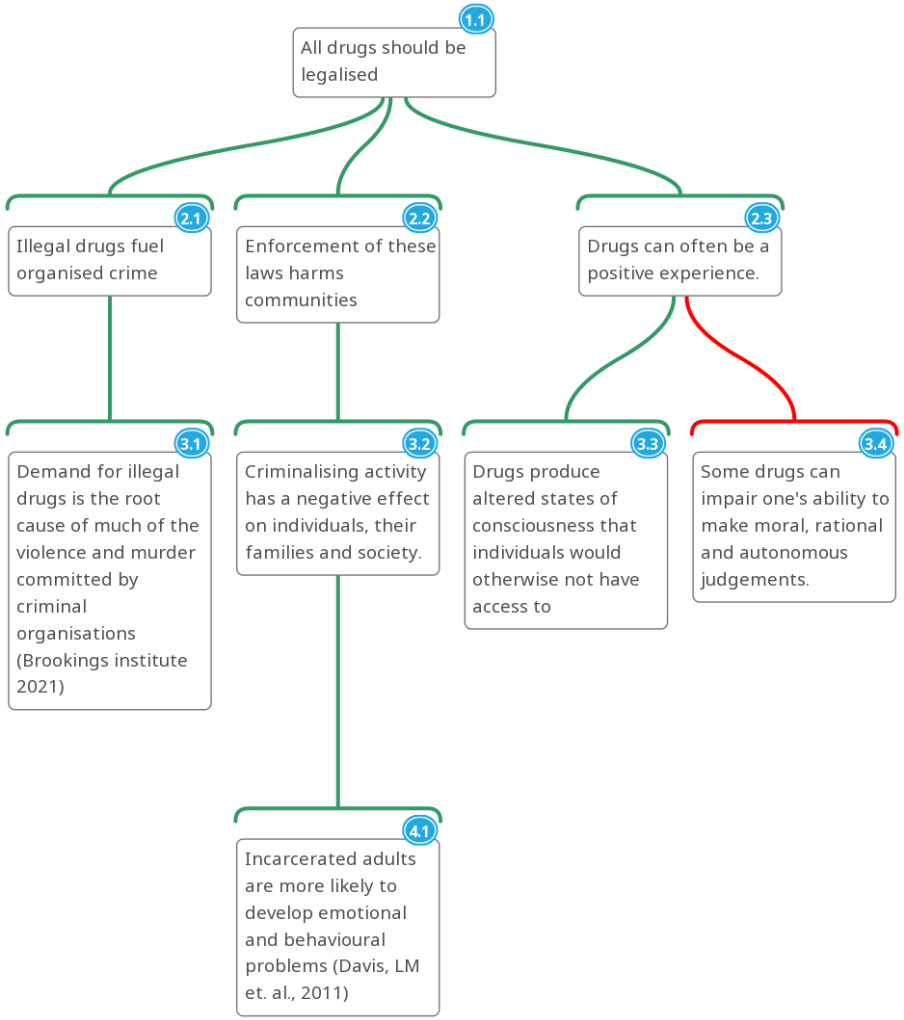
Solution 1: Rats



Solution 2: School Uniforms



Solution 3: Drug legalization



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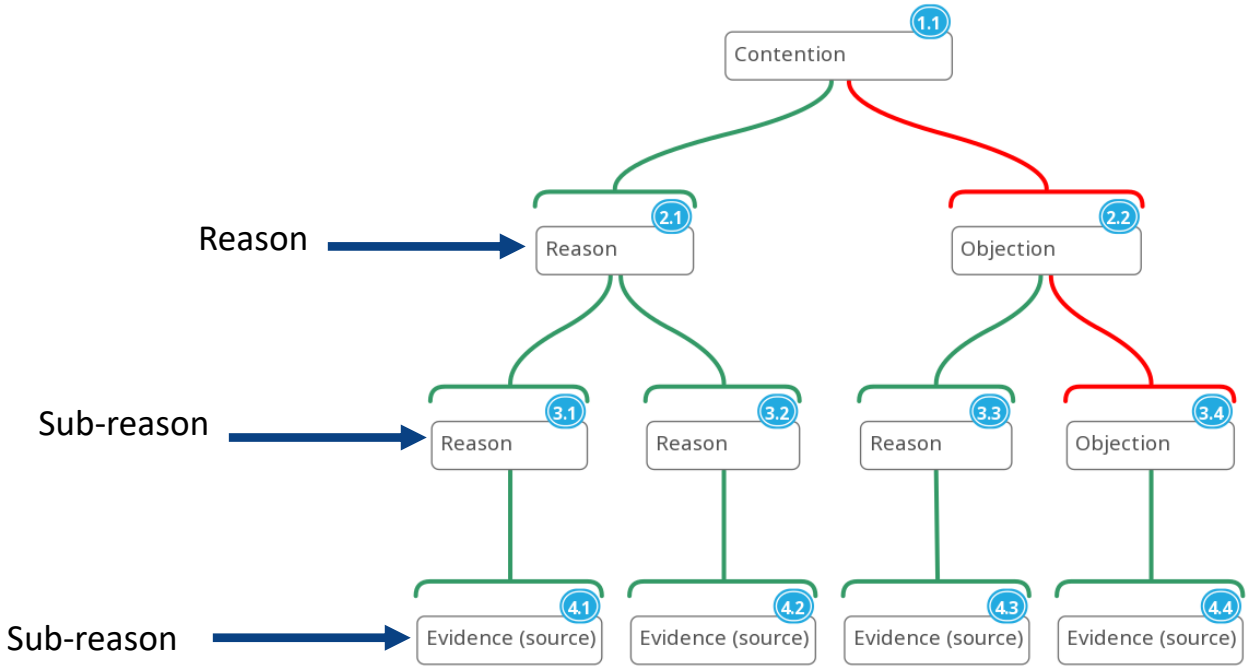
Improving argument maps

Session 2

Recap of argument mapping

- An argument map can have many ‘argument layers’
- A layer houses all the ‘reasons’, ’objections’ and ‘rebuttals’.
- Argument layers exist in between the contention at the top, and the evidence/source at the bottom



Hints to improve argument maps

There are common mistakes when making an argument map. In this lesson we practice with tips to improve argumentation in maps (and writing)

1. Be clear
2. Exclude "logical language" from claims
3. Exclude background material
4. Use parallel language whenever possible
5. Place claims in a single reason when and only when they support a conclusion more strongly together than separately

Adopted from: https://maps.simoncullen.org/hints
By Cullen et al., 2018

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www.nature.com/npjscilearn

ARTICLE OPEN

Improving analytical reasoning and argument understanding: a quasi-experimental field study of argument visualization

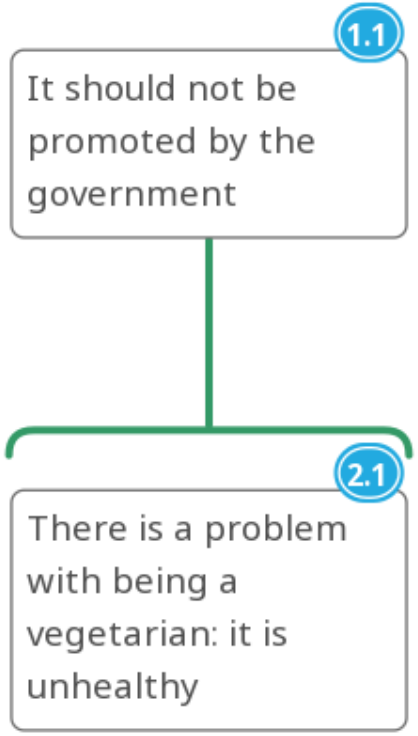
Simon Cullen[1,2], Judith Fan[3], Eva van der Brugge[4] and Adam Elga[1]

The ability to analyze arguments is critical for higher-level reasoning, yet previous research suggests that standard university education provides only modest improvements in students' analytical-reasoning abilities. What pedagogical approaches are most effective for cultivating these skills? We investigated the effectiveness of a 12-week undergraduate seminar in which students practiced a software-based technique for visualizing the logical structures implicit in argumentative texts. Seminar students met weekly to analyze excerpts from contemporary analytic philosophy papers, completed argument visualization problem sets, and received individualized feedback on a weekly basis. We found that seminar students improved substantially more on LSAT Logical Reasoning test forms than did control students ($d = 0.71$, 95% CI: [0.37, 1.04], $p < 0.001$), suggesting that learning how to visualize arguments in the seminar led to large generalized improvements in students' analytical-reasoning skills. Moreover, blind scoring of final essays from seminar students and control students, drawn from a parallel lecture course, revealed large differences in favor of seminar students ($d = 0.87$, 95% CI: [0.26, 1.48], $p = 0.005$). Seminar students understood the arguments better, and their essays were more accurate and effectively structured. Taken together, these findings deepen our understanding of how visualizations support logical reasoning and provide a model for improving analytical-reasoning pedagogy.

npj Science of Learning (2018)3:21 ; doi:10.1038/s41539-018-0038-5

Hints to improve argument maps

1. Be clear
   - Do not use needlessly long words or sentences
   - Ensure that each claim box contains one sentence, and that this sentence is true or false
   - Avoid language that makes it difficult to understand a claim without referring to something outside the claim itself



Example of unclear argumentation

Adopted from: https://maps.simoncullen.org/hints
By Cullen et al., 2018

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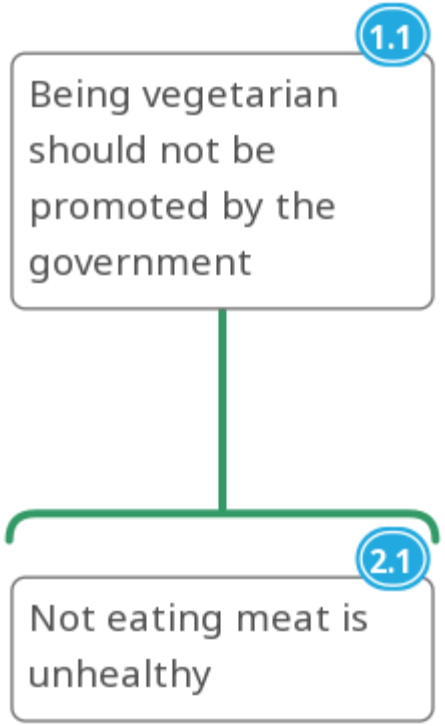

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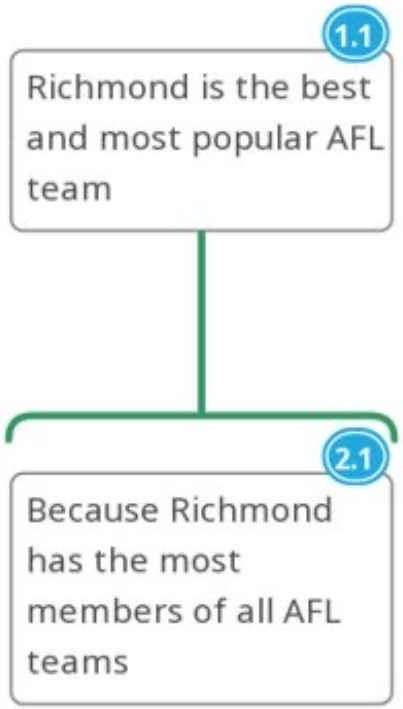
Hints to improve argument maps

1. Be clear
2. Exclude "logical language" from boxes
    - Rarely include "conjunctions" in claim boxes, i.e. rather than *describing* an argument, *display* the argument using color



Example of logical language in claims and arguments

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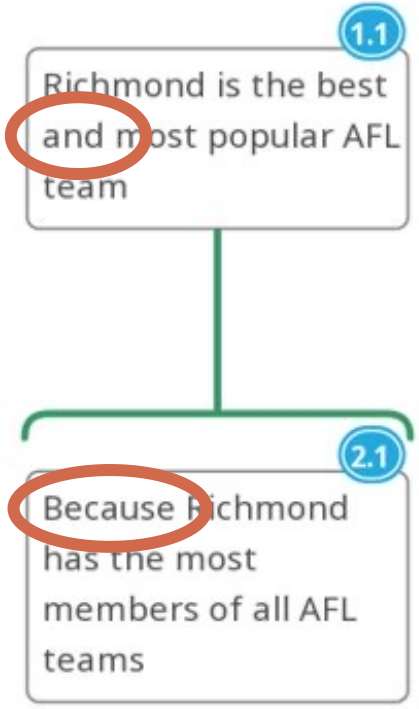

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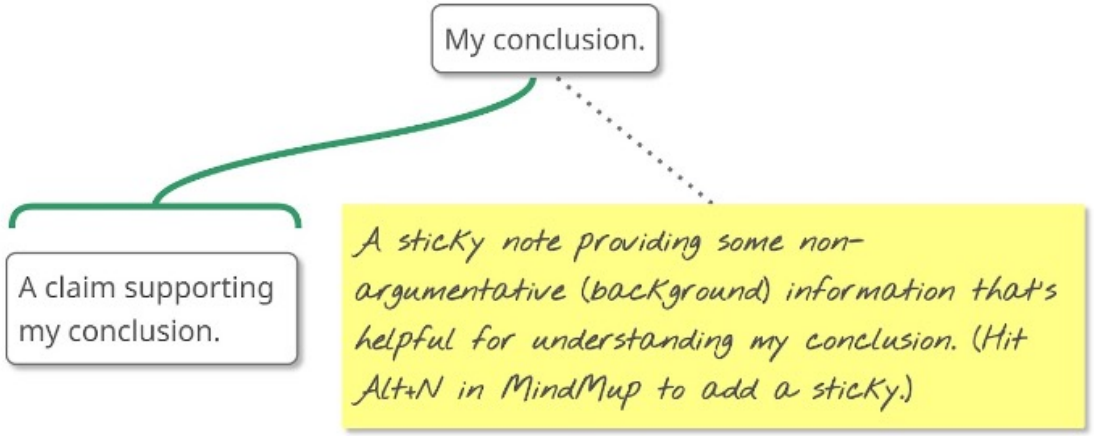
Hints to improve argument maps

1. Be clear
2. Exclude "logical language" from claims
3. Exclude background material
   - Don’t represent definitions or stage-setting materials (unless you’re analysing an argument about a definition)
   - If you want to include background material you can do that with a sticky note



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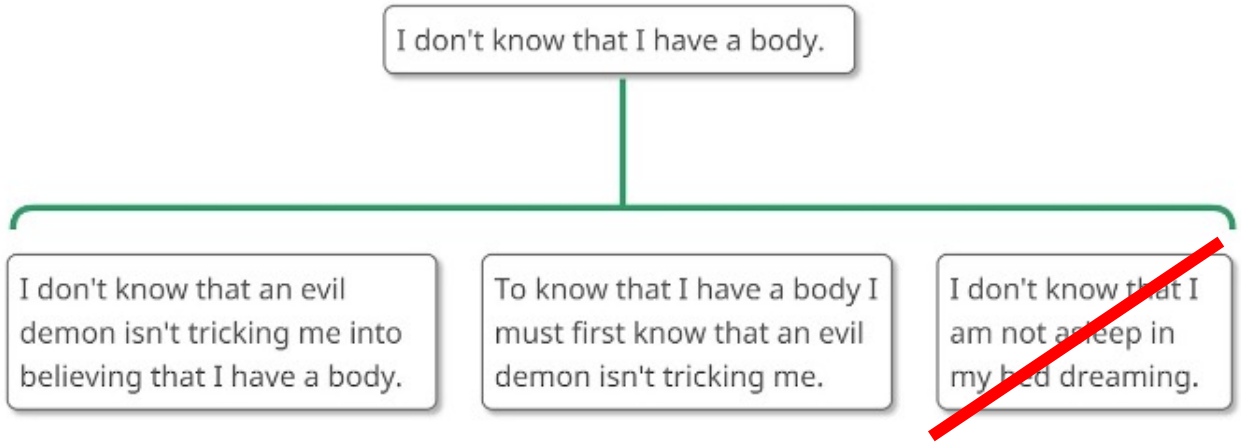
4. Use parallel language whenever possible
   - Using different words to mean the same makes it more difficult to follow your argument
   - Eliminate danglers: claims that do not contribute (or detract from) the strength of an argument



Eliminate the dangler in the example

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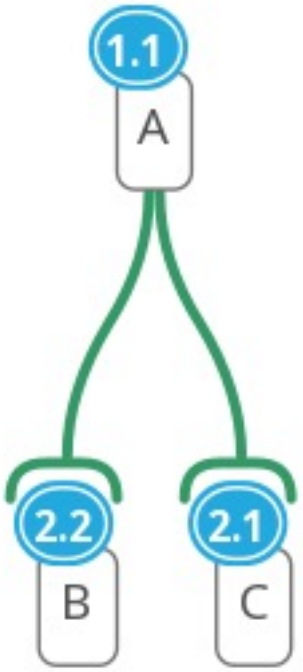

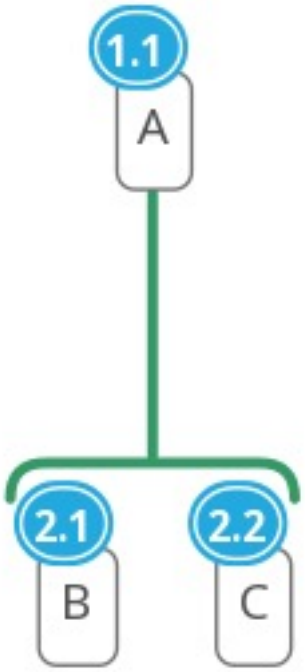

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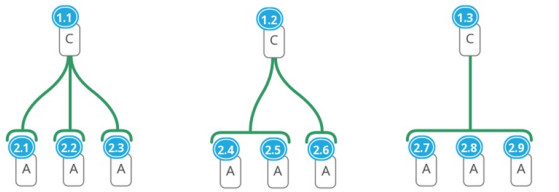

Adopted from: https://maps.simoncullen.org/hints
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Contention:

Whitney killed Dylan

Arguments:

Only 1 in 100 million people have genetic marker A

Whitney has genetic marker A

The person who killed Dylan has genetic marker A

How would you map this argument?

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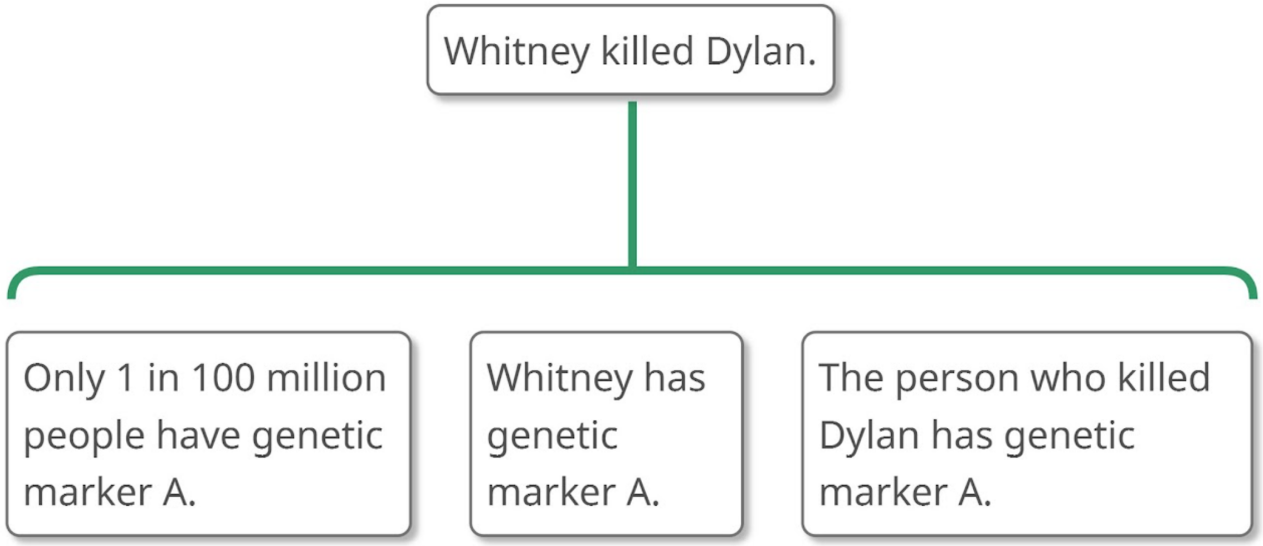

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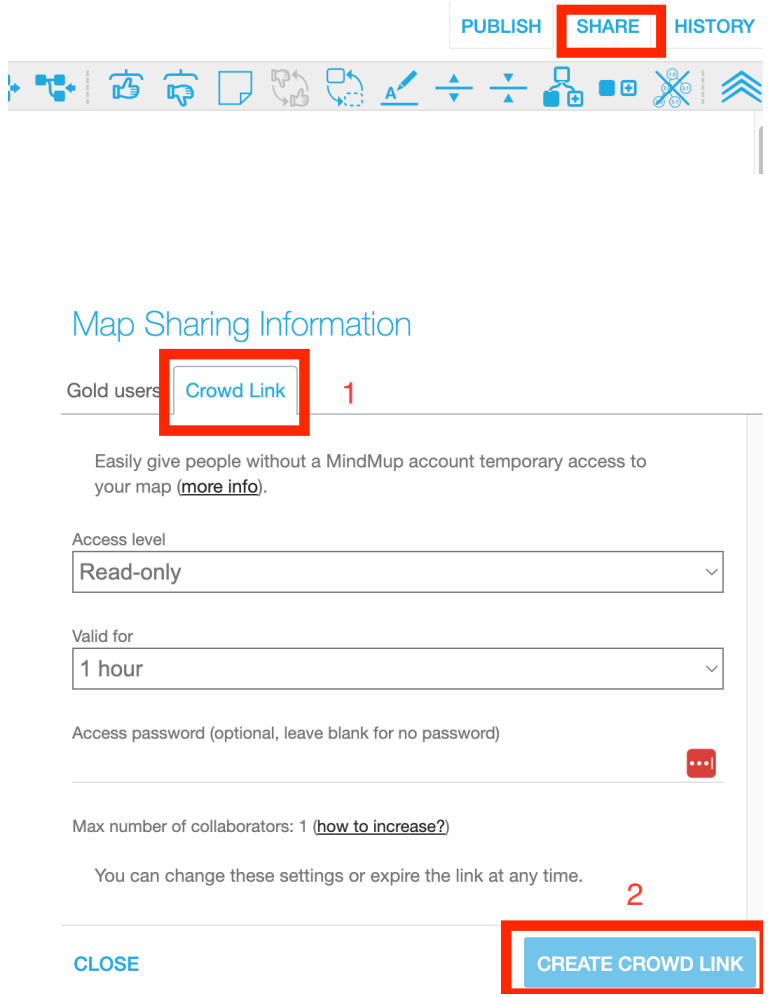
Groupwork

- Teams of 3-5
- One ‘scribe’ to map arguments using MindMup with input from the team.
- Generate one map per team
- When ready, share the link to your map with your tutor.



Time to try create a simple argument map from scratch

- Pick a contention and make sure it's something *contentious*, not an established fact. For example, 'Chocolate ice-cream is the best flavor' rather than 'Melbourne is a city in Victoria'.
- Try to have 3 layers of argumentation, so contention-argument-subargument-subargument.
- Don't worry about sourcing your evidence.

Guided group discussion

Some question to consider:

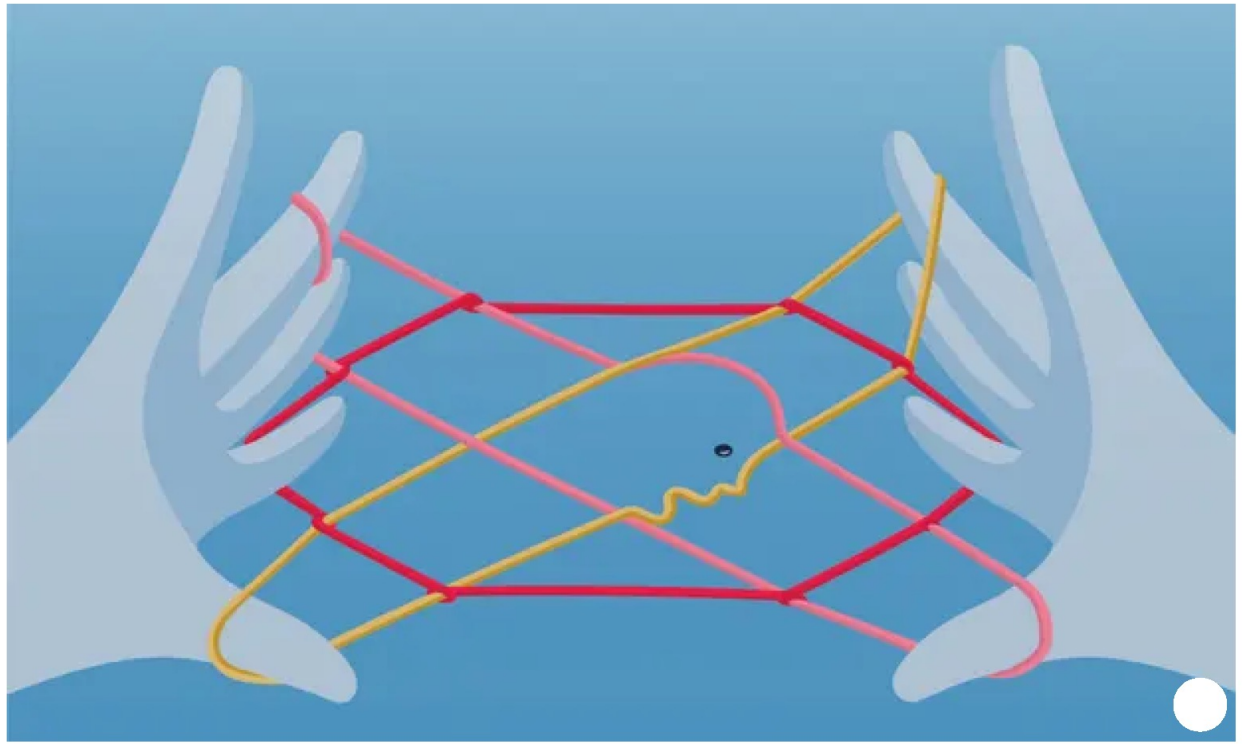
1. Is the language clear?
2. Is logical language excluded from claims?
3. Is background info (i.e. definitions) excluded?
4. Is parallel language used when possible?
5. Are claims that support a conclusion more strongly together placed in a single reason?

A real world example

Map the argument for the claim:

You can mould your personality into the shape you desire

Source: The Guardian 13 February 2023



The big idea

The big idea: your personality is not set in stone

Think you're stuck being scatty, or an introvert? The latest research suggests otherwise

David Robson

Mon 13 Feb 2023 23.30 AEDT

Next time

In the next session we'll:

- Look at bridging claims and hidden assumptions.
- Use these tools to evaluate some argument maps as a team.