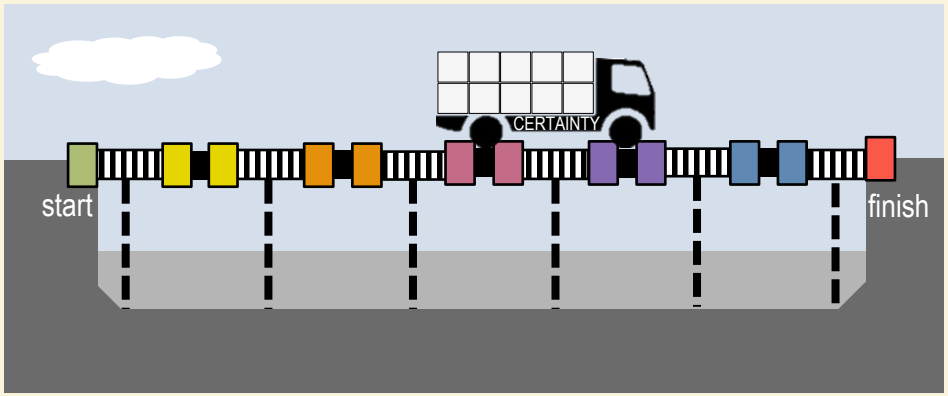
A Clear Logical Argument... Guaranteed:

making compelling lines of reasoning in court



Oregon Department of Justice

2014 CLE (approved for 3.75 credits)

Joseph A. Laronge, JD

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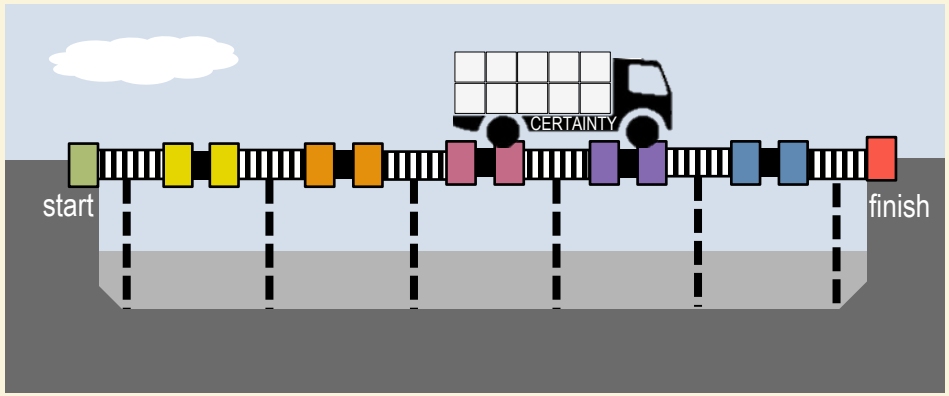
Basic Terminology



There are actually very few words (terms) that need to be mentioned first when beginning to discuss logical reasoning.

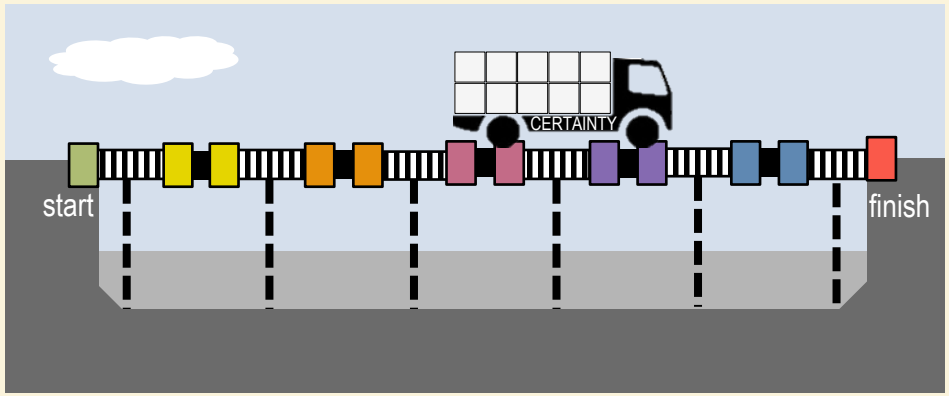
CONCLUSION: A conclusion is the statement that you want the audience to accept as true. Sometimes it is called a claim, contention, or thesis. It's the perspective of reality that you want to prove is a "fact." For example:
"Henry is a British subject."

REASON: A reason is the line of connected sentences (premises) that are intended to lead the audience to accept that the conclusion is true with some degree of certainty. For example,
"Henry was born in Bermuda." "Someone born in Bermuda is a British subject."

PREMISE: A premise is a sentence that when connected (linked) to other sentences form a line of reasoning.

ARGUMENT: An argument is the combination of the conclusion and the reason.

A Logical Argument

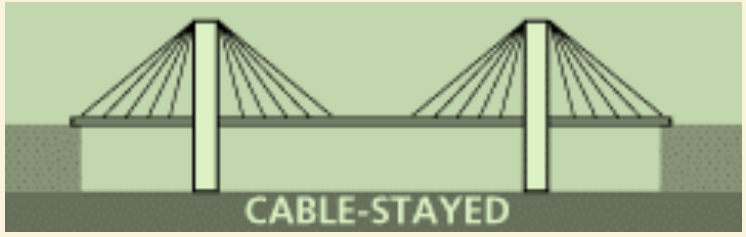


The degree to which the court accepts your conclusion (e.g., contention, claim, or thesis) as true—such as beyond a reasonable doubt—largely depends on the court's subjective opinion of the strength (e.g., goodness, quality, or probative weight) of the reasoning that leads to that conclusion.

That individually judged reasoning strength, like the strength of a *bridge*, depends on two primary characteristics:

1. The degree to which the sentences (premises) that comprise the line of reasoning are subjectively perceived to be true.

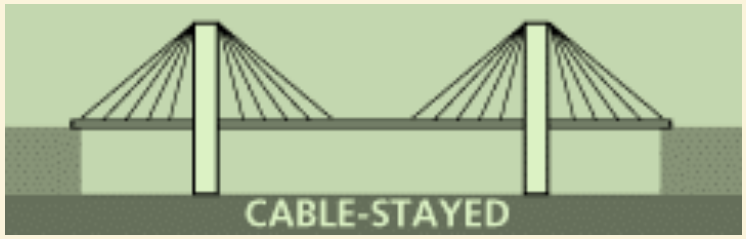
2. Whether the audience perceives the structure (e.g., form or pattern) of the argument to be logical (structurally correct).



The logic of reasoning depends on the underlying structural form of its sentences (premises and conclusion).

To guarantee that an argument is logical, the meaning of the sentences (**premises**) that together form the line of reasoning and that of the **conclusion** being asserted (contention, claim, or thesis) must be capable of being expressed in words that can combine together in a **defined logical structure**, form, or pattern.

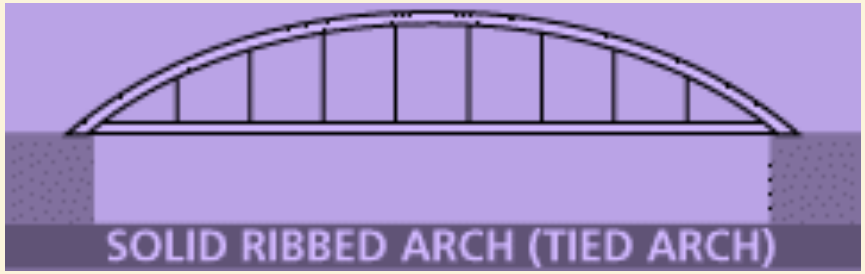
And just like for any bridge that holds together, there are different strictly defined structurally correct designs necessary for certain types of arguments to be logical.

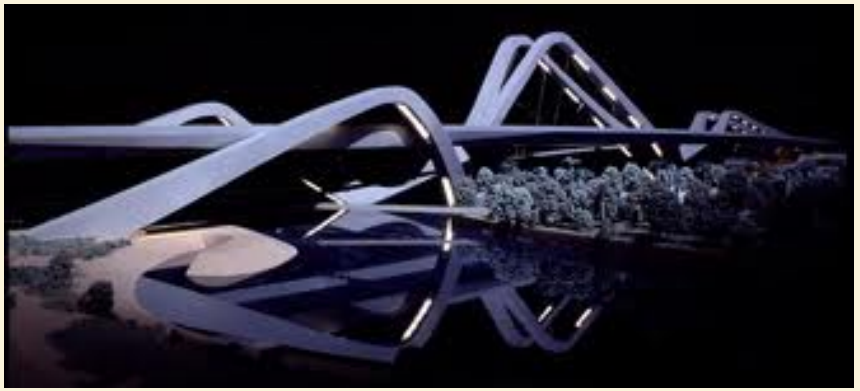


The underlying structure of a good line of reasoning may not always be readily apparent.

Just as the necessary structurally correct design of a sound bridge may not always be readily apparent on the surface, the underlying logical structure of a good line of reasoning may not always be readily apparent in the arrangement of its presented sentences and words.

So it is critical that the logic of the argument be self-evident to the court to be accepted.



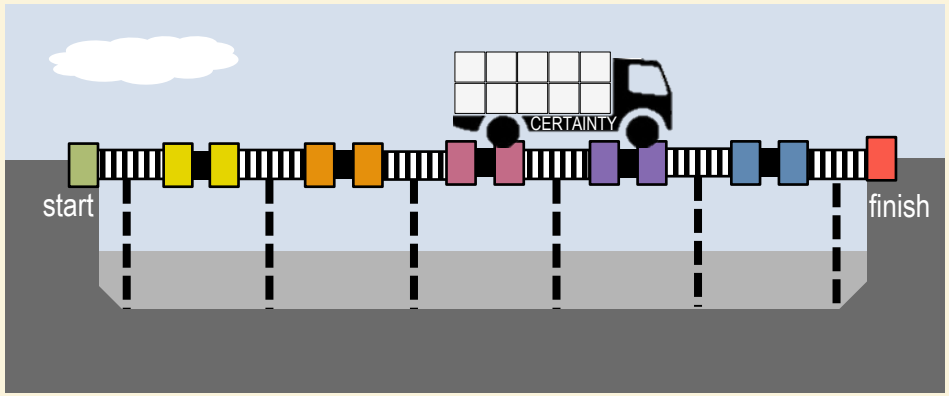


Infinity Loop Bridge, Zhuhai, China

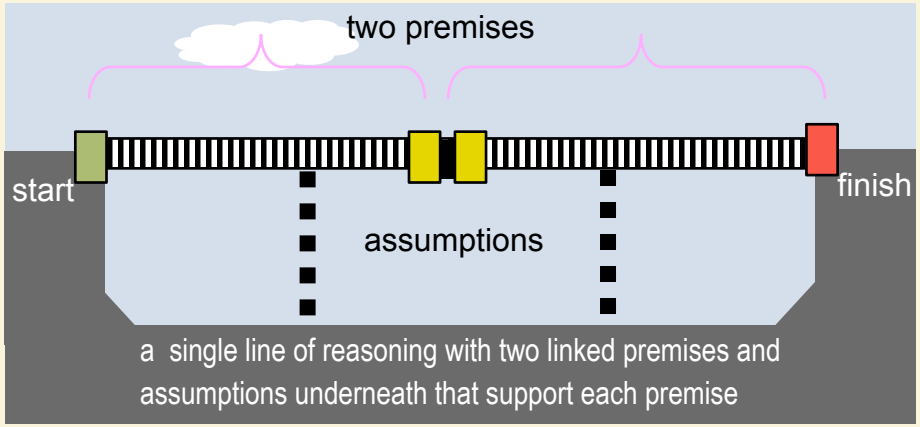
Infinity Loop Bridge, Zhuhai, China

LOGICAL STRUCTURE OBSCURED

The Logic-bridge



*The formal name of this universal logical form is Defeasible Class-Inclusion Transitivity (DCIT, dee•kit).[1]



There is an all-purpose structure or template to make any logical argument—the Logic-bridge.* The design is user-friendly, rigorous, robust, and foolproof.

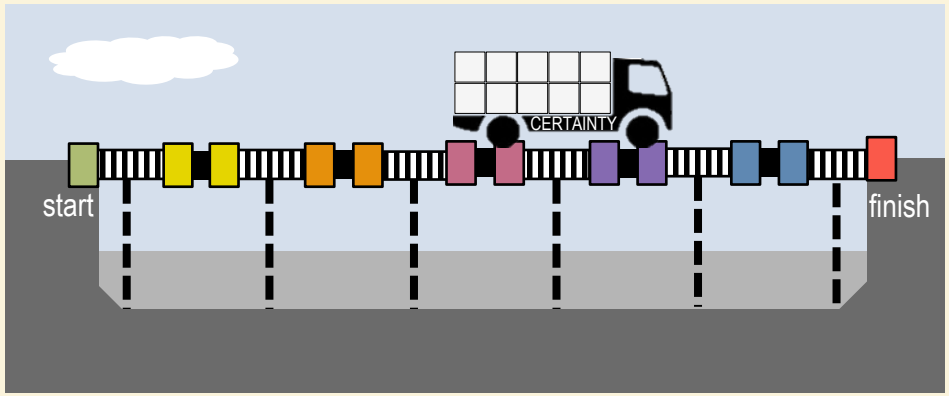
Any type of logical argument (e.g., deductive, inductive, abductive, or argument schemes) can be built using the identical Logic-bridge structure or template.

Metaphorically, it resembles a cantilever style bridge. Each horizontal *span* represents each of the two or more sentences (premises) that link together to form the logical line of reasoning that leads to the conclusion (finish).

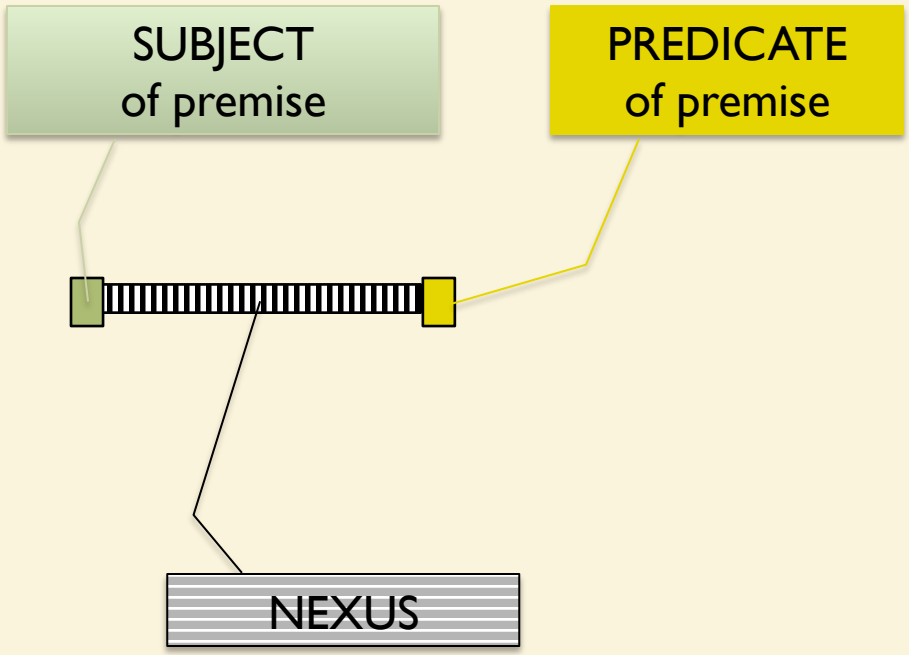
And the vertical *piers* beneath each *span* represent the supporting assumptions for each linked premise in the line of reasoning.

"LOGIC-BRIDGE" STRUCTURE

Premise Structure

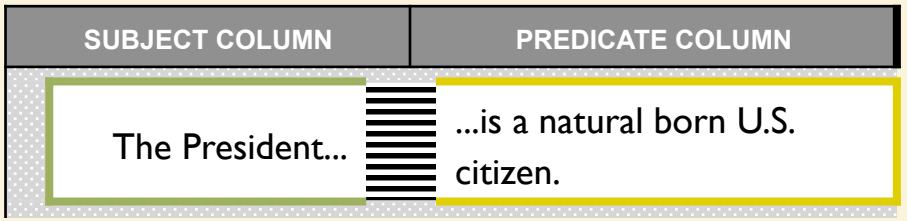


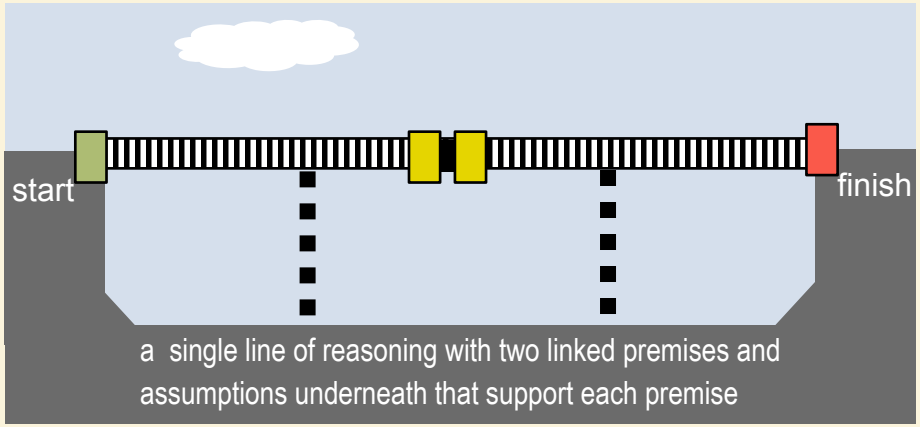
** Any sentence can be structured in this categorical form.*[1]



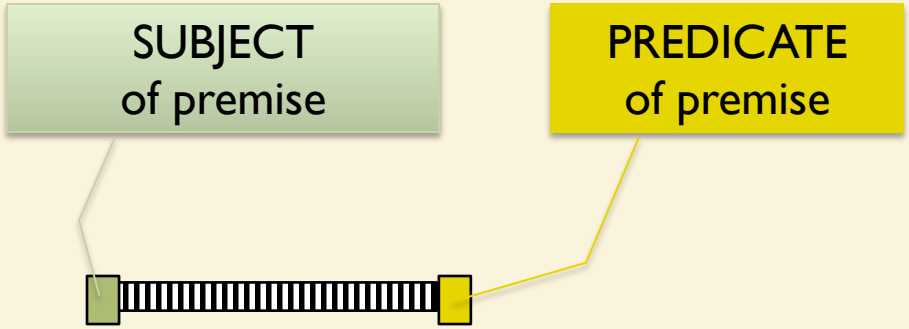
Each sentence (premise) of the Logic-bridge line of reasoning consists of three parts:*

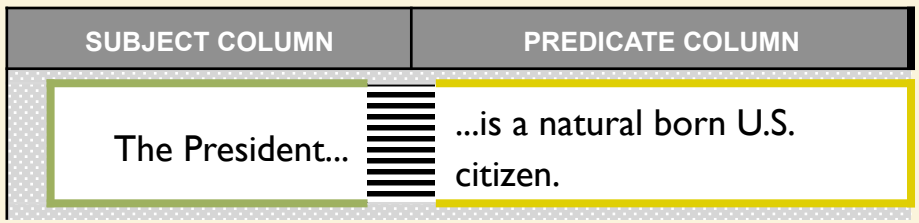
1. SUBJECT [phrase] of the premise (starting colored end-cap of the span);
2. PREDICATE [phrase] of the same premise (ending colored cap of the span); and,
3. NEXUS of Predication that joins them.

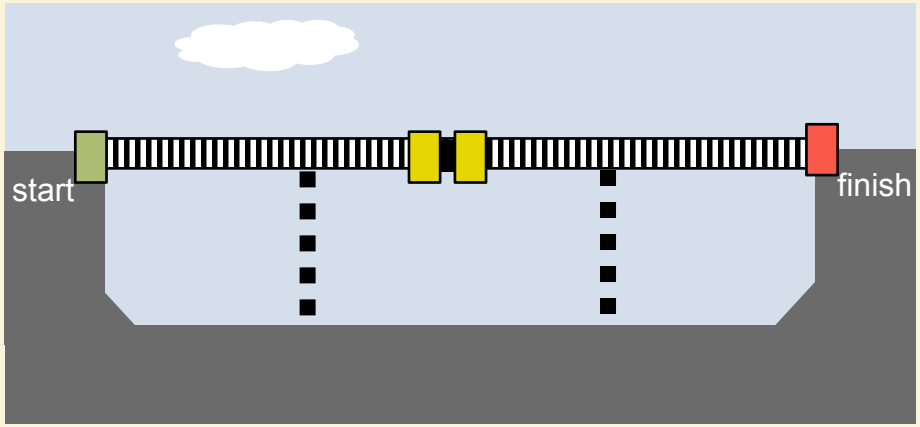




DEFINED PREMISE STRUCTURE



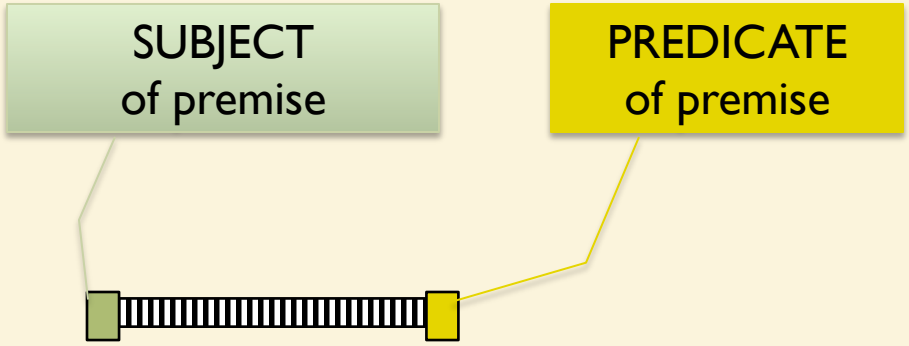


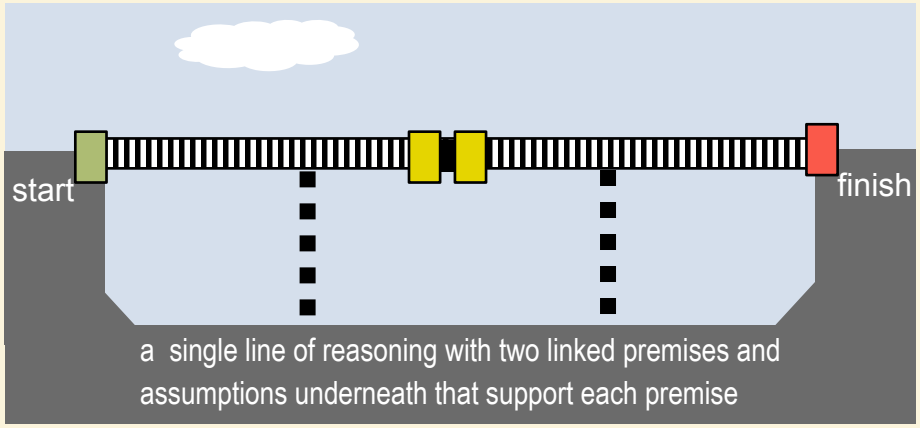


"The SUBJECT is a noun [phrase].
That's a person, place or thing.
It's who or what the sentence is about
And the PREDICATE is the verb [phrase].
That's the action word.
That gets the subject up and out."

The Tale of Mr. Morton
Schoolhouse Rock

These are examples of parsing sentences into their SUBJECT [phrase] and PREDICATE [phrase] halves.





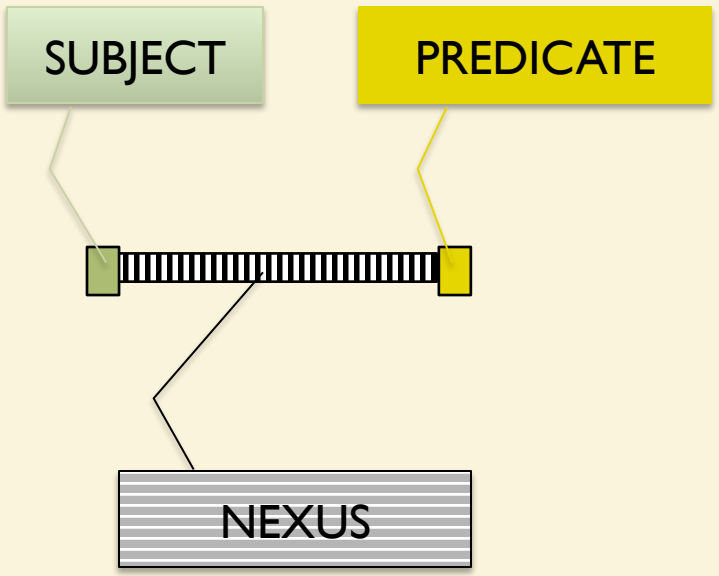
SUBJECT COLUMN	PREDICATE COLUMN
The President...	...is a natural born U.S. citizen.

SUBJECT COLUMN	PREDICATE COLUMN
The newspaper...	...published a false birth announcement.

SUBJECT COLUMN	PREDICATE COLUMN
The Governor...	...had personal knowledge of the birth.

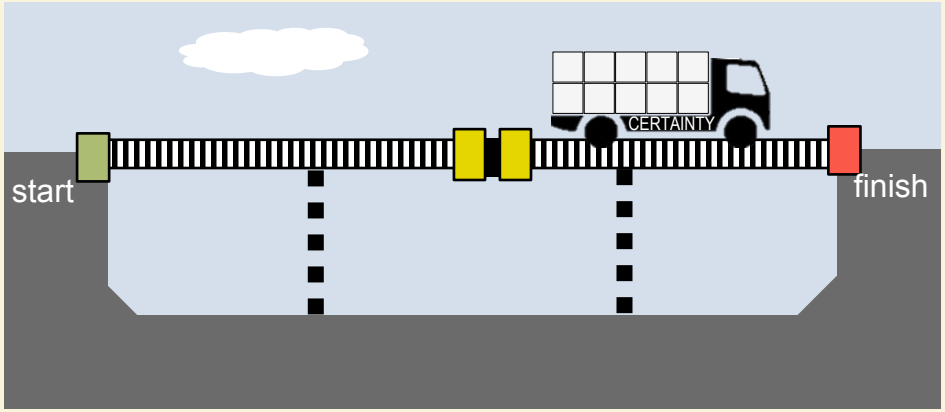
SUBJECT COLUMN	PREDICATE COLUMN
The birth certificate...	...was authentic.

SUBJECT COLUMN	PREDICATE COLUMN
The Constitutional requirement...	...was fulfilled.

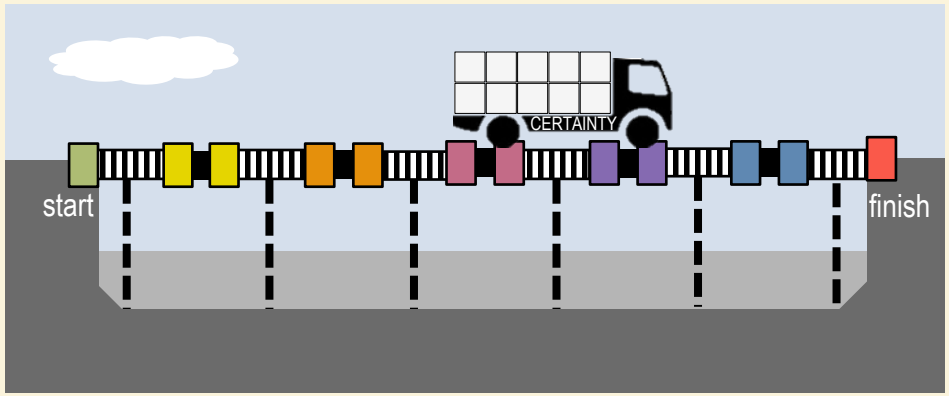


The NEXUS *span* between the SUBJECT and PREDICATE end-caps represents the relationship (i.e., single direction categorical) between the two parts of the premise.

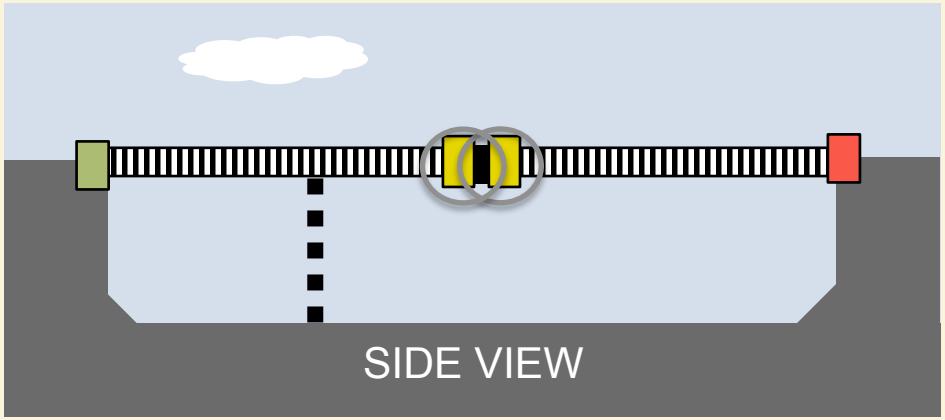
The strength of that relationship represents an individual's subjective perception of the amount (load) of certainty (e.g., believability, acceptability, or likelihood) of the truth of that premise that it can support.



Linking Premises

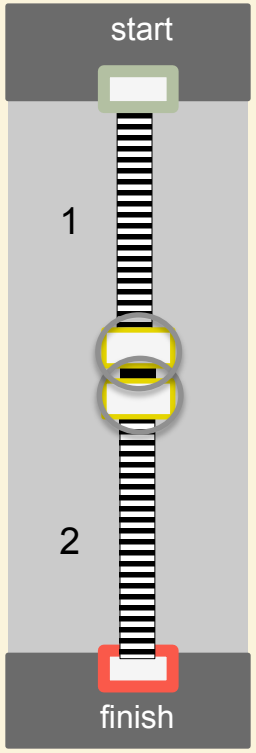


** The word "such" means "like the original subject." While technically needed, in practice it can be dropped.*



The sentences (premises) of the Logic-bridge line of reasoning are arranged in a specific order by linking each other back to front.

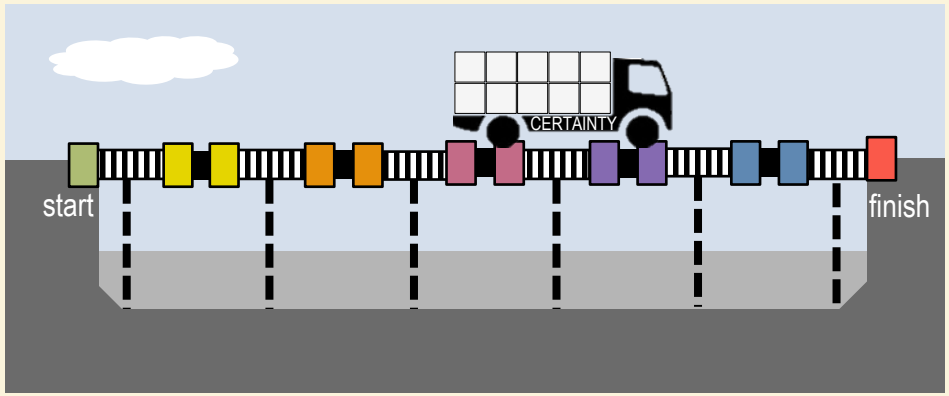
This linkage is created by the PREDICATE of one sentence matching the SUBJECT of the next sentence in the line of reasoning plus an added universal [e.g., Any, All, One (such)*].



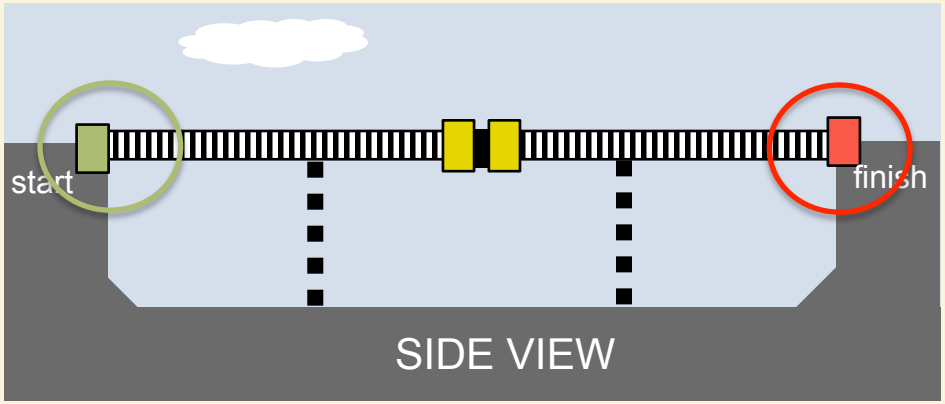
	SUBJECT COLUMN	PREDICATE COLUMN
1	The President...	... . has a valid Hawaiian birth certificate.
2	One who has a Hawaiian birth certificate...	...was born in Hawaii.
Therefore, CONCLUSION		
	The President...	...was born in Hawaii.

	SUBJECT COLUMN	PREDICATE COLUMN
1	The President...	... . has a valid Hawaiian birth certificate.
2	Any (all/one) who (that) [PREVIOUS PREDICATE]	...was born in Hawaii.
Therefore, CONCLUSION		
	The President...	...was born in Hawaii.

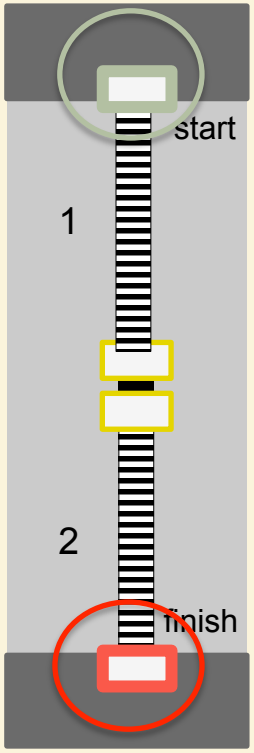
Start and Finish

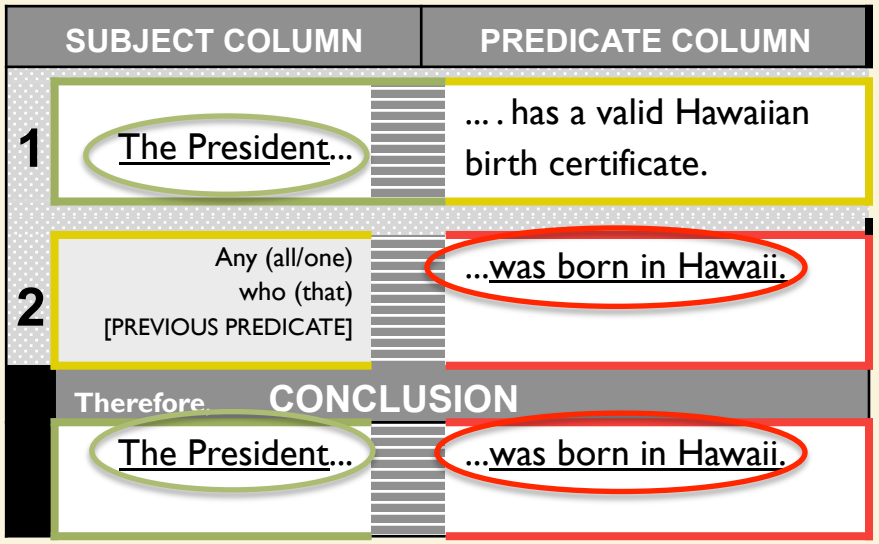


The SUBJECT [phrase] and PREDICATE [phrase] of the CONCLUSION bound the ends of the line of reasoning.

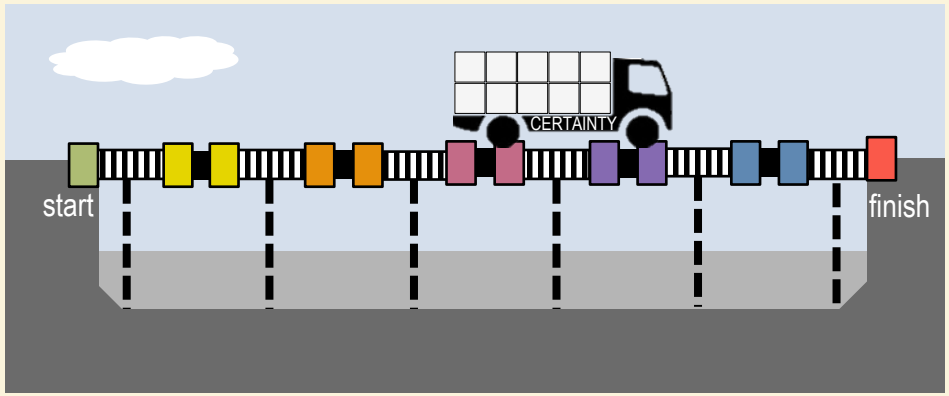


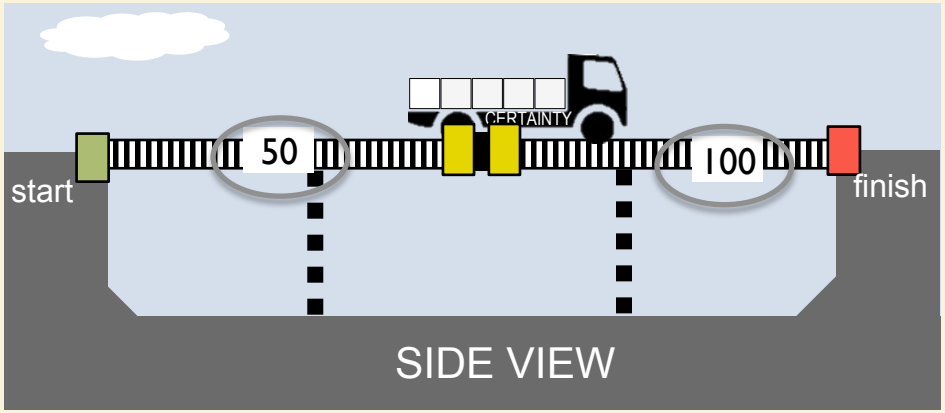
Besides the matching linkage and resulting order of the premises, the Logic-bridge requires that the SUBJECT of the first premise and the PREDICATE of the last premise in the line of reasoning form the CONCLUSION (claim or thesis).



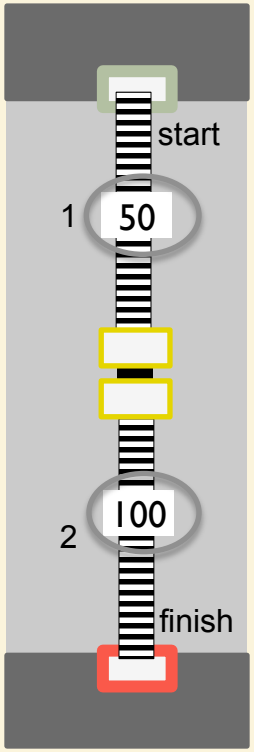


Amount of Certainty



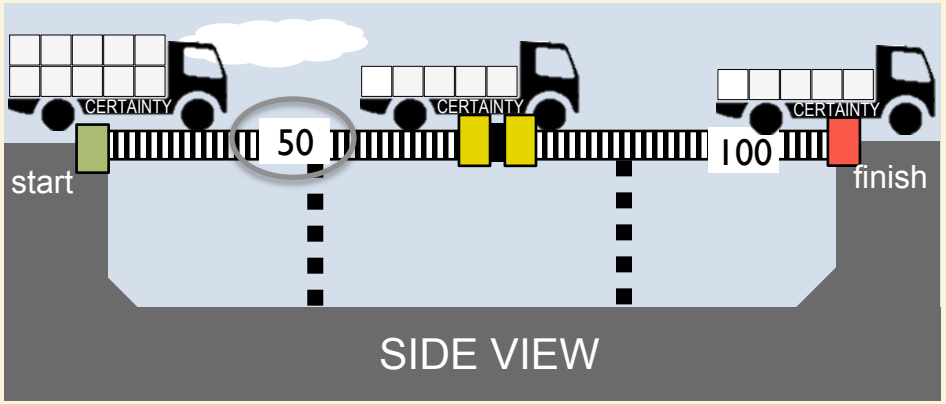


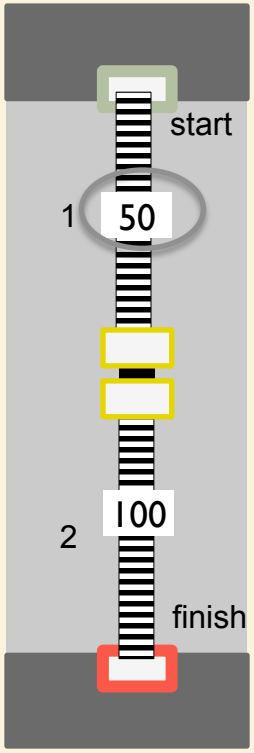
Assume you subjectively perceive the first premise having the probative load bearing strength to support a 50% level of certainty of being true. But the second premise is perceived to have the strength to support a 100% level of certainty of being true.



SUBJECT COLUMN		PREDICATE COLUMN
1	The President... **50**	... has a valid Hawaiian birth certificate.
2	Any (all/one) who (that) [PREVIOUS PREDICATE] **100**	...was born in Hawaii.
Therefore, **CONCLUSION**		
	The President...	...was born in Hawaii.

AMOUNT OF CERTAINTY (belief)





A CONCLUSION reached (justified) from one line of reasoning (without objections) possesses only the smallest subjective level of certainty of truth (e.g., 50%) that can be supported by any one of its premises. So the certainty of a CONCLUSION (e.g., guilty beyond a reasonable doubt) in this context can never be stronger than the weakest premise in the logical line of reasoning.

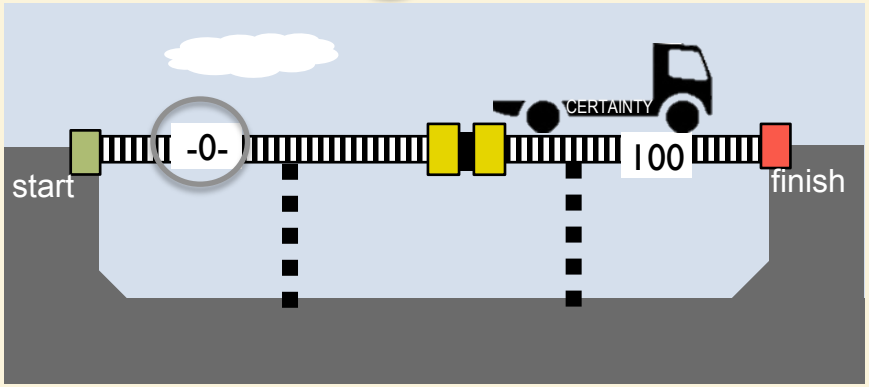
SUBJECT COLUMN		PREDICATE COLUMN
1	The President...	50 ... has a valid Hawaiian birth certificate.
2	Any (all/one) who (that) [PREVIOUS PREDICATE]	100 ...was born in Hawaii.
Therefore,	CONCLUSION	
	The President...	50 ...was born in Hawaii.

Two identical perfectly logical arguments can have different individually subjective degrees of strength.

The amount of certainty that any one PREMISE can support and the resulting amount of certainty for the CONCLUSION that is reached (justified) is a subjective judgment by each individual traveling the line of reasoning. But both arguments are perfectly logical.

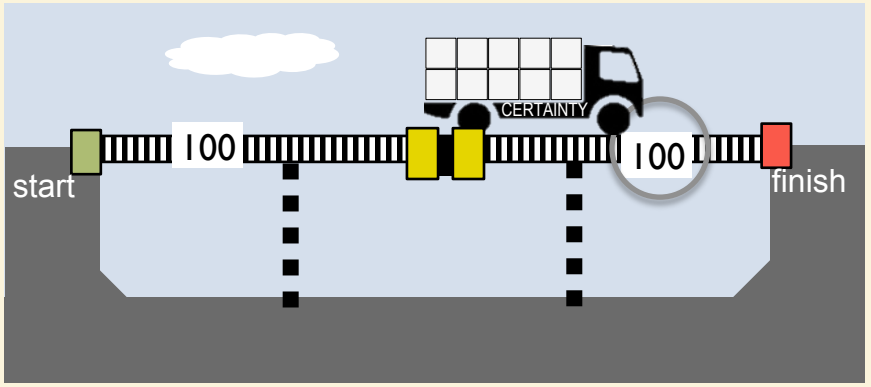
COURT'S PERCEPTION

	SUBJECT COLUMN		PREDICATE COLUMN
1	The President...	-0-	... . has a valid Hawaiian birth certificate.
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	100	...was born in Hawaii.
Therefore,	CONCLUSION		
	The President...	0	...was born in Hawaii.

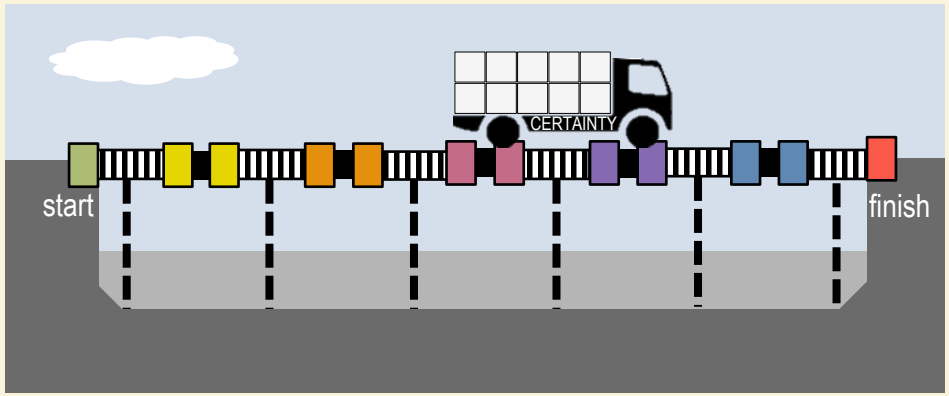


COUNSEL'S PERCEPTION

	SUBJECT COLUMN		PREDICATE COLUMN
1	The President...	100	... . has a valid Hawaiian birth certificate.
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	100	...was born in Hawaii.
Therefore,	CONCLUSION		
	The President...	100	...was born in Hawaii.



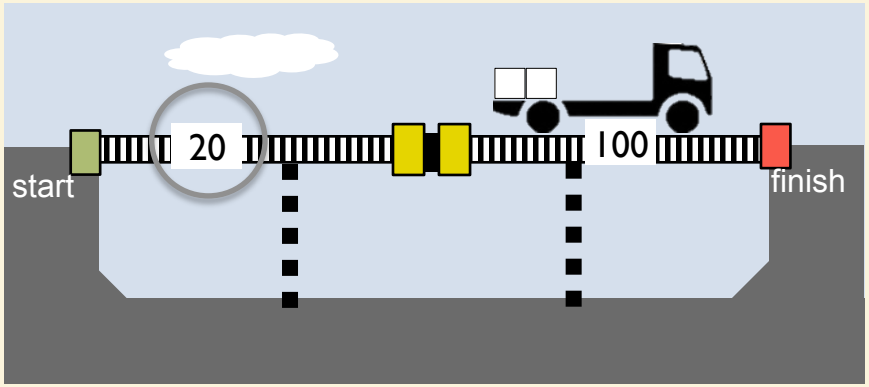
Qualifiers

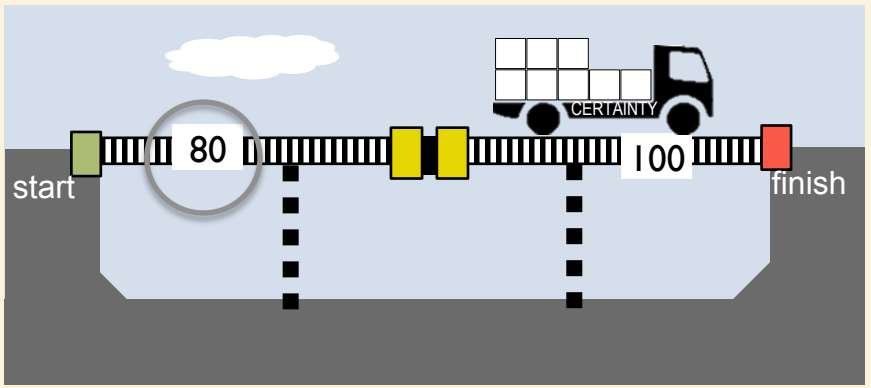


These examples illustrate the using QUALIFIERS to possibly increase the perceived level of certainty by the court for the conclusion. Examples of QUALIFIERS include the following: **some, many, most, probably, likely, possibly, generally** etc.

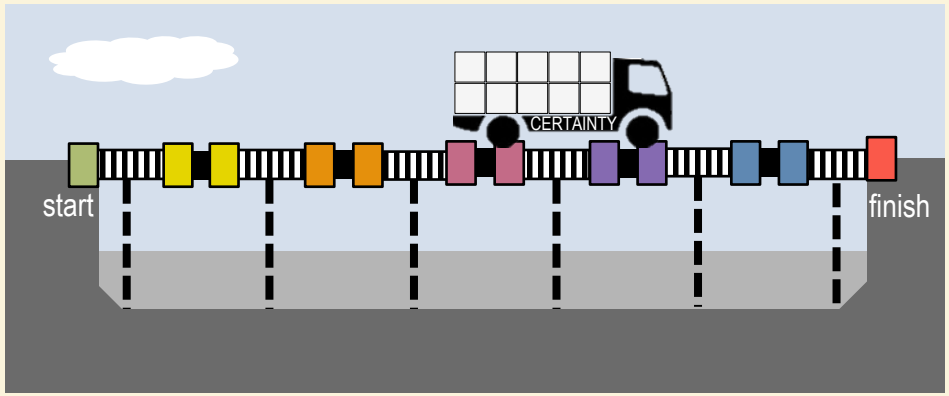
	SUBJECT COLUMN		PREDICATE COLUMN
1	The President...	20	... . has a valid Hawaiian birth certificate.
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	100	...was born in Hawaii.
Therefore,	CONCLUSION		
	The President...	20	...was born in Hawaii.

	SUBJECT COLUMN		PREDICATE COLUMN
1	The President...	80	... possibly has a valid Hawaiian birth certificate.
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	100	...was possibly born in Hawaii.
Therefore,	CONCLUSION		
	The President...	80	...was possibly born in Hawaii.



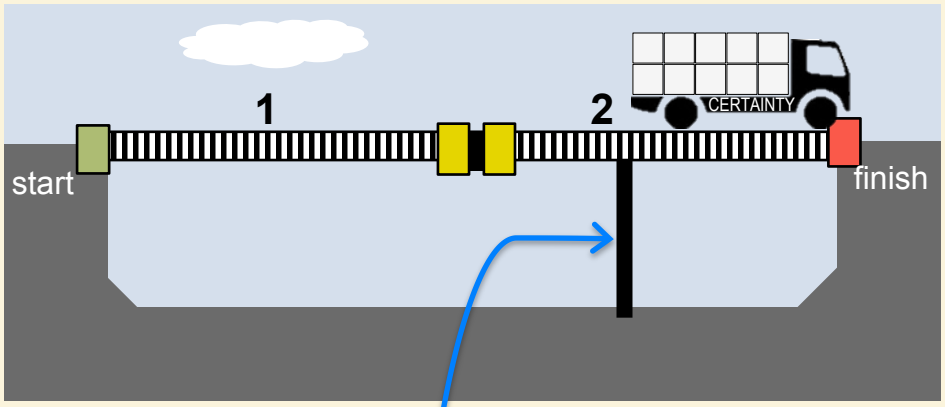


Assumptions



An ASSUMPTION provides **necessary** or **ancillary** support to the premise it supports.

There can be many assumptions supporting a premise. And the subjective level of certainty of the truth of a premise can be impacted by the level of certainty of any of its assumptions.



	SUBJECT COLUMN	PREDICATE COLUMN	Supporting Assumptions
1	The President...	... was born in Hawaii.	*[None stated.]*
2	Any (all/one) who (that) [PREVIOUS PREDICATE]	...is a natural born U.S citizen.	*2a The person was born when Hawaii was a state or U.S. territory.* ***(necessary assumption)***
Therefore,	CONCLUSION		
	The President...	...is a natural born U.S citizen.	

"The charges against defendant arose out of a domestic fight between defendant and Payne, who is his ex-girlfriend and the mother of his two daughters. The children, ages 5 and 3 at the time, were home during the fight...They argued some more, during which time he hit her in the face. She believed it was with an open hand, but she couldn't recall at that time. He knocked her to the floor a couple of times, and she fought back, left the residence, went to the neighbor's house where she had them call 911."

State of Oregon v. Bivens, 191 Or App 460, 83 P.3d 379, (2004)

"In charging him with felony assault, the state alleged that the assaultive conduct was witnessed by the older of the two children. Specifically, the indictment pleaded:

"The defendant, on or about 03/16/00, in the County of Umatilla and State of Oregon, did unlawfully and intentionally cause physical injury to Noel Payne by striking her in the face, and the defendant's conduct was witnessed by [C], the minor child of the defendant and Noel Payne.

Consequently, the burden fell on the state to prove that C, the older of the two children, witnessed defendant striking Payne in the face. *See* *State v. Reynolds*, 183 Or App 245, 251, 51 P3d 684, *rev den* 335 Or 90 (2002) (factors that aggravate fourth-degree assault to a felony are material elements of the offense)."

State of Oregon v. Bivens, 191 Or App 460, 83 P.3d 379, (2004)

"To be sure, the record provides an ample basis for the first two steps in that line of logic. Payne's testimony provided the jury with a basis to conclude that the children were in their bedroom during most of the argument, and in particular were there toward the end of the argument when defendant slapped Payne in the face.

Both Payne's testimony and that of the investigating officers provide sufficient grounds to conclude that the argument and the fight could be easily heard in other areas of the house, and easily seen if doors were open.
But the third step in the state's line of logic requires several additional intermediate inferences."

State of Oregon v. Bivens, 191 Or App 460, 83 P.3d 379, (2004)

"To infer that the children heard the assault, as distinct from the general argument and fight between the parties, a factfinder would first have to infer that the open-hand slap made a distinctive sound.

Did the sound of the slap rise above the noise of the argument or the other sounds of their physical fighting? The record is silent. No predicate facts assist in informing any inference, and any conclusion would constitute speculation or guesswork.

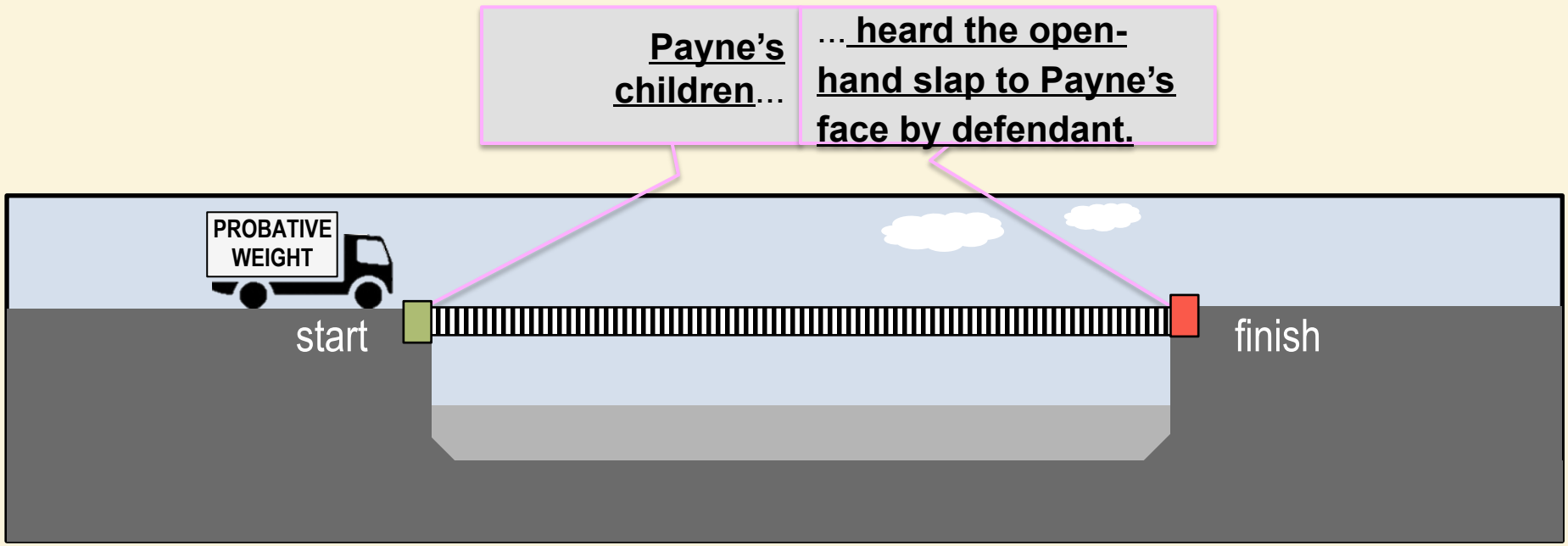
Did the children hear it or see it,

did C in particular identify it for what it was--that is, the sound of defendant slapping Payne?

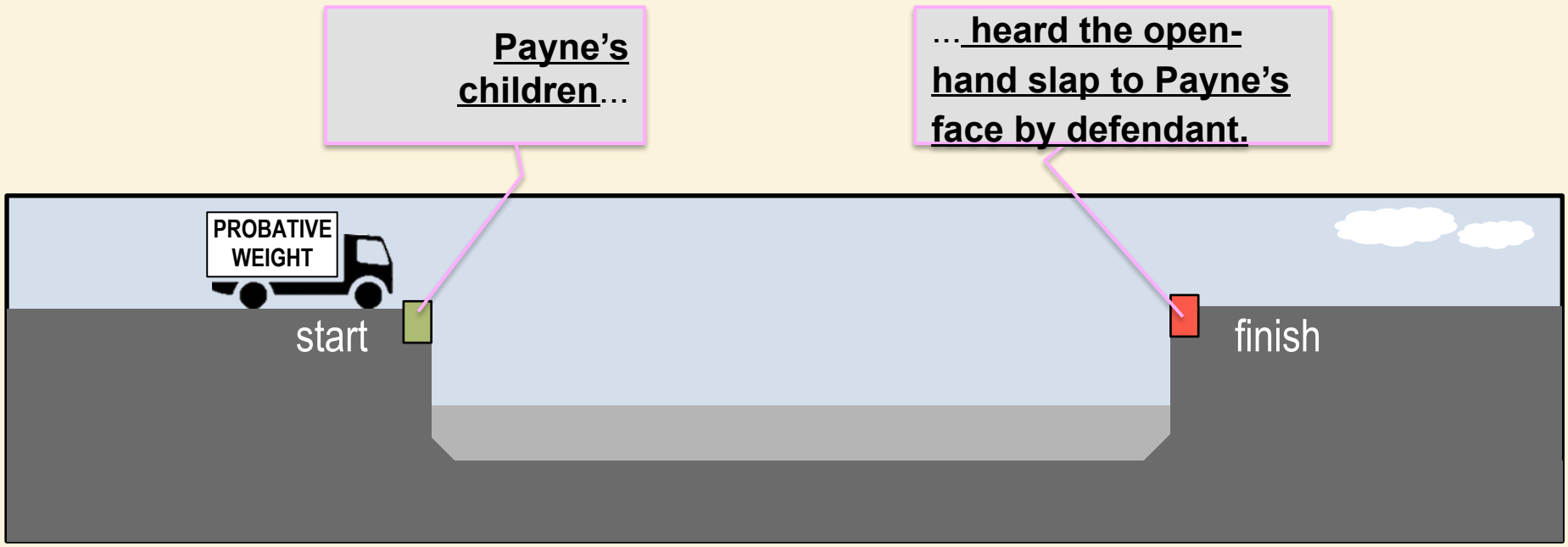
But even that inference requires the further inference that the children--and the five-year-old in particular--paid attention to the fight."

LINE OF REASONING (linked premises)			Supporting Assumptions to Adjoining Premise
1	**Payne's children...**	...were in the house at the time of the argument.	
2	*Any (all/one) who (that)* ...were in the house at the time of the argument...	...would have heard the arguing of the defendant and Payne.	
3	*Any (all/one) who (that)* ...would have heard the arguing of the defendant and Payne...	**...heard the open-hand slap to Payne's face by defendant.**	***(a) "The open hand slap made a distinctive sound."*** ***(b) "[T]he sound of the slap rose above the noise of the argument."*** ***(c) Any such child "was sufficiently mature to distinguish the assaultive conduct from other aspects of the fight."*** ***(d) Any such child paid particular "attention to the fight."***
Therefore,	**Payne's children...**	CONCLUSION ...**heard the open-hand slap to Payne's face by defendant.**	

State of Oregon v. Bivens, 191 Or App 460, 83 P.3d 379, (2004)



State of Oregon v. Bivens, 191 Or App 460, 83 P.3d 379, (2004)

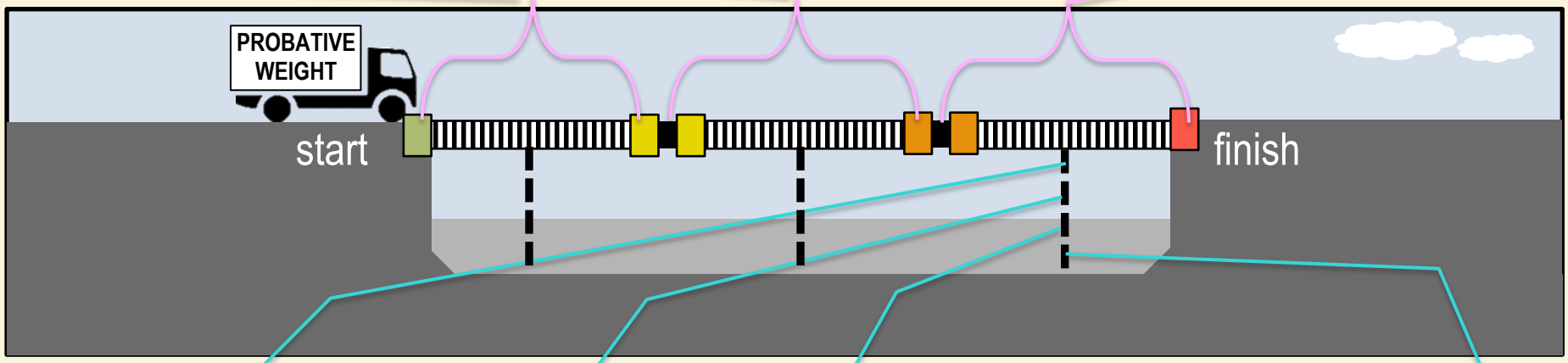


State of Oregon v. Bivens, 191 Or App 460, 83 P.3d 379, (2004)

1. <u>The children</u>...
were in the house at the time of the argument.

2. Any who...
were in the house at the time of the argument
...would have heard the arguing of the defendant and Payne.

3. Any who...
would have heard the arguing of the defendant and Payne
...**<u>heard the open-hand slap to Payne's face by defendant.</u>**



"The open hand slap made a distinctive sound."

"[T]he sound of the slap rose above the noise of the argument."

Any such child "was sufficiently mature to distinguish the assaultive conduct from other aspects of the fight."

Any such child paid particular "attention to the fight."

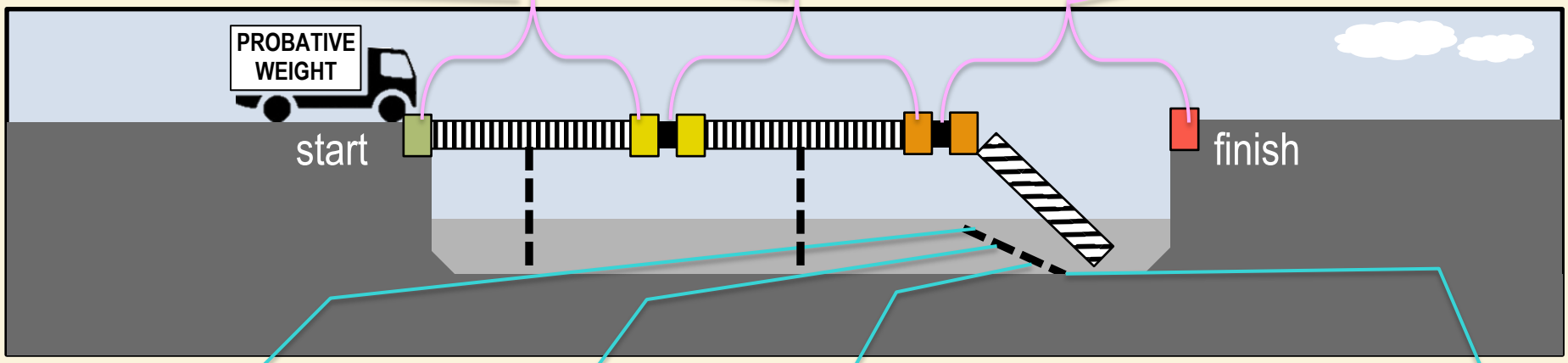
NECESSARY ASSUMPTIONS

State of Oregon v. Bivens, 191 Or App 460, 83 P.3d 379, (2004)

1. <u>The children</u>...
were in the house at the time of the argument.

2. Any who...
were in the house at the time of the argument
...would have heard the arguing of the defendant and Payne.

3. Any who...
would have heard the arguing of the defendant and Payne
...**<u>heard the open-hand slap to Payne's face by defendant.</u>**



"The open hand slap made a distinctive sound."

"[T]he sound of the slap rose above the noise of the argument."

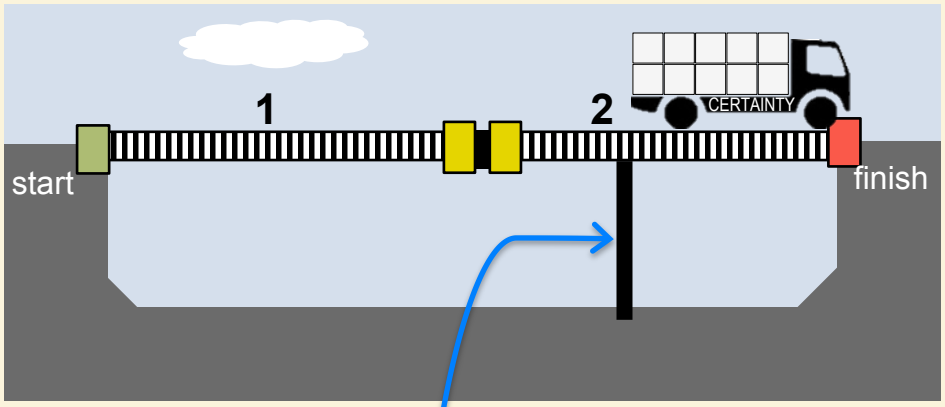
Any such child "was sufficiently mature to distinguish the assaultive conduct from other aspects of the fight."

Any such child paid particular "attention to the fight."

NECESSARY ASSUMPTIONS

An ASSUMPTION provides **necessary** or **ancillary** support to the premise it supports.

There can be many assumptions supporting a premise. And the subjective level of certainty of the truth of a premise can be impacted by the level of certainty of any of its assumptions.



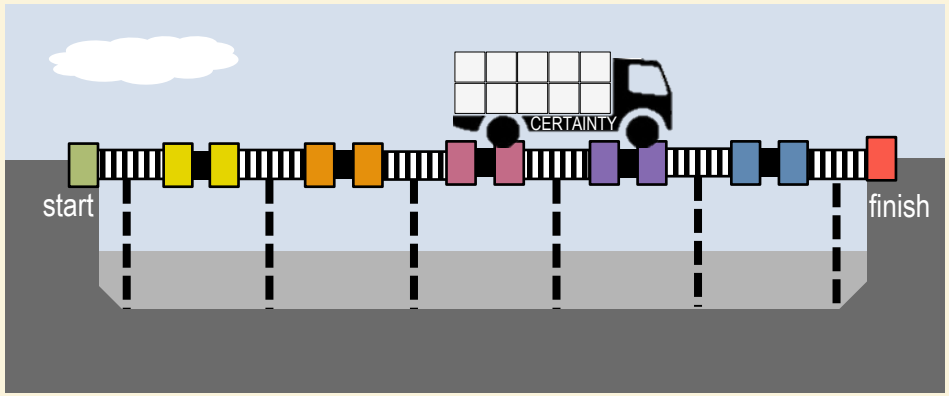
	SUBJECT COLUMN	PREDICATE COLUMN
1	The President...	... was born in Hawaii.
2	Any (all/one) who (that) [PREVIOUS PREDICATE]	...is a natural born U.S citizen.
Therefore,	CONCLUSION	
	The President...	...is a natural born U.S citizen.

Supporting Assumptions

[None stated.]

2a The person was born in 1961.
(ancillary assumption)

Assumption Sets



Different defined ASSUMPTION SETS can accompany certain types of inference steps such as ones that depend upon RELIABILITY OF A SOURCE, ANALOGY, SAMPLE GENERALIZING.

SUBJECT COLUMN	PREDICATE COLUMN	*Supporting Assumptions*
1 The President...	... was born in Hawaii, ACCORDING TO THE WITNESS.	*[None stated.]*
2 One who... was born in Hawaii... ACCORDING TO THE WITNESS...	...was born in Hawaii.	2a The **Witness** had personal knowledge (i.e., was in a position to know). 2b The **Witness** focused his attention for a sufficient period of time to observe the event. 2c The **Witness** had the necessary perceptual and cognitive capabilities to witness and understand. 2d The **Witness** had adequate memory capabilities. 2e The level of certainty of the **Witness** is sufficient. 2f The **Witness** is not personally biased. 2g The **Witness** intended to be truthful.
Therefore, CONCLUSION		
The President...	...was born in Hawaii.	

ASSUMPTION SETS / **WITNESS**

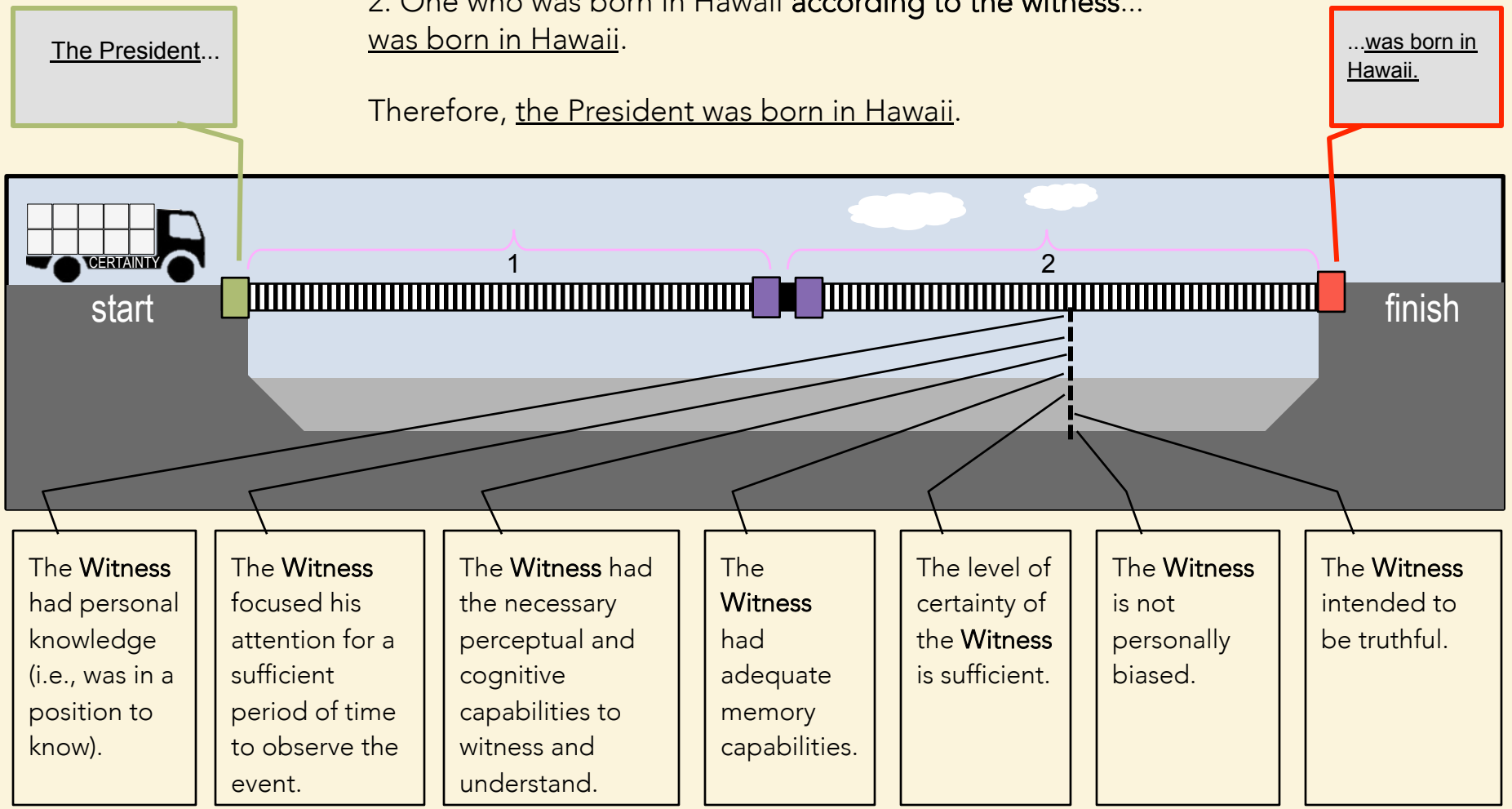
A Logical Argument...Guaranteed!

MAIN CONCLUSION: The President was born in Hawaii.

STUDENT: My line of reasoning consists of two premises:

1. The President...was born in Hawaii **according to the witness**.
2. One who was born in Hawaii **according to the witness**... was born in Hawaii.

Therefore, the President was born in Hawaii.



ASSUMPTION SETS / **WITNESS**

Different defined ASSUMPTION SETS can accompany certain types of inference steps such as ones that depend upon RELIABILITY OF A SOURCE, ANALOGY, SAMPLE GENERALIZING.

	SUBJECT COLUMN	PREDICATE COLUMN	*Supporting Assumptions*
1	The President...	...had an authentic birth certificate ACCORDING TO THE EXPERT.	*[None stated.]*
2	One who... had an authentic birth certificate ACCORDING TO THE EXPERT...	... had an authentic birth certificate.	2a The **Expert** has sufficient qualifications and stature. 2b The **Expert** relied upon a theory or technique that has general acceptance in the scientific field of study. 2c The **Expert** made proper use of the theory or technique. 2d The error rate of the technique is acceptable. 2e The level of certainty of the **Expert** is sufficient. 2f The **Expert** is not personally biased. 2g The **Expert** intended to be truthful. 2h The **Expert** could make a rational inference of identification from the phenomena (sensory input) that the **Expert** actually perceived.
Therefore,	CONCLUSION		
	The President...	...had an authentic birth certificate.	

Different defined ASSUMPTION SETS can accompany certain types of inference steps such as ones that depend upon RELIABILITY OF A SOURCE, ANALOGY, SAMPLE GENERALIZING.

	SUBJECT COLUMN	PREDICATE COLUMN	*Supporting Assumptions*
1	The birth certificate ink...	...was authentic ACCORDING TO THE INSTRUMENT.	*[None stated.]*
2	One that... ...was authentic ACCORDING TO THE INSTRUMENT.	...was authentic.	2a The **Instrument** was properly calibrated. 2b The **Instrument** was administered and read correctly. 2c The **Instrument** readings were recorded accurately. 2d The **Instrument** readings were not altered. 2e The **Instrument** readings are sufficiently probative.
Therefore,	The birth certificate ink...	...was authentic.	**CONCLUSION**

Different defined ASSUMPTION SETS can accompany certain types of inference steps such as ones that depend upon RELIABILITY OF A SOURCE, ANALOGY, SAMPLE GENERALIZING.

	SUBJECT COLUMN	PREDICATE COLUMN	Supporting Assumptions
1	The President...	... is caught in a scandal that is similar to the Nixon scandal.	*[None stated.]*
2	Any one who... ...is caught in a scandal that is similar to the Nixon scandal...	...should, BY ANALOGY, resign.	2a There are no critical differences sufficient to destroy the **ANALOGY**. 2b The similarities are defining characteristics of the comparable (**SOURCE ANALOGUE**). 2c There are a sufficient amount of similarities to give assurance that other characteristics are shared. 2d The shared characteristics are relevant to the inferred characteristic. 2e The characteristic in the conclusion is not inconsistent with the subject (**TARGET ANALOGUE**).
Therefore,		**CONCLUSION**	
	The President...	...should, BY ANALOGY, resign.	

ASSUMPTION SETS / "**BY ANALOGY**"

Generalizing in many circumstances is also called induction.

Different defined ASSUMPTION SETS can accompany certain types of inference steps such as ones that depend upon RELIABILITY OF SOURCE, ANALOGY, GENERALIZING.

	SUBJECT COLUMN	PREDICATE COLUMN
1	The sample of citizens polled...	... indicates that the voting public generally believes the President's citizenship claim.
2	Any such that... ...indicates that the voting public generally believes the President's citizenship claim...	...sufficiently proves, by **GENERALIZING (induction)**, that actually the voting public generally believes the President's citizenship claim.
Therefore,	The sample of citizens polled...	...sufficiently proves, by **GENERALIZING (induction)**, that actually the voting public generally believes the President's citizenship claim.

CONCLUSION

Supporting Assumptions

[None stated.]

2a Any deviant examples in the **SAMPLE** are sufficiently accounted for in the reasoning structure.
2b The **SAMPLE** examples all belong to the same class.
2c The terms in the conclusion are common and defining characteristics of the **SAMPLE** examples.
2d There are enough facts to support the inference that all unknown relevant facts will support the same conclusion. (Adequate **SAMPLE** size)
2e The interval estimate is sufficiently small.

“...the possibility that the fleeing person is entirely innocent.*”

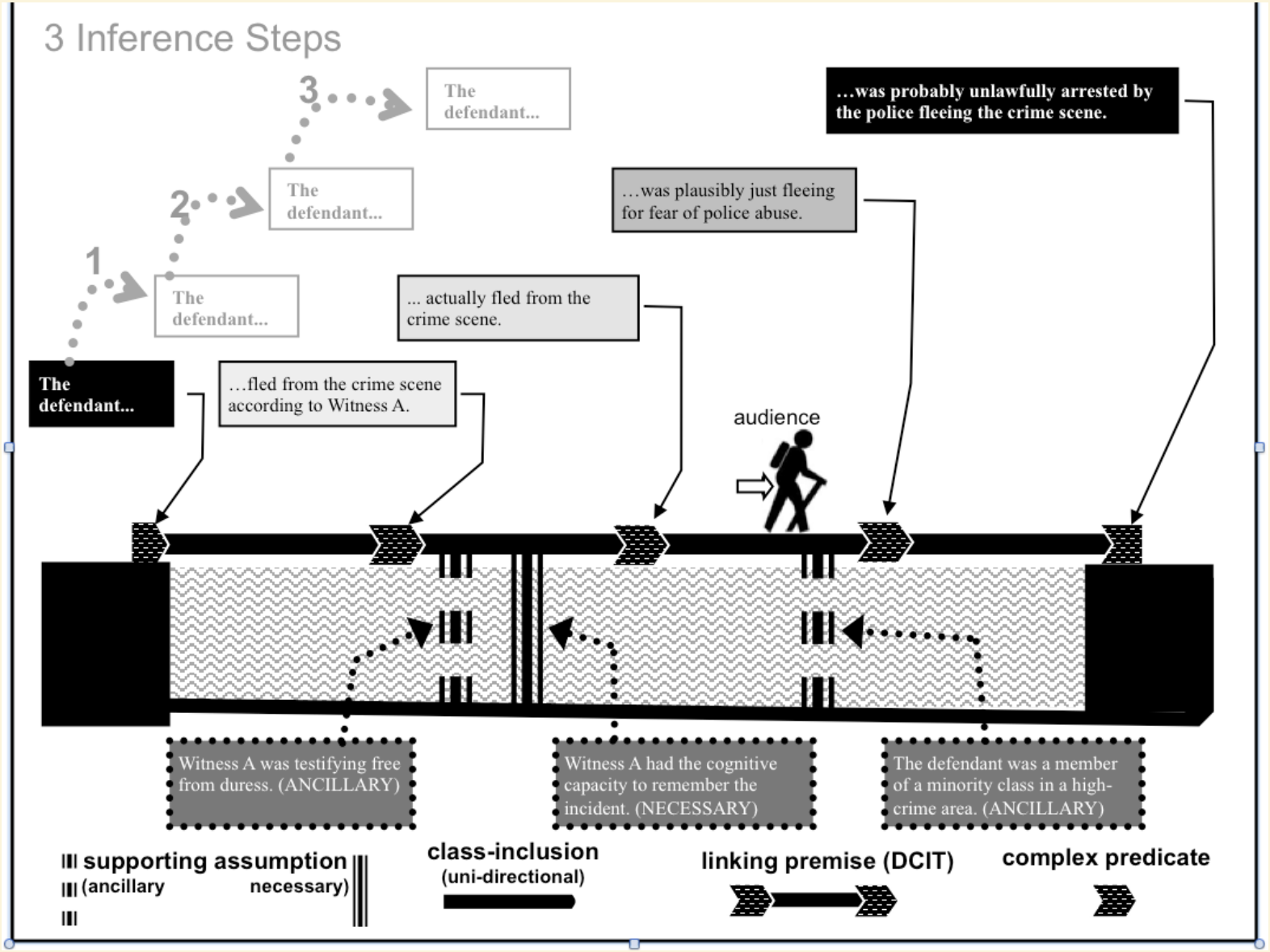
“Among some citizens, particularly minorities and those residing in high crime areas, there is also the possibility that the fleeing person is entirely innocent, but, with or without justification, believes that contact with the police can itself be dangerous, apart from any criminal activity associated with the officer’s sudden presence.”

Illinois v. Wardlow, 528 U.S. 119 (2000). *

"The defendant was a member of a minority class in a high-crime area."

Ancillary supporting assumption for Linked Premise 3

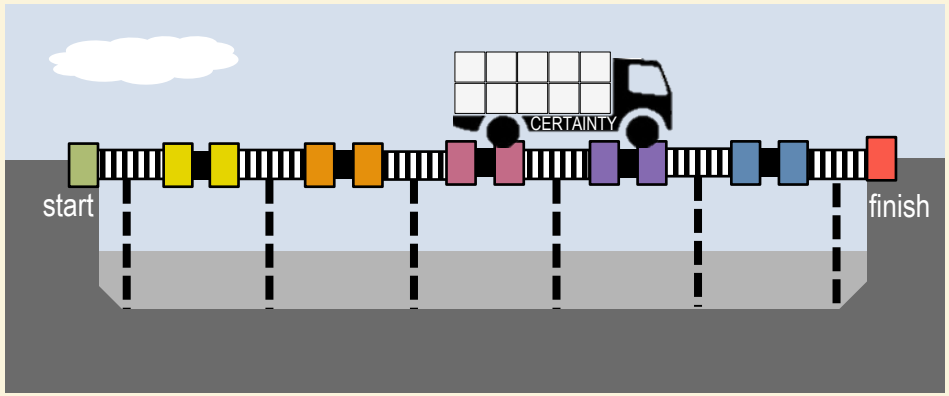
DCIT LINKED PREMISES			
#	COMPLEX SUBJECT		COMPLEX PREDICATE
1	→	**The defendant...**	…fled from the crime scene according to Witness A.
2	One such who…	…fled from the crime scene according to Witness A...	... actually fled from the crime scene.
3	One such who…	... actually fled from the crime scene...	…was plausibly just fleeing for fear of police abuse.
4	One such who…	…was plausibly just fleeing for fear of police abuse...	**…was probably unlawfully arrested by the police fleeing the crime scene.**
CONCLUSION			
		The defendant...	**…was probably unlawfully arrested by the police fleeing the crime scene.**
ASSUMPTIONS TO LINKED PREMISES			
2	Witness A was testifying free from duress. (ANCILLARY) Witness A had the cognitive capacity to remember the incident. (NECESSARY)		
3	The defendant was a member of a minority class in a high-crime area. (ANCILLARY)		


3 Inference Steps
3
The defendant...
2
The defendant...
1
The defendant...
The defendant...
…was probably unlawfully arrested by the police fleeing the crime scene.
…was plausibly just fleeing for fear of police abuse.
... actually fled from the crime scene.
…fled from the crime scene according to Witness A.
audience
Witness A was testifying free from duress. (ANCILLARY)
Witness A had the cognitive capacity to remember the incident. (NECESSARY)
The defendant was a member of a minority class in a high-crime area. (ANCILLARY)
supporting assumption
(ancillary necessary)
class-inclusion
(uni-directional)
linking premise (DCIT)
complex predicate

> “This fact provides a cautionary note to uncritical reliance on a standardized list of Critical Questions or assumptions attached to any Argument Scheme.”

Wardlow illustrates that the choice and degree of acceptability of generalizations, whether structured as transitively-linked premises, assumptions (ancillary or necessary), or implicit in Critical Questions attached to Argument Schemes can be dependent on the worldview of the audience [59]. This fact provides a cautionary note to uncritical reliance on a standardized list of Critical Questions or assumptions attached to any Argument Scheme. Such constructions of stereotypical reasoning must always account for the fact that one group’s sound stereotypical reasoning may be unsound from another group’s worldview [24]. And what is a Critical Question or assumption for one group may not be critical for another.

Design Summary



1. Each individual inferential premise (e.g., singular, compound, or relational) is regimented into a categorical form of Subject and Predicate.

2. The premises are ordered as follows:

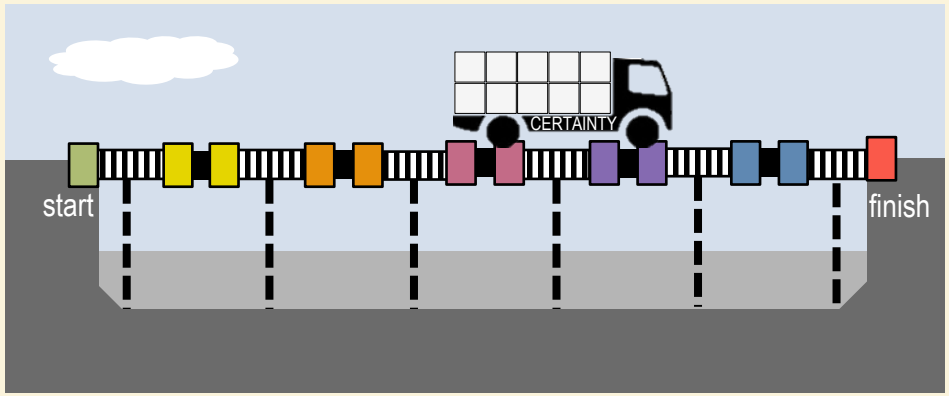
A. The Subject of the first premise must be the Subject of the conclusion.

B. The complex Predicate phrase of the last premise in the line of reasoning must be the complex Predicate phrase of the conclusion.

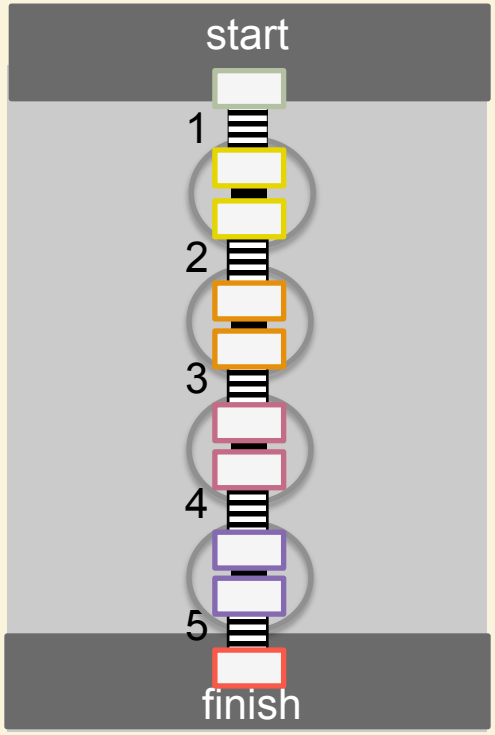
C. The remaining complex Predicate phrases of each premise must be the Subject of the following premise prefaced by a universal quantifier (e.g., One [*like the First Subject*] who…, One [*like the First Subject*] that…; Any such [*like the First Subject*] who…, Any such [*like the First Subject*] that…) creating a transitively-linked chain of premises in this distinct order.

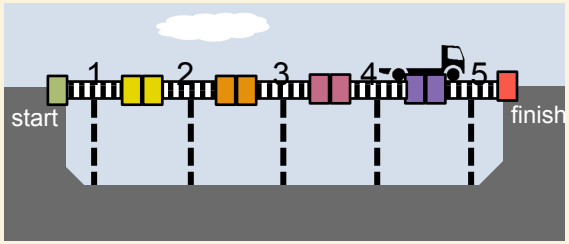
3. For each linked premise, any associated non-linking assumptions that provide some degree of support (necessary or ancillary) are appropriately added.

Multiple Linkages



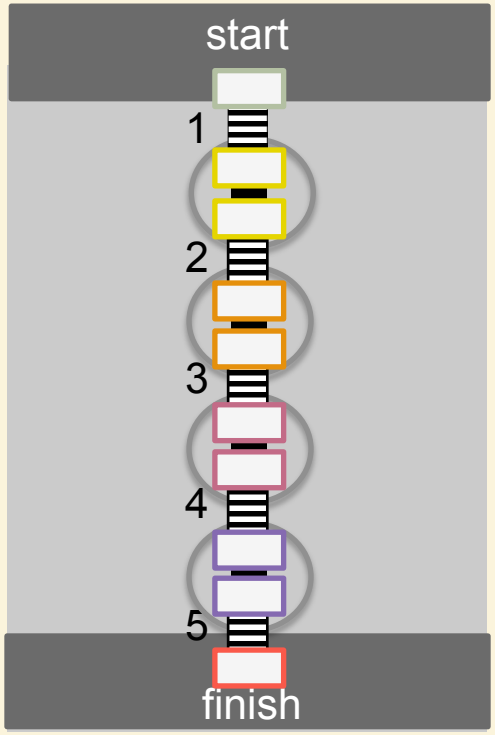
A line of reasoning can consist of multiple linkages rather than just one.
These blank figures illustrate four matching linkages which connect five premises.

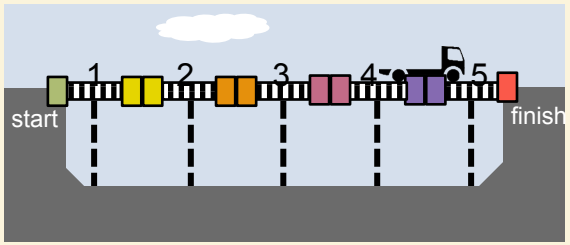




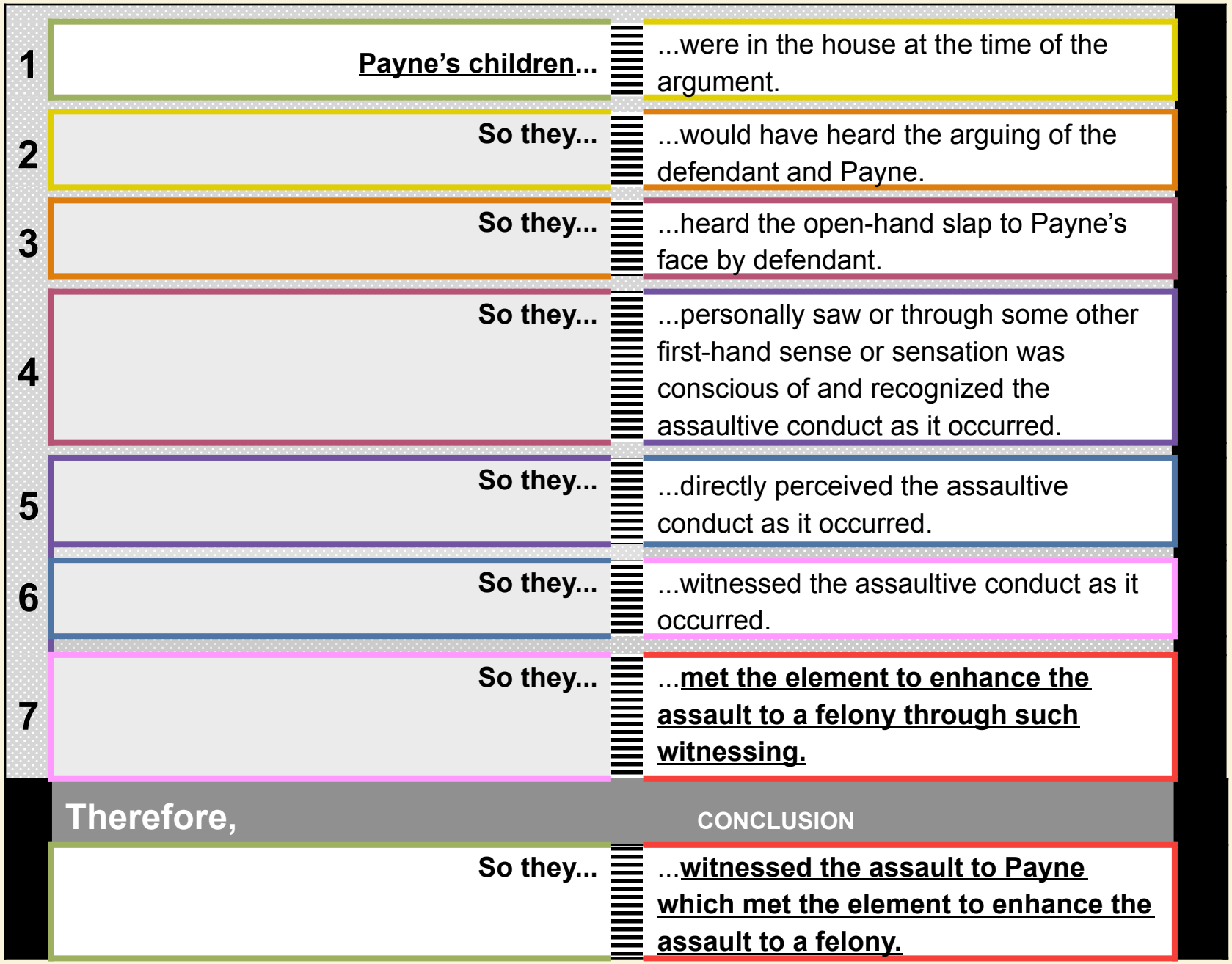
	SUBJECT COLUMN	PREDICATE COLUMN	Assumptions Column
1	SUBJECT OF CONCLUSION...	[...predicate of first premise.]	*[None stated.]*
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	[...predicate of second premise.]	*[None stated.]*
3	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	[...predicate of third premise.]	*[None stated.]*
4	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	[...predicate of fourth premise.]	*[None stated.]*
5	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	...PREDICATE OF CONCLUSION	*[None stated.]*
	Therefore,	**CONCLUSION**	
	SUBJECT OF CONCLUSION...	...PREDICATE OF CONCLUSION	

This example illustrates an actual line of reasoning with multiple linkages (formed from predicate/subject matching of adjoining premises).

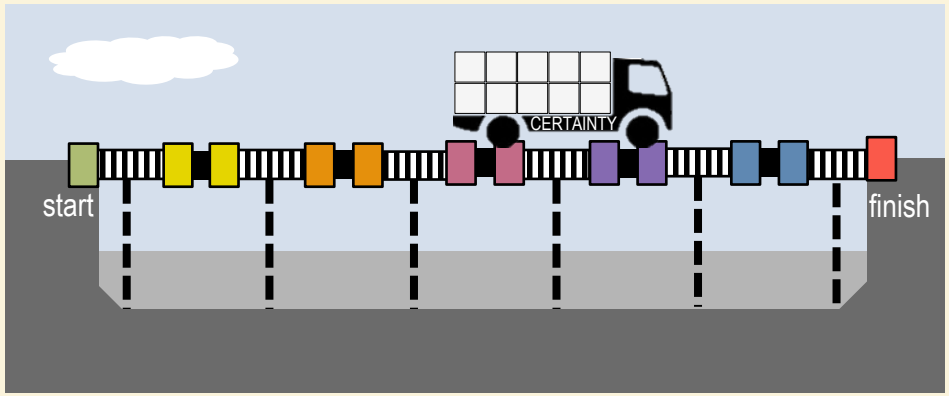




	SUBJECT COLUMN	PREDICATE COLUMN	*Assumptions Column*
1	The President...	...has a valid Hawaiian birth certificate, according to Director Fukino.	*[None stated.]*
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	...has a valid Hawaiian birth certificate.	*[None stated.]*
3	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	...was born in Hawaii.	*[None stated.]*
4	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	...is a natural born U.S. citizen.	*[None stated.]*
5	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	...satisfies Section 1 of Article II of the U.S. Constitution.	*[None stated.]*
	Therefore,	**CONCLUSION**	
	The President...	...satisfies Section 1 of Article II of the U.S. Constitution.	


1
Payne's children...
...were in the house at the time of the argument.
2
So they...
...would have heard the arguing of the defendant and Payne.
3
So they...
...heard the open-hand slap to Payne's face by defendant.
4
So they...
...personally saw or through some other first-hand sense or sensation was conscious of and recognized the assaultive conduct as it occurred.
5
So they...
...directly perceived the assaultive conduct as it occurred.
6
So they...
...witnessed the assaultive conduct as it occurred.
7
So they...
...met the element to enhance the assault to a felony through such witnessing.
Therefore,
CONCLUSION
So they...
...witnessed the assault to Payne which met the element to enhance the assault to a felony.

John Henry Wigmore



John Henry Wigmore's chart method is another informal logic argument structure to compare with DCIT. It was developed for legal scholarship (Wigmore, 1937). It went over, however, like a "lead balloon" (Twining, 1985, p. 165).

One of its difficulties may have been its complexity. Anderson, Schum & Twining (2005) have attempted to revive its use with suggested modifications. Neither the Wigmore chart method nor their modifications, however, provide a required form for premises that would clearly established a linkage between the premises.

And in Wigmore's examples, many of the connections between the premises relied upon implicit premises. The next slide is an example of a charting of evidence done by Wigmore (1937).

Here, P = Driver S did deliver the money to clerk H; plaintiff denies this, *i. e.* his
Pn = Driver S did not deliver it.
T1 = H's receipt testimonially admitting the delivery
⟶ P2 = S did deliver.

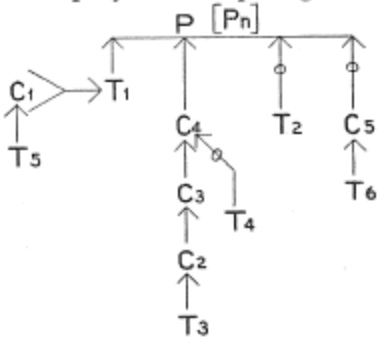
This is explained away by C1 = H's practice (testified to by himself = T5) to sign the receipt although the goods were left on the sidewalk and not brought to him.

T2 = H's testimony on the stand that the package was not delivered.

T3 = F's testimony to C2 = the company's rule requiring complete delivery by drivers, and this C2 ⟶ C3 = the habit of drivers in general to deliver completely, which ⟶ C4 = the habit of driver S to deliver completely. But T4 = H's testimony that S did not habitually do so.

Then C5 = S's thieving practices (testified to by F = T6) ⟶ P1 = he did not deliver the money, but kept it for himself.

Thus, the evidence would plot:

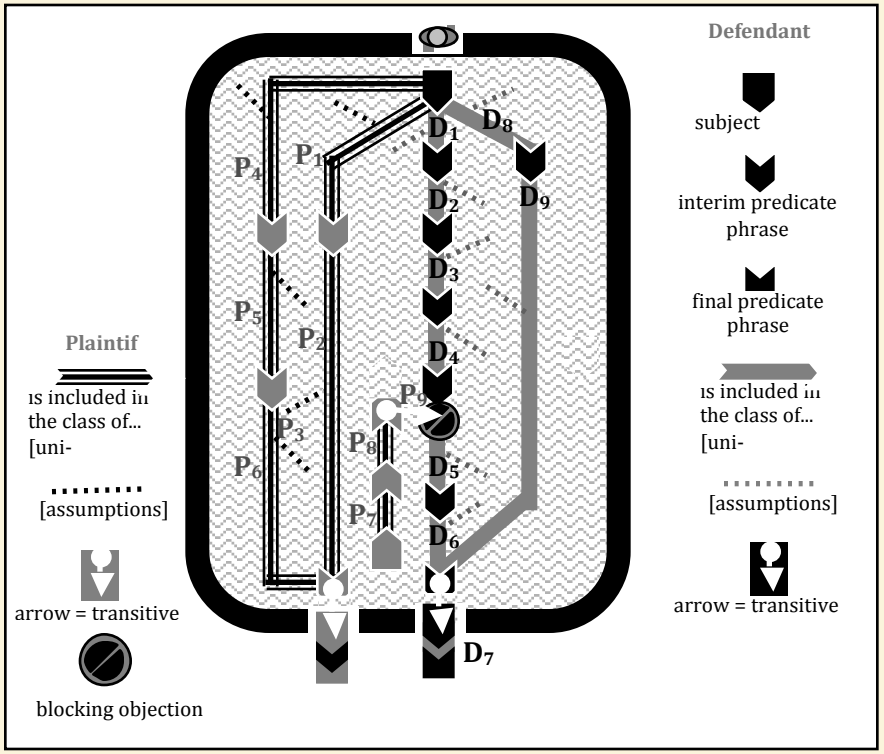


Thus, if we accept C1 as explaining away T1, and doubt C4 because denied by T4, and if we give credit to T2 and C5, we arrive at the final inference (as the Court did) that the money package was *not* delivered.

In this case, *American Express Co. v. Haggard* (1865), the issue was whether a package of money was every received at the David D. Haggard business through delivery by American Express.

While there was signed receipt that the money was delivered to Mr. Haggard's son, a clerk H, at the business, his son claimed that the package never was delivered. The next slide illustrates a DCAT argument structure for these inferences which makes the connections between the premises apparent.

This example also illustrates the concept on attacking the opponent's arguments which is discussed further in the following section. The slides thereafter show the Wigmore argument in a DCIT template format.


Defendant
subject
interim predicate phrase
final predicate phrase
is included in the class of...
[uni-
[assumptions]
arrow = transitive
Plaintif
is included in the class of...
[uni-
[assumptions]
arrow = transitive
blocking objection
P1
P2
P3
P4
P5
P6
P7
P8
P9
D1
D2
D3
D4
D5
D6
D7
D8
D9

	DEFENDANT'S 1ST INFERENCE LINE			
		Subject phrase		Predicate phrase
D_1	➔	**Driver S**		...was a driver for Am. Express.
D_2	Any who	...was a driver for Am. Express...		...was, according to F's testimony, subject to the company's rule for all drivers, requiring complete delivery.
D_3	Any who	...was, according to F's testimony, subject to the company's rule for all drivers, requiring complete delivery...		...was subject to the company's rule, for all drivers, requiring complete delivery.
D_4	Any who	...was subject to the company's rule, for all drivers, requiring complete delivery...		...was in a class of drivers which in general had the habit for complete delivery.
D_5	Any who	...was in a class of drivers which in general had the habit for complete delivery...		...had the habit to deliver completely.
D_6	Any who	...had the habit to deliver completely...		**...did deliver the money to clerk H.**
		CONCLUSION		
D_7		**Driver S did deliver the money to clerk H.**		

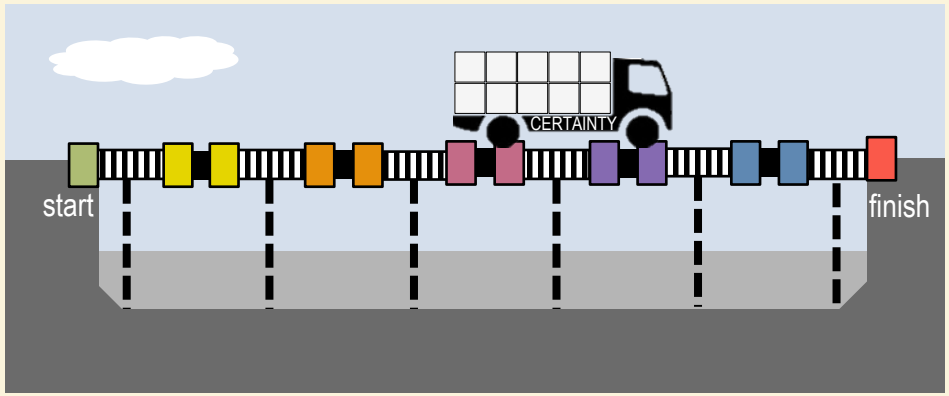
		DEFENDANT'S 1ST INFERENCE LINE		
		Subject phrase		Predicate phrase
D_8	→	**Driver S**		...had a signed receipt admitting the delivery by him.
D_9	Any who	...had a signed receipt admitting the delivery by him...		**...did deliver the money to clerk H.**
		CONCLUSION		
D_7		**Driver S did deliver the money to clerk H.**		

		PLAINTIFF'S 1ST OFF-LINE DIVERTING OBJECTION		
		Subject phrase		Predicate phrase
P_1	→	**Driver S**		...did not, according to clerk H, deliver the money to clerk H.
P_2	Any who	...did not, according to clerk H, deliver the money to clerk H...		**...did not deliver the money to clerk H.**
		CONCLUSION		
P_3		**Driver S did not deliver the money to clerk H.**		

		PLAINTIFF'S 2ND OFF-LINE DIVERTING OBJECTION		
		Subject phrase		Predicate phrase
P_4	➔	**Driver S**		...stole, according to F, from company packages.
P_5	Any who	...stole, according to F, from company packages...		...did steal from company packages.
P_6	Any who	...did steal from company packages...		**did not deliver the money to clerk H.**
		CONCLUSION		
P_3		**Driver S did not deliver the money to clerk H.**		

		PLAINTIFF'S IN-LINE BLOCKING OBJECTION		
		Subject phrase		Predicate phrase
P_7	➔	**Driver S**		...did not, according to clerk H, habitually deliver completely.
P_8	Any who	...did not, according to clerk H, habitually deliver completely...		...did not habitually deliver completely.
P_9	Any who	...did not habitually deliver completely...		**...did not deliver the money to clerk H.**
		CONCLUSION		
P_3		**Driver S did not deliver the money to clerk H.**		

Eliminating Redundancies



An inference-upon-inference tree-like or pyramid argument structure of deductive inferences also reduces, with redundancies removed, to a less complex DCIT structure.

For example, Richard Whately, the English Logician and Archbishop of Dublin created such a structure in what may have been the first use of argument diagramming (Walton, 2004, p. 263).

The next slide represents this Whately (1826, p. 422 as cited in Walton, 2004, p. 263) structure. The second slide illustrates with arrows the class-inclusion transitivity inherent in this structure starting at node Z. And, finally, the third slide represents the same argument with redundancies removed as a DCIT argument structure.

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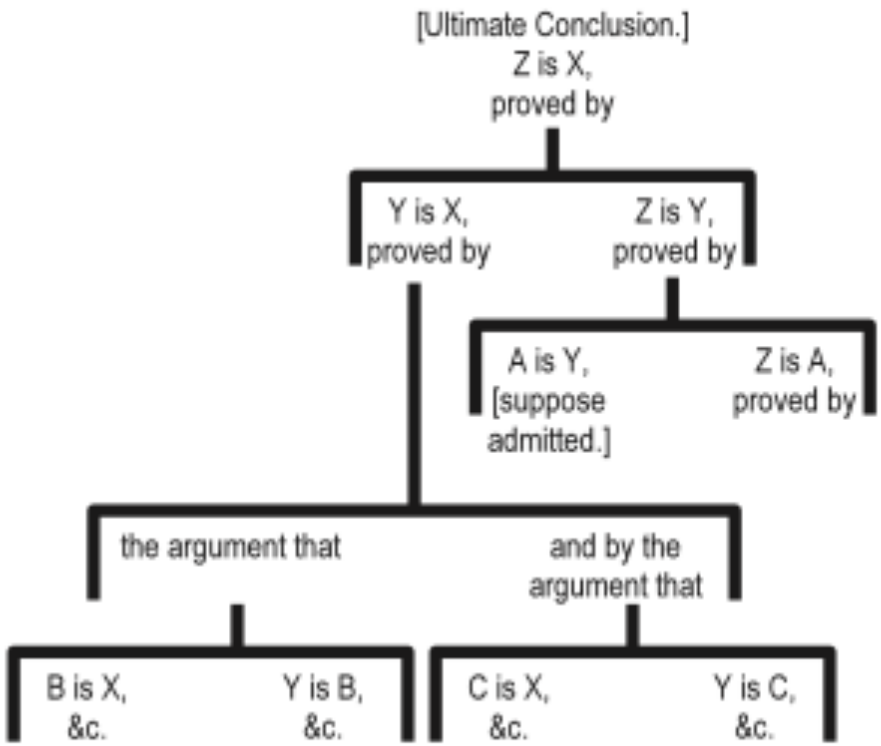
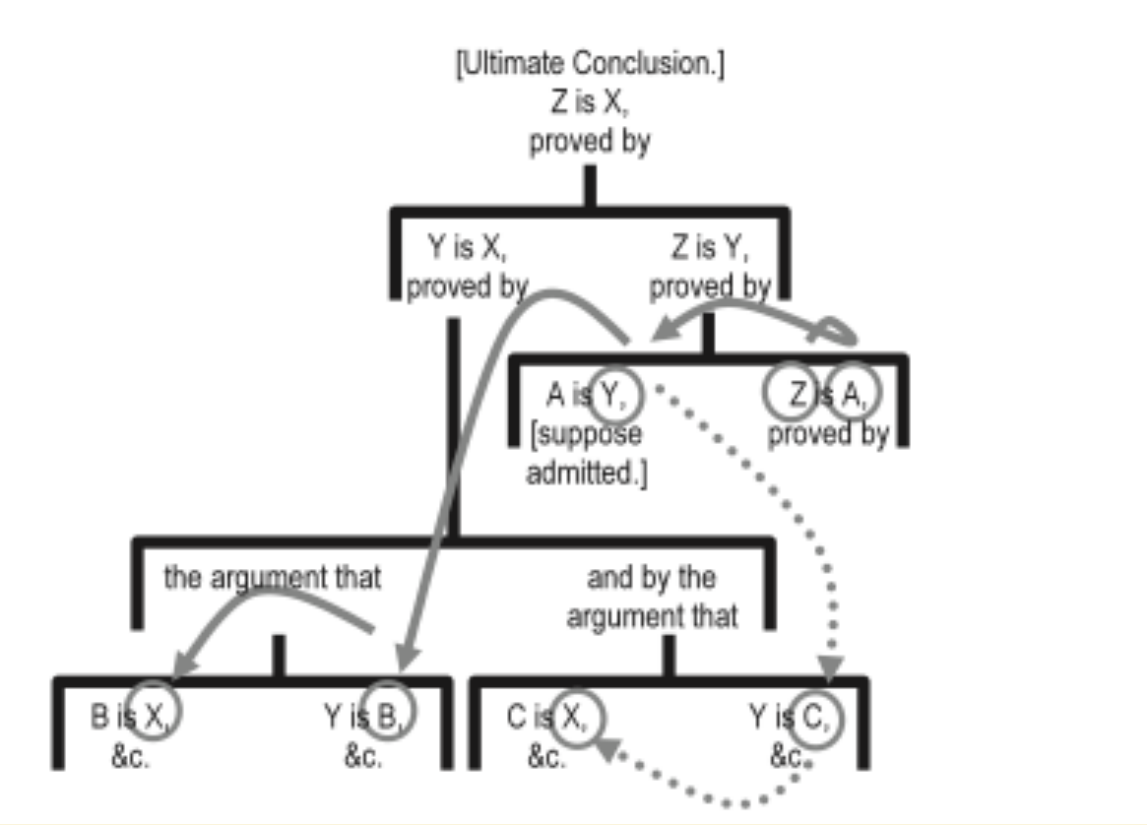
WHATELY, R. (1836). Elements of Logic. Jackson, New York

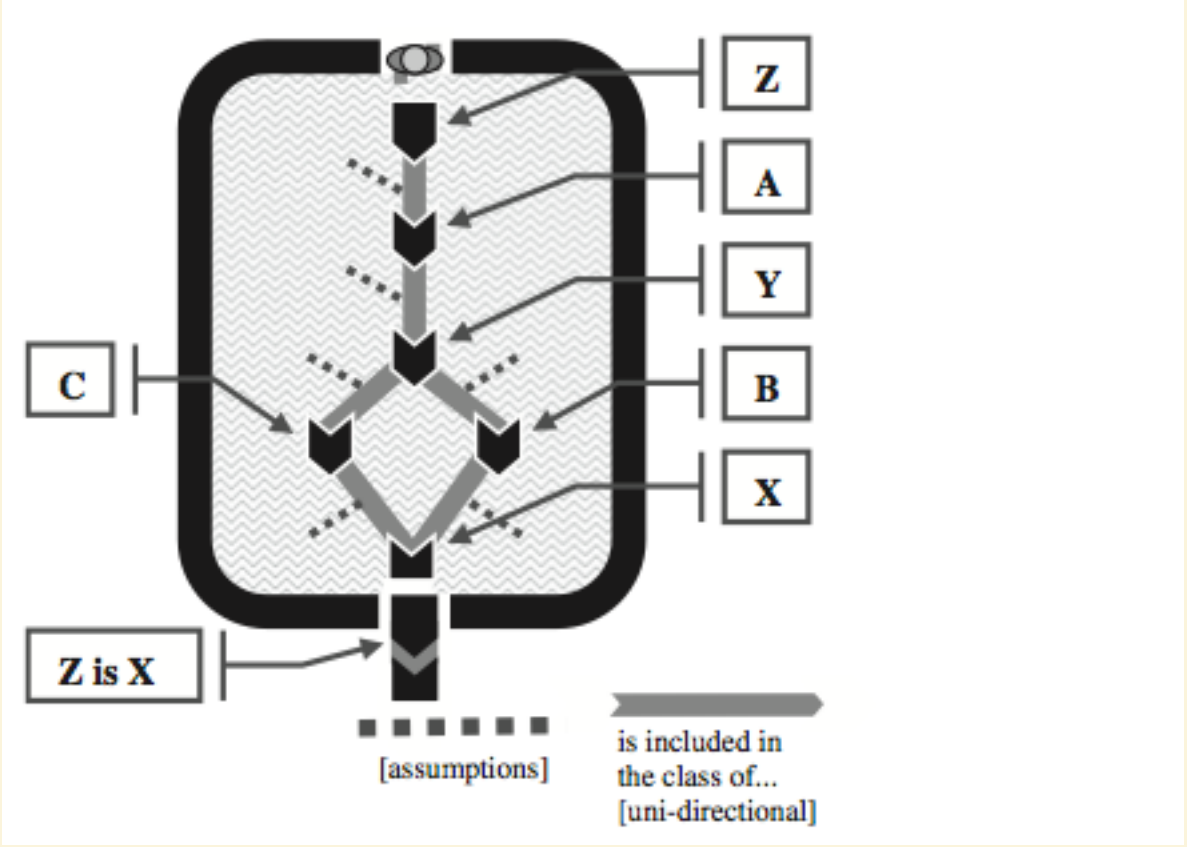


Richard Whately argument diagram of inference-upon-inference.

ELIMINATING REDUNDANCIES

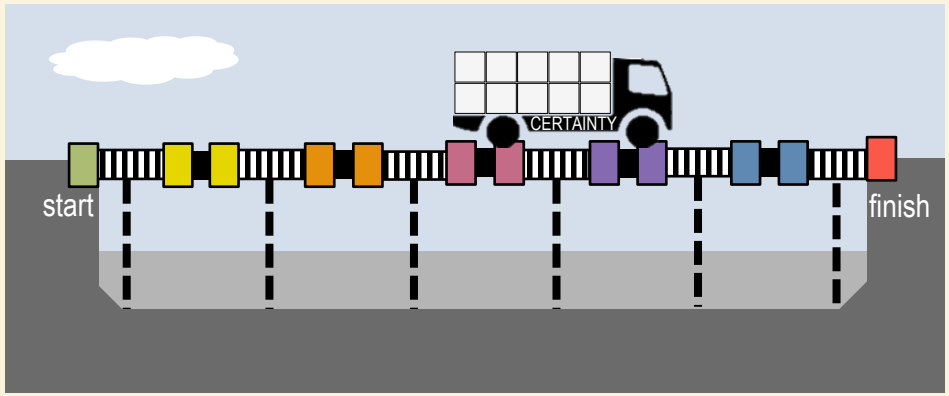


ELIMINATING REDUNDANCIES

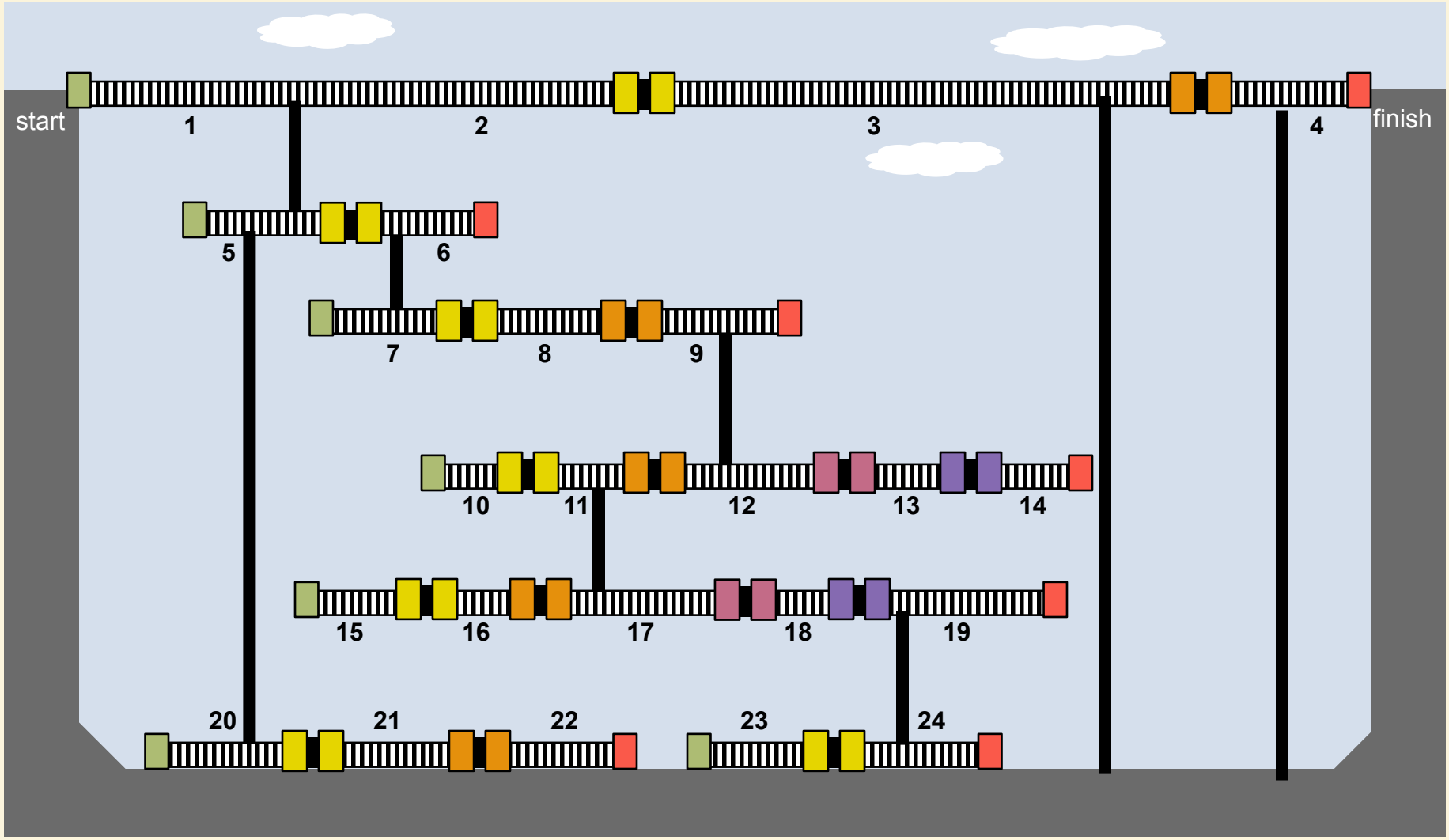


ELIMINATING REDUNDANCIES

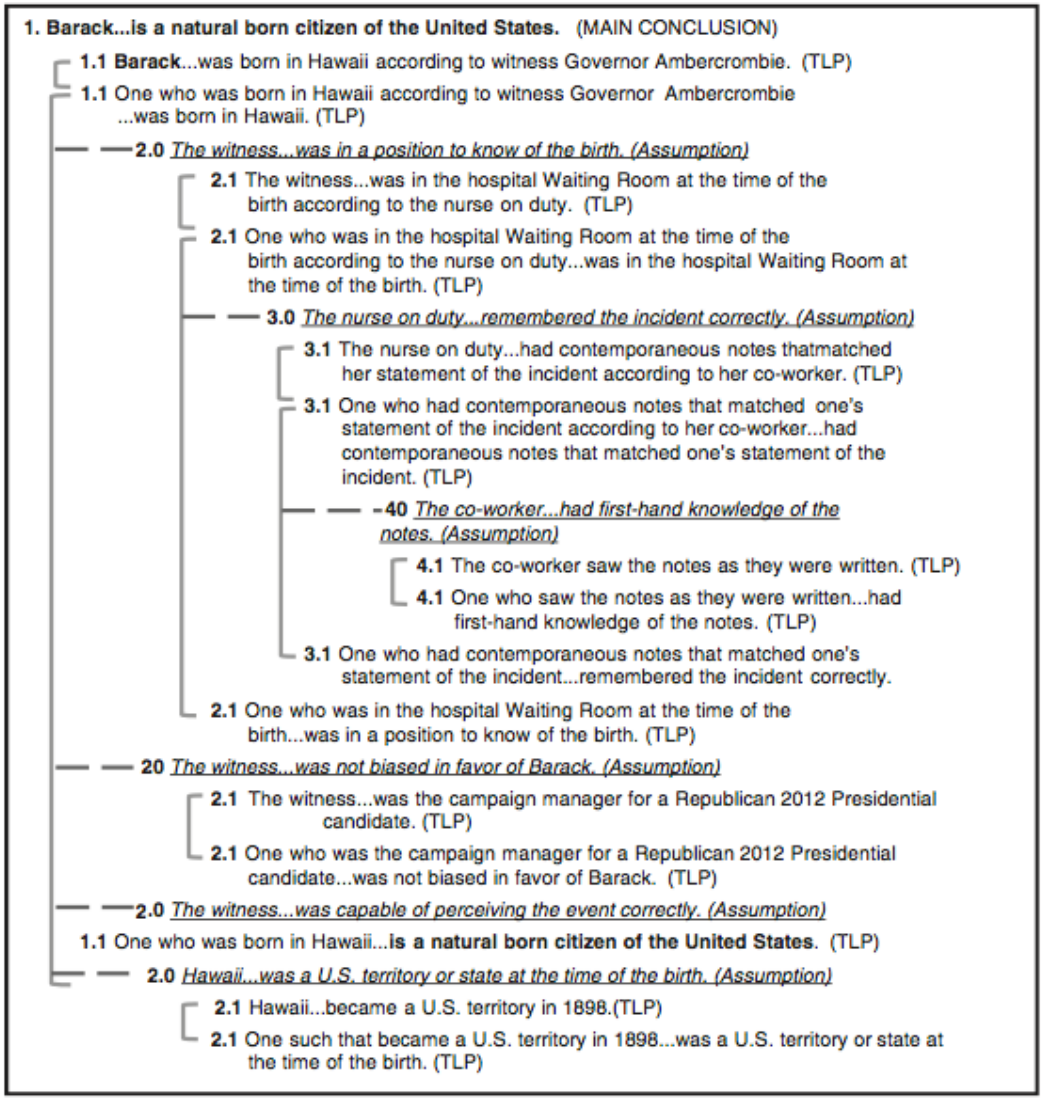
Inferential Net



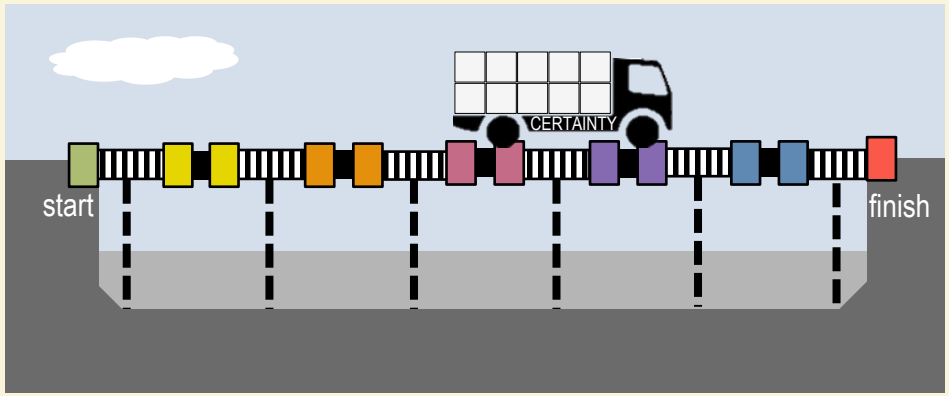
A line of reasoning can depend on multiple layers of ASSUMPTIONS with their own lines of reasoning support .



MAIN CONCLUSION: Barack is a natural born citizen of the United States.

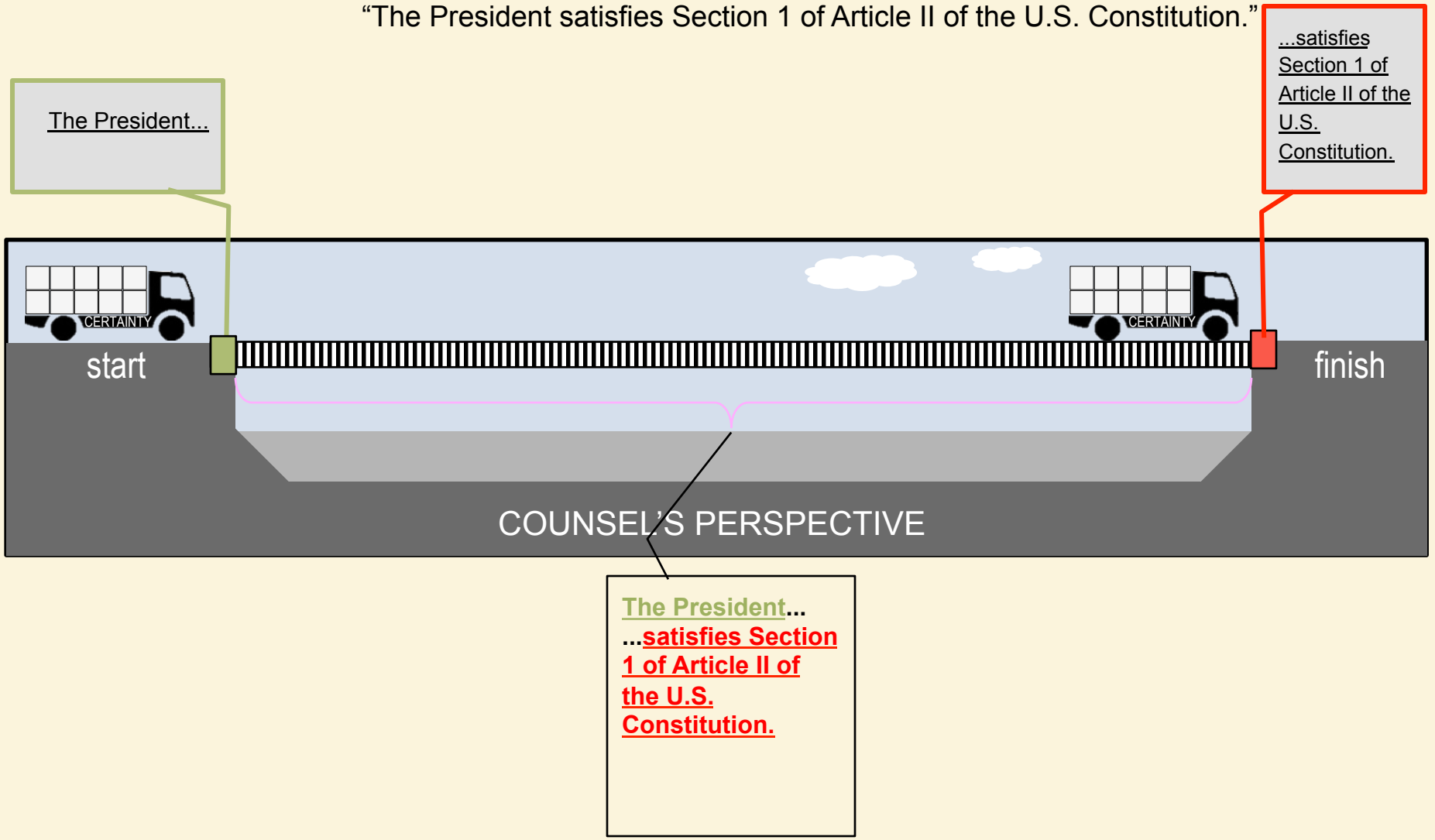


Argument Dialogue



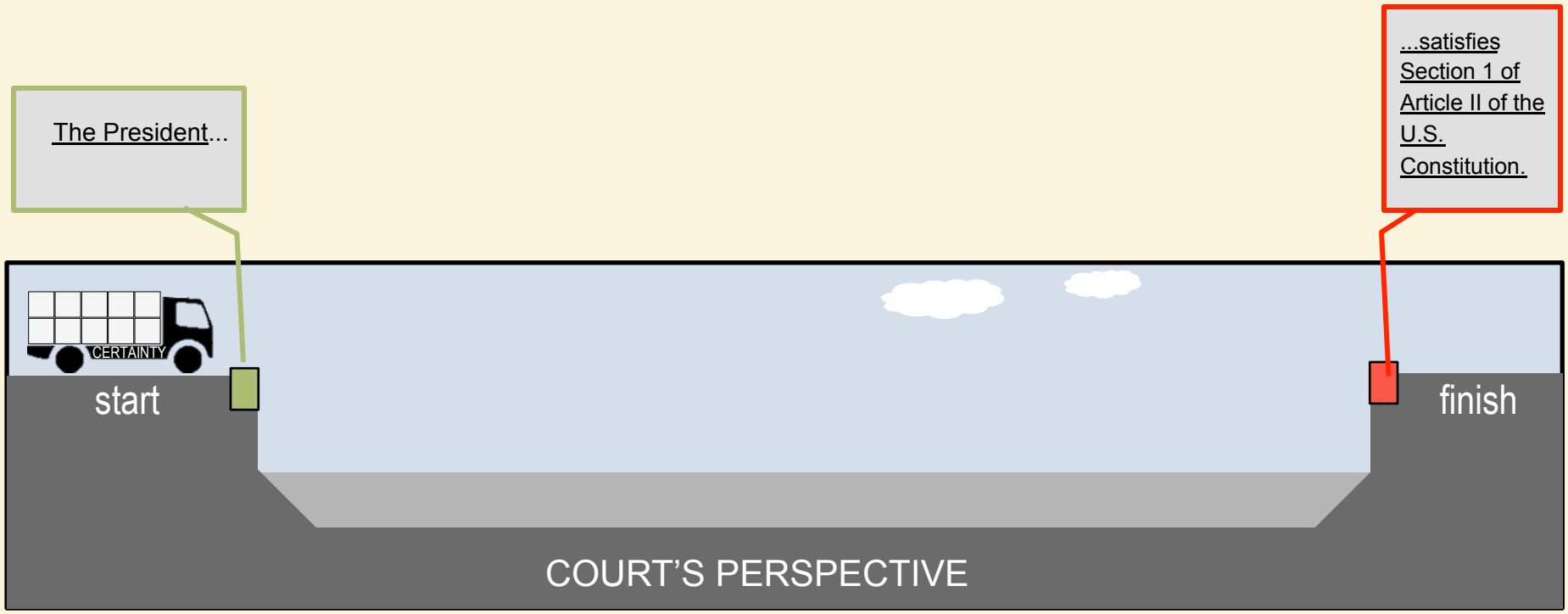
MAIN CONCLUSION: The President satisfies Section 1 of Article II of the U.S. Constitution.

COUNSEL: My claim (contention) is that
"The President satisfies Section 1 of Article II of the U.S. Constitution."



MAIN CONCLUSION: The President satisfies Section 1 of Article II of the U.S. Constitution.

COURT: How did you reach that conclusion?

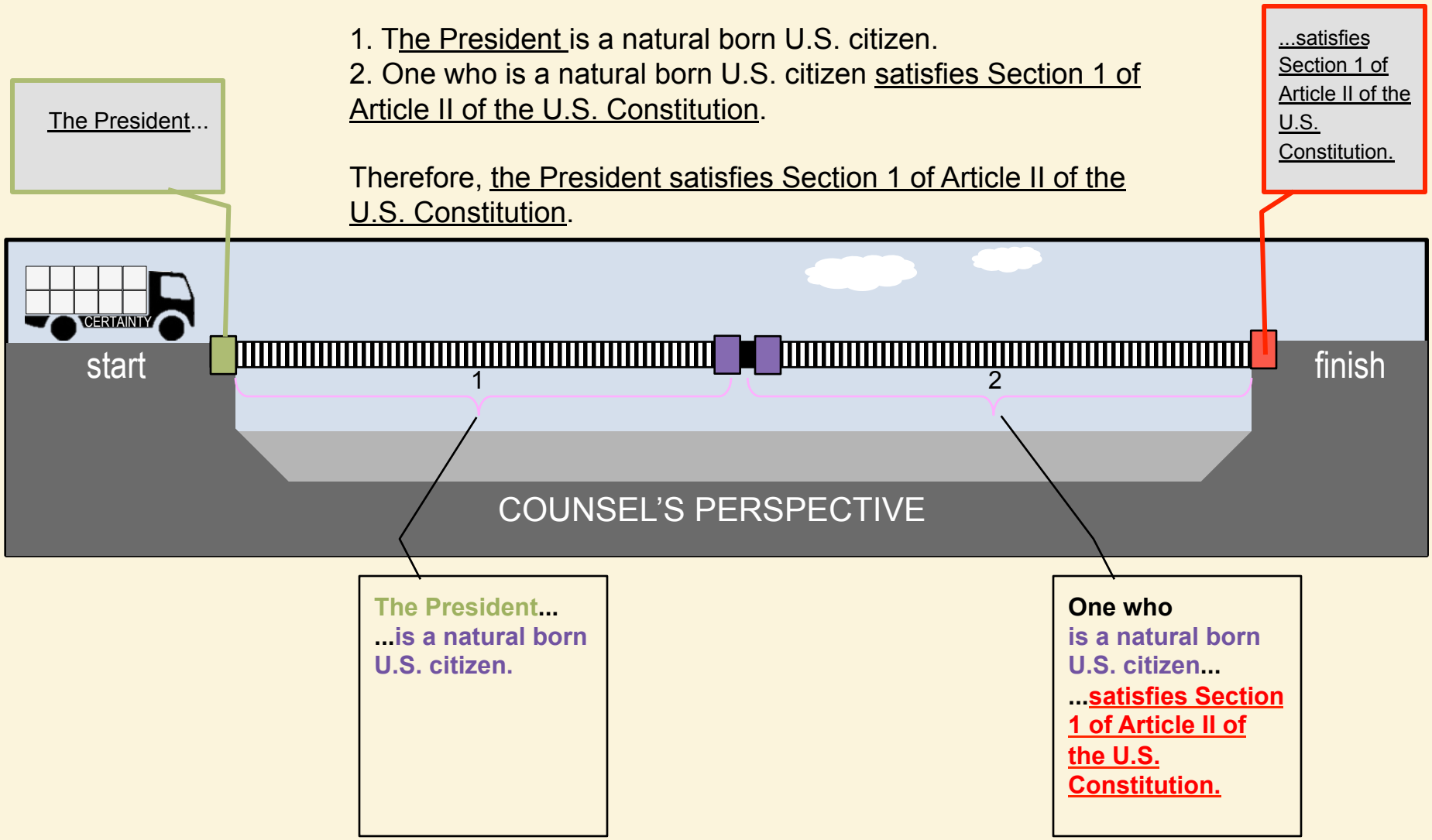


MAIN CONCLUSION: The President satisfies Section 1 of Article II of the U.S. Constitution.

COUNSEL: My line of reasoning consists of two premises:

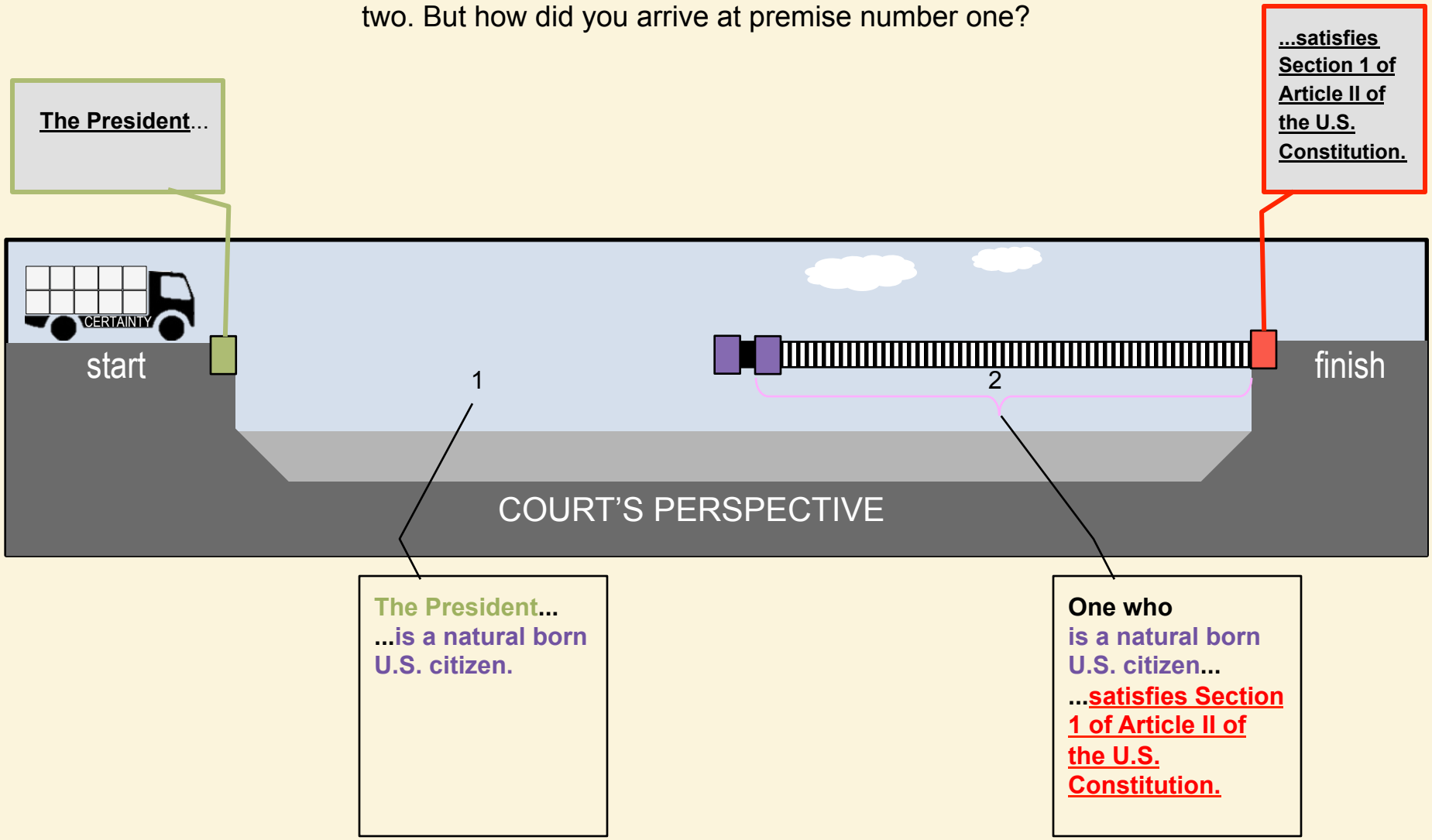
1. The President is a natural born U.S. citizen.
2. One who is a natural born U.S. citizen satisfies Section 1 of Article II of the U.S. Constitution.

Therefore, the President satisfies Section 1 of Article II of the U.S. Constitution.



MAIN CONCLUSION: The President satisfies Section 1 of Article II of the U.S. Constitution.

COURT: I agree to some extent with your premise number two. But how did you arrive at premise number one?



MAIN CONCLUSION: The President satisfies Section 1 of Article II of the U.S. Constitution.

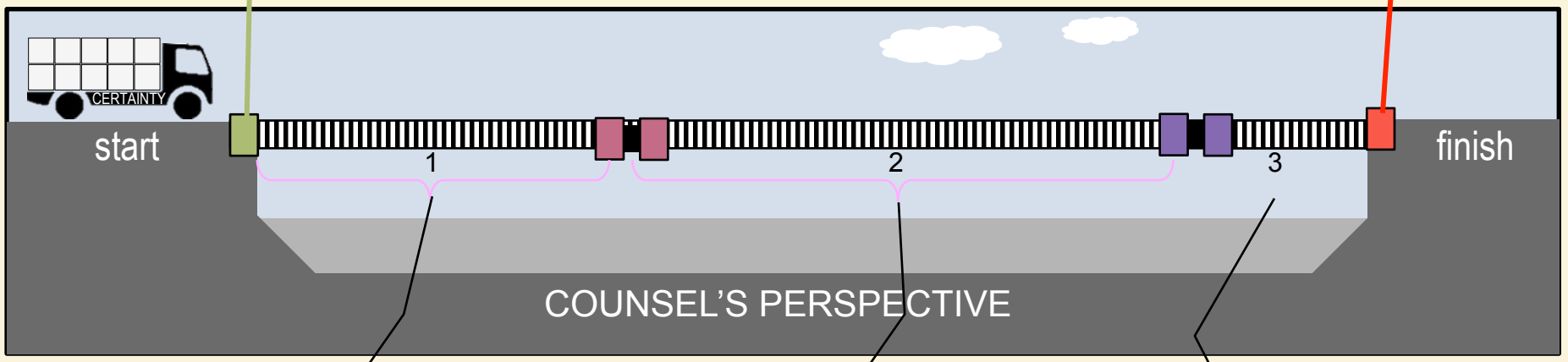
COUNSEL: My line of reasoning consists of two premises:

1. The President was born in Hawaii.
2. One who was born in Hawaii is a natural born U.S. citizen.

Therefore, the President is a natural born U.S. citizen.

The President...

...satisfies Section 1 of Article II of the U.S. Constitution.



The President...
... was born in Hawaii.

One who was born in Hawaii ...is a natural born U.S. citizen.

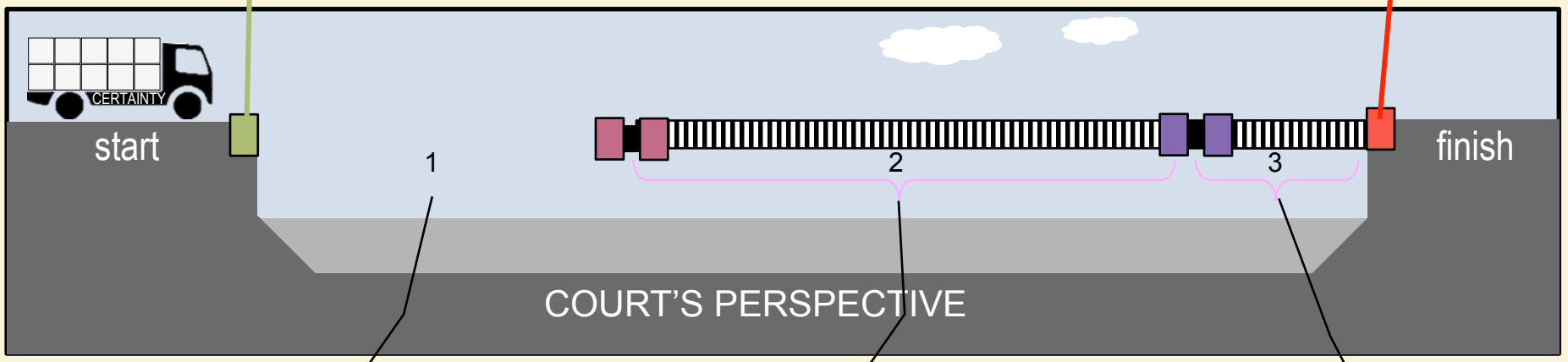
One who is a natural born U.S. citizen... ...satisfies Section 1 of Article II of the U.S. Constitution.

MAIN CONCLUSION: The President satisfies Section 1 of Article II of the U.S. Constitution.

COURT: OK. I agree to some extent with your premise number two and three. But how did you arrive at premise number one?

The President...

...satisfies Section 1 of Article II of the U.S. Constitution.



The President...
... was born in Hawaii.

One who
was born in Hawaii
...is a natural born U.S. citizen.

One who
is a natural born U.S. citizen...
...satisfies Section 1 of Article II of the U.S. Constitution.

MAIN CONCLUSION: The President satisfies Section 1 of Article II of the U.S. Constitution.

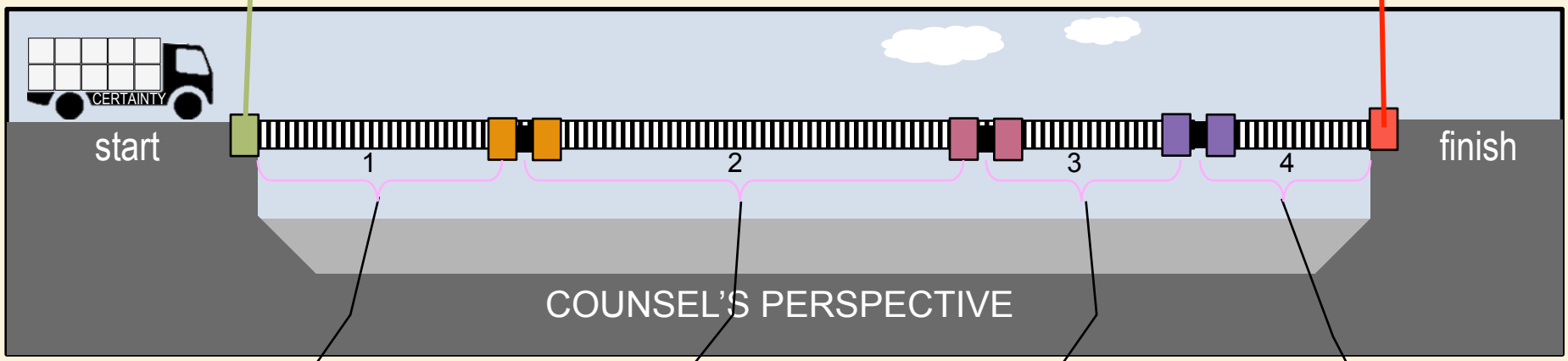
The President...

COUNSEL: My line of reasoning consists of two premises:

1. The President has a Hawaiian birth certificate.
2. One who has a Hawaiian birth certificate was born in Hawaii.

Therefore, the President was born in Hawaii.

...satisfies Section 1 of Article II of the U.S. Constitution.



The President...
...has a Hawaiian birth certificate.

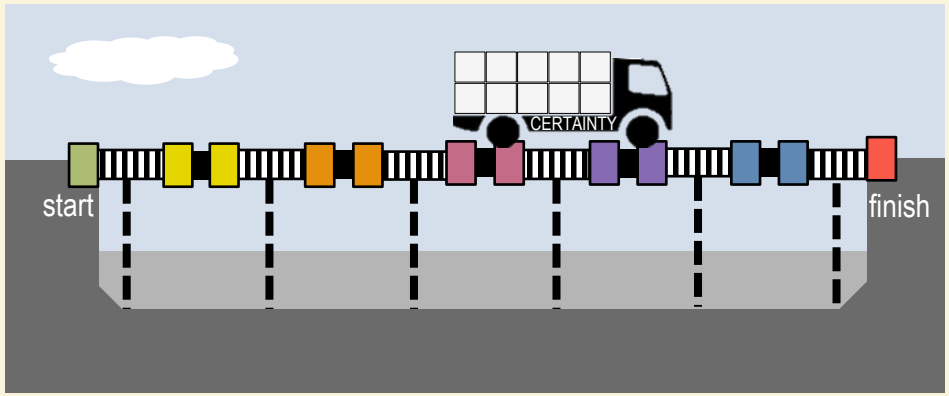
One who has a Hawaiian birth certificate...
...was born in Hawaii.

One who was born in Hawaii ...is a natural born U.S. citizen.

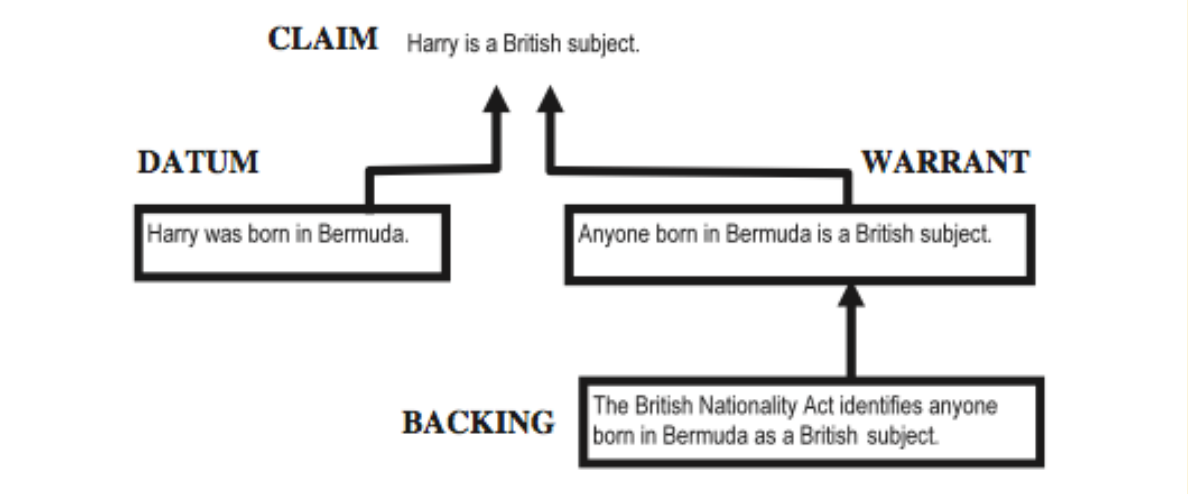
One who is a natural born U.S. citizen...
...satisfies Section 1 of Article II of the U.S. Constitution.

*Toulmin, S. The Uses of Argument. (1958). Updated ed. Cambridge: Cambridge UP, 2003.

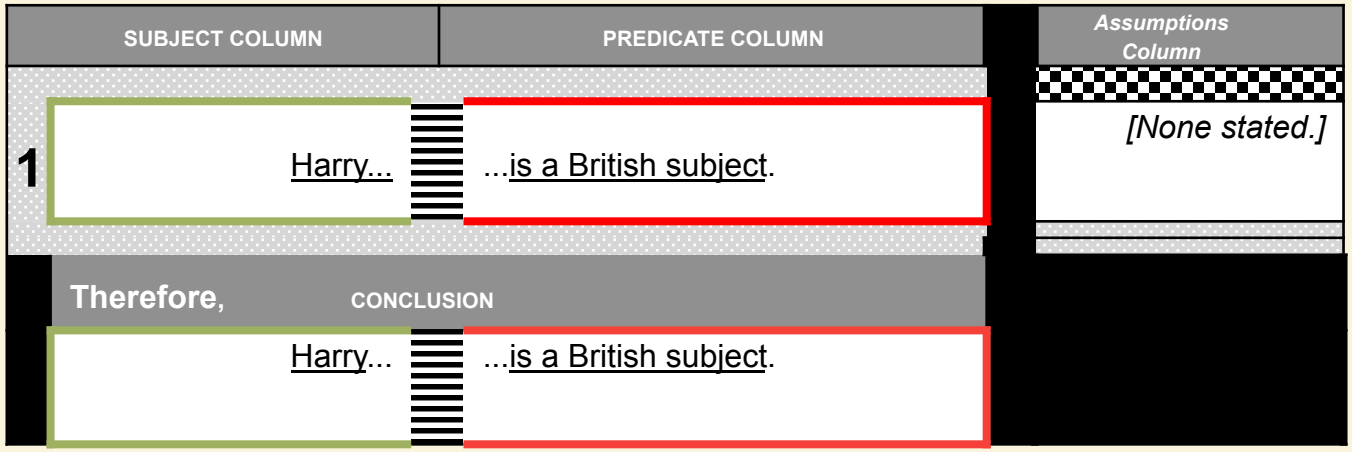
Toulmin Model*



MAIN CONCLUSION: Harry is a British subject.

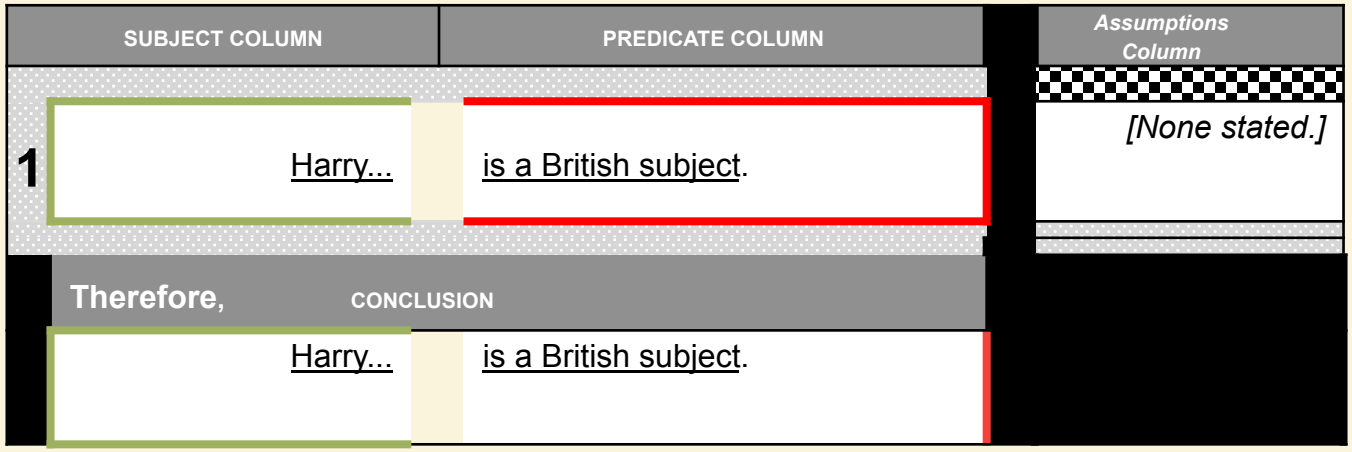


MAIN CONCLUSION: Harry is a British subject.



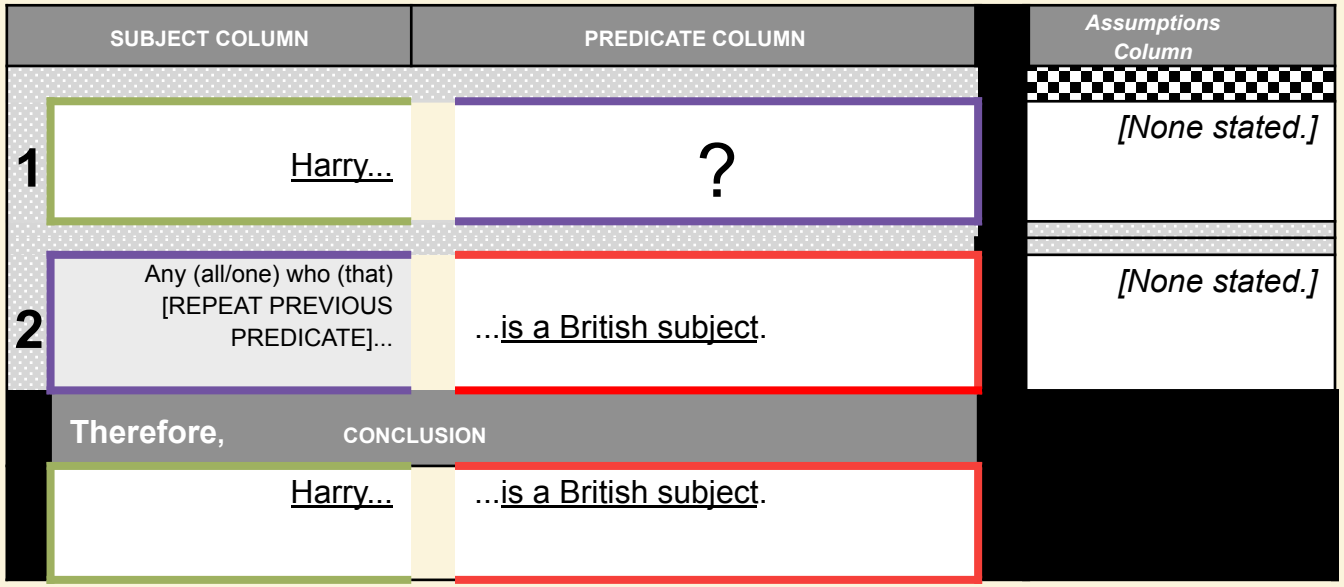
COUNSEL: My conclusion (contention) is that "Harry is a British subject."

MAIN CONCLUSION: Harry is a British subject.



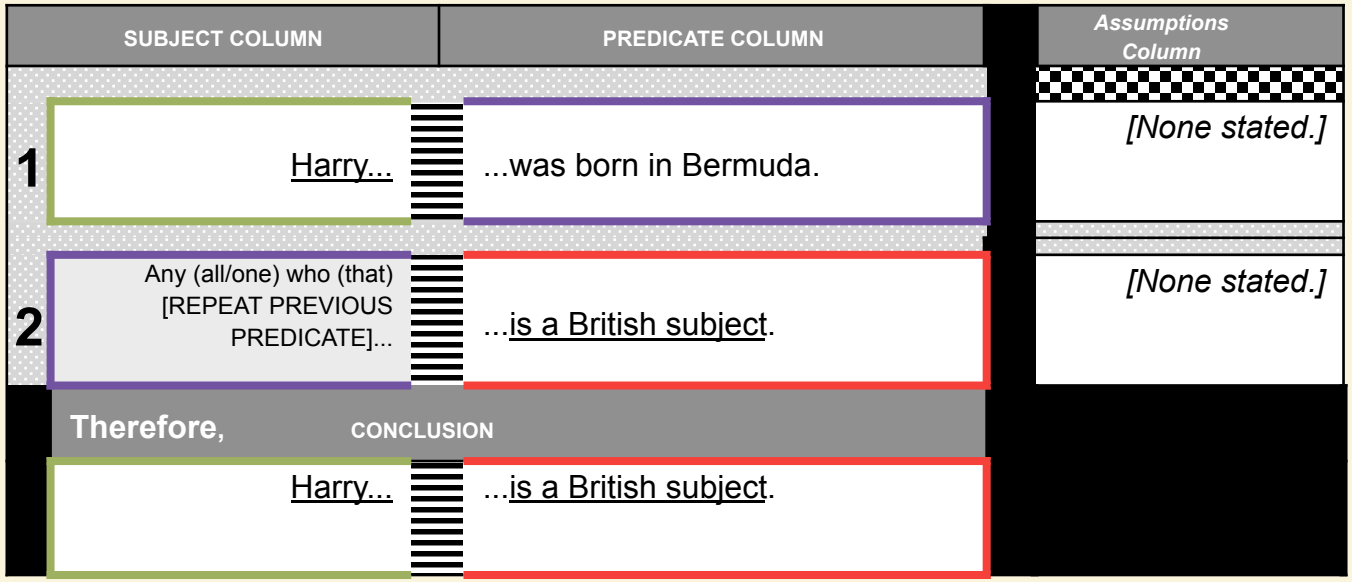
COURT: How did you reach that conclusion?

MAIN CONCLUSION: Harry is a British subject.



COURT'S PERSPECTIVE

MAIN CONCLUSION: Harry is a British subject.

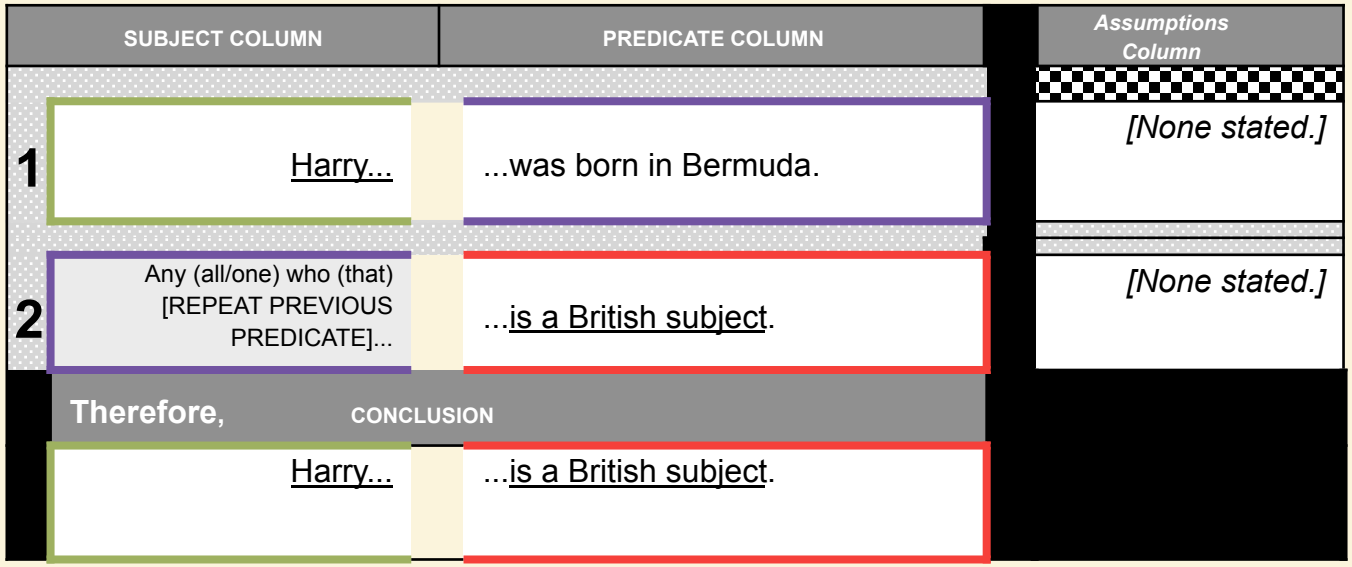


COUNSEL: My line of reasoning consists of two premises:

1. Harry was born in Bermuda.
2. One who was born in Bermuda is a British subject.

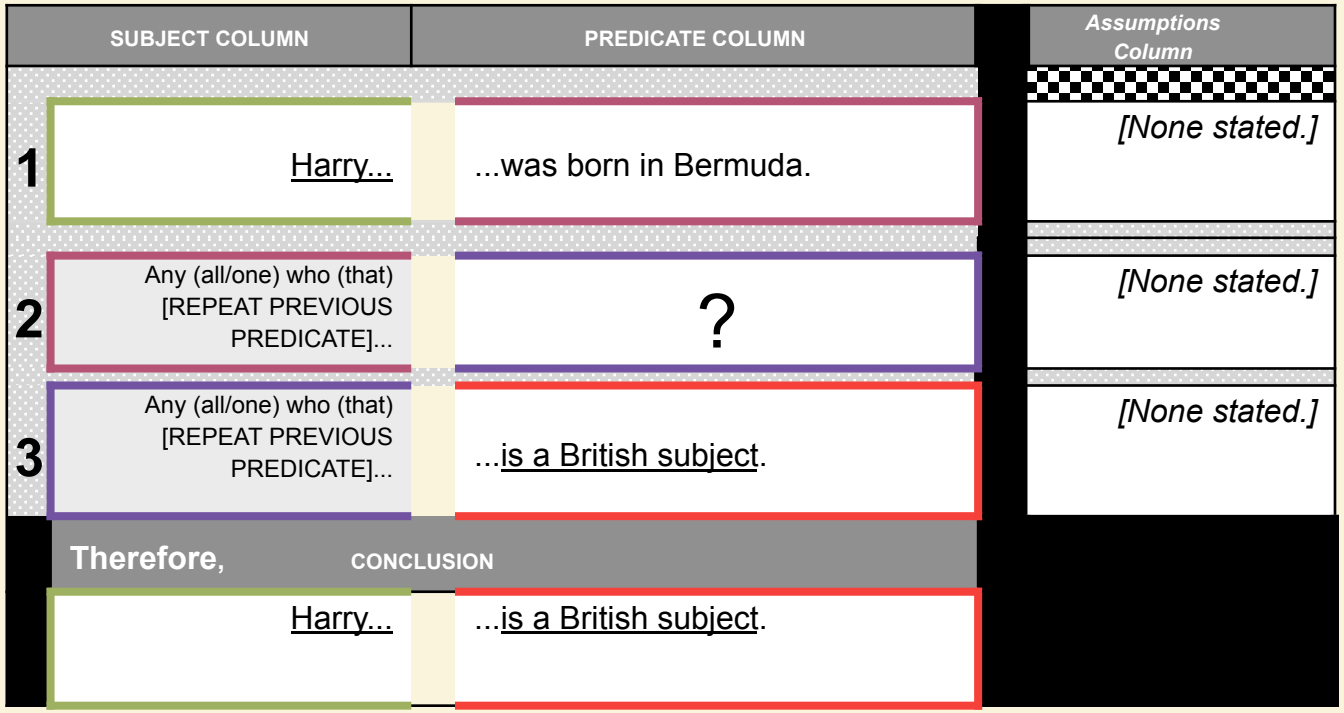
Therefore, Harry is a British subject.

MAIN CONCLUSION: Harry is a British subject.



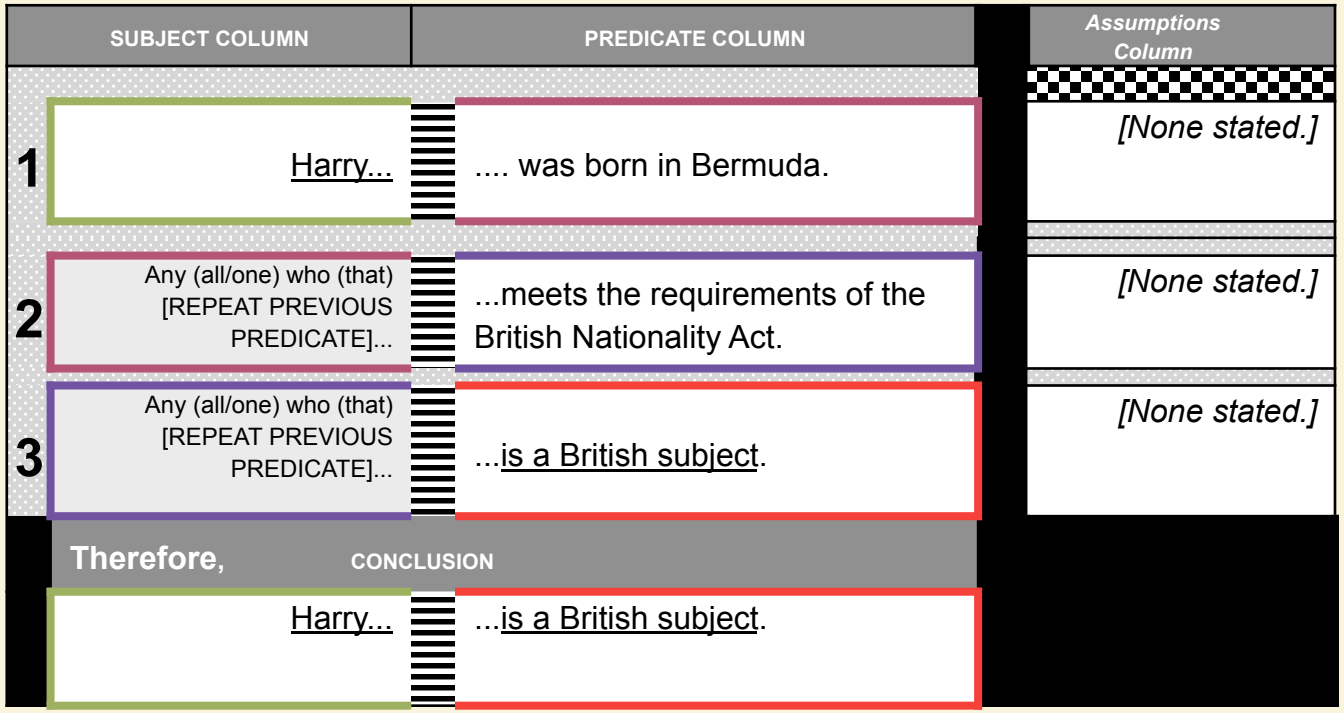
COURT: How did you arrive at premise number two?

MAIN CONCLUSION: Harry is a British subject.



COURT'S PERSPECTIVE

MAIN CONCLUSION: Harry is a British subject.

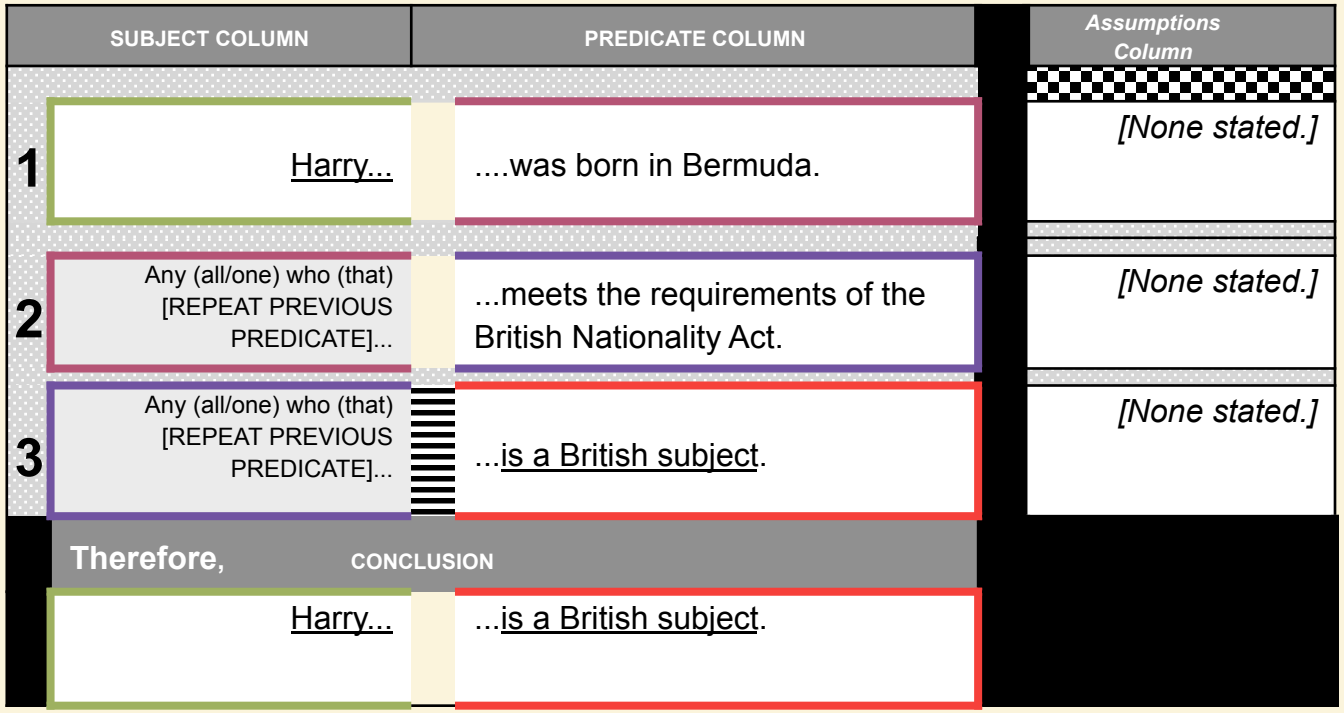


COUNSEL: My line of reasoning consists of two premises:

1. Harry meets the requirements of the British Nationality Act.
2. One who meets the requirements of the British Nationality Act is a British subject.

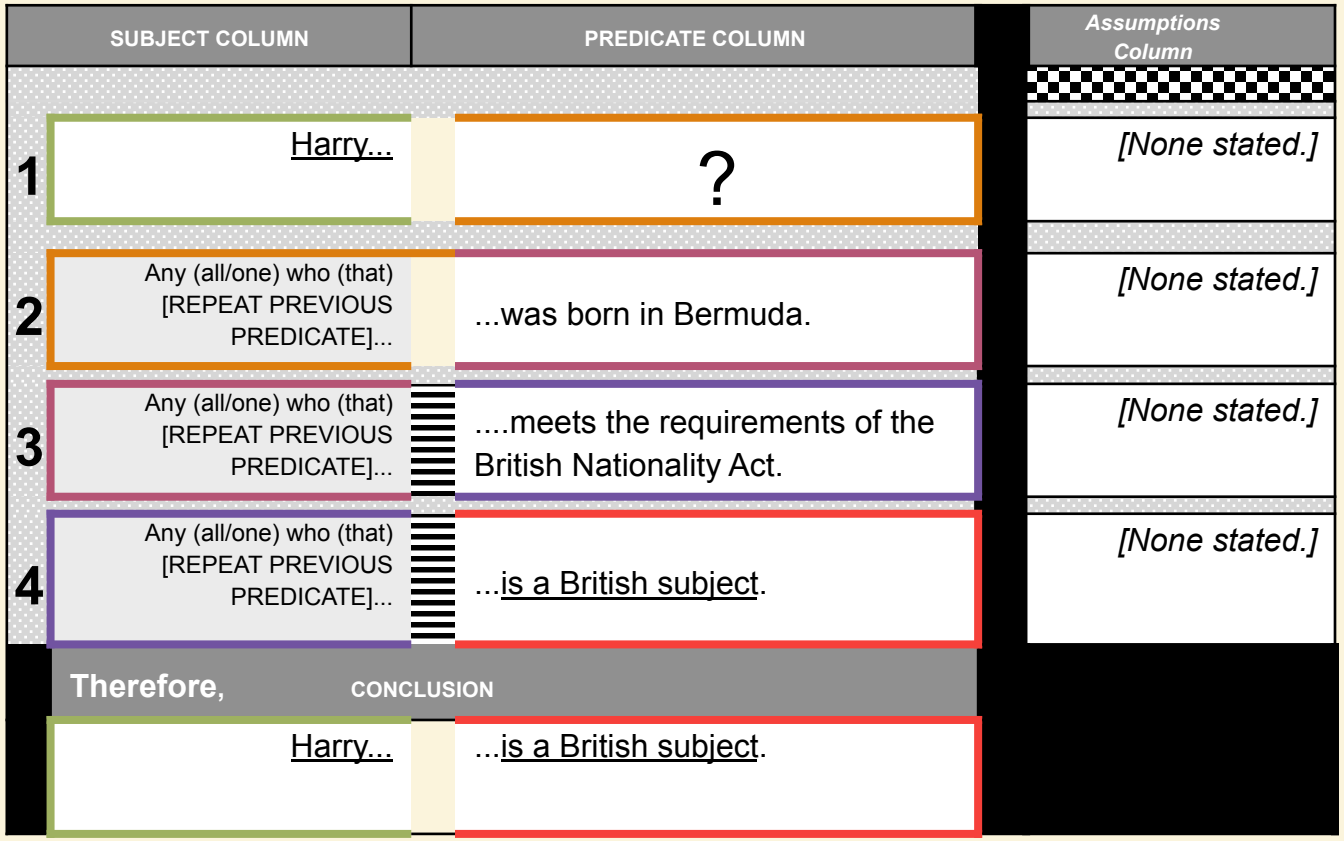
Therefore, Harry is a British subject.

MAIN CONCLUSION: Harry is a British subject.



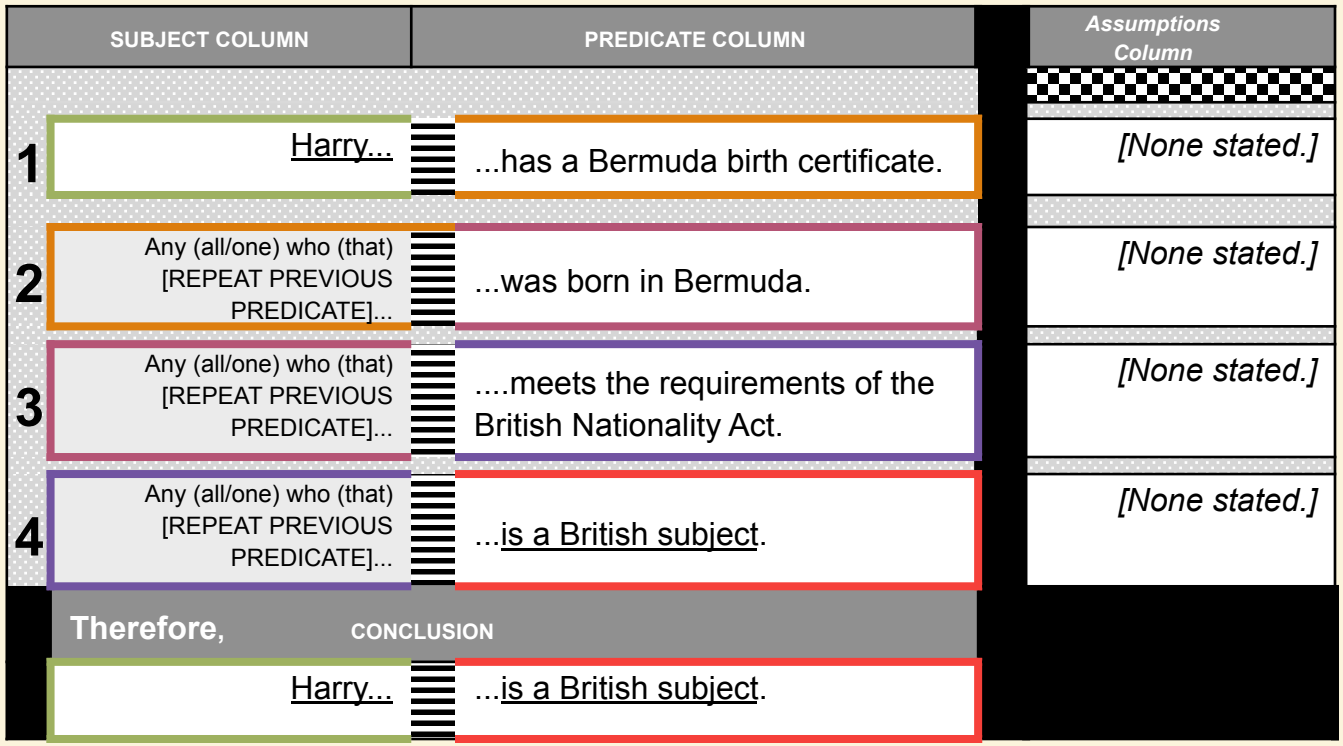
COURT: OK. I agree to some extent with your premise number two and three. But how did you arrive at premise number one?

MAIN CONCLUSION: Harry is a British subject.



COURT'S PERSPECTIVE

MAIN CONCLUSION: Harry is a British subject.

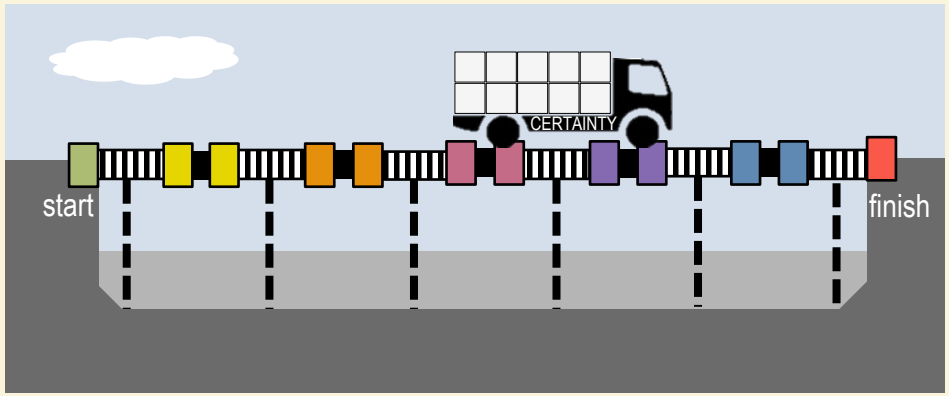


COUNSEL: My line of reasoning consists of two premises:

1. Harry has a Bermuda birth certificate.
2. One who has a Bermuda birth certificate was born in Bermuda.

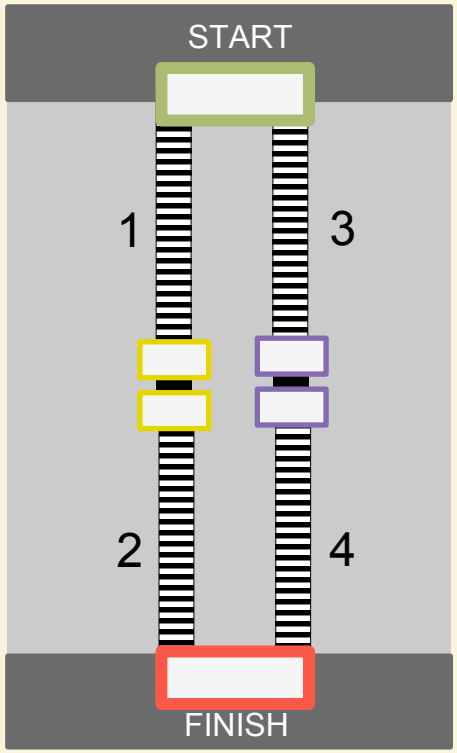
Therefore, Harry was born in Bermuda.

Multiple Lines of Reasoning



This argument configuration is called a "convergent" argument.

This example illustrates multiple (i.e., two) lines of reasoning justifying the same CONCLUSION. Multiple lines of reasoning may increase the subjective perception of the level of certainty of the CONCLUSION.

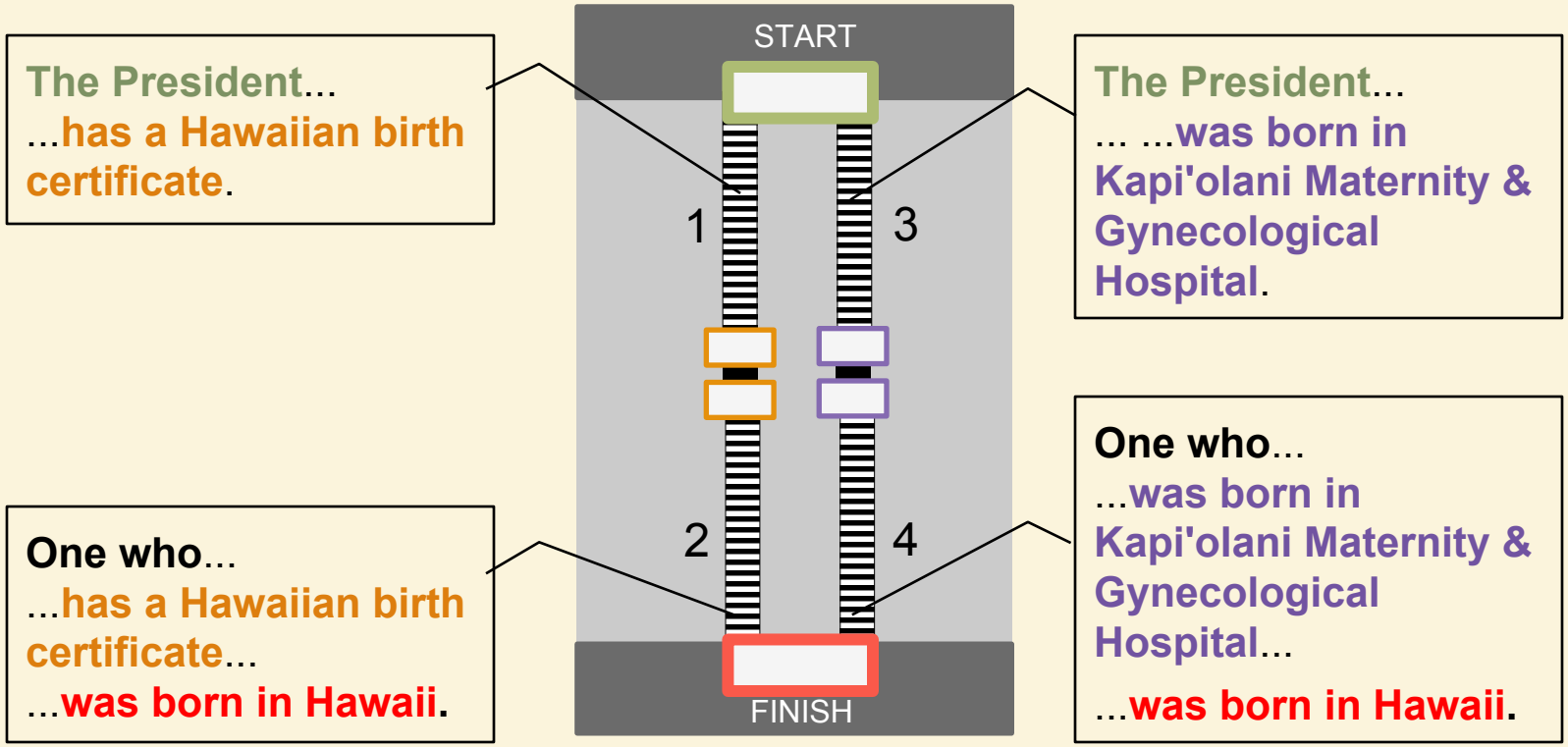


SUBJECT COLUMN		PREDICATE COLUMN
1 The President...	50	...has a Hawaiian birth certificate.
2 Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	100	...was born in Hawaii.
Therefore, CONCLUSION		
The President...	50	...was born in Hawaii.

SUBJECT COLUMN		PREDICATE COLUMN
3 The President...	50	...was born in Kapi'olani Maternity & Gynecological Hospital.
4 Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	100	...was born in Hawaii.
Therefore, CONCLUSION		
The President...	50	...was born in Hawaii.

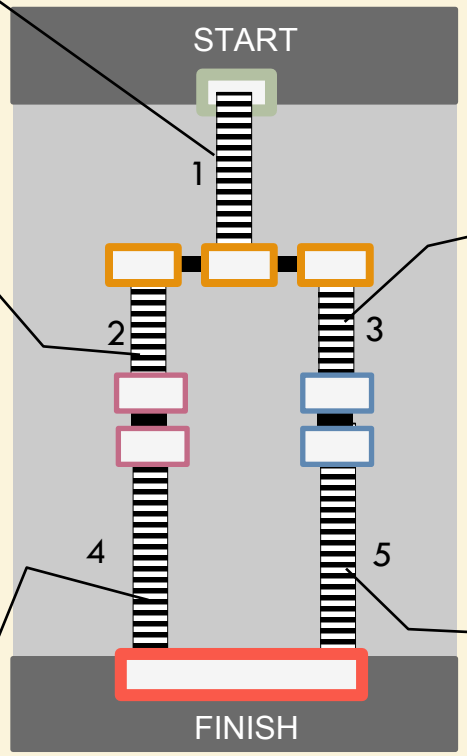
This argument configuration is called a "convergent" argument.

This example illustrates multiple (i.e., two) lines of reasoning justifying the same CONCLUSION. Multiple lines of reasoning may increase the subjective perception of the level of certainty of the CONCLUSION.



This example illustrates (e.g., two) intra-lines of reasoning that branch from within the main line of reasoning that converge together to justify the same CONCLUSION.

The President...
...**produced a newly recertified Hawaiian birth certificate**.



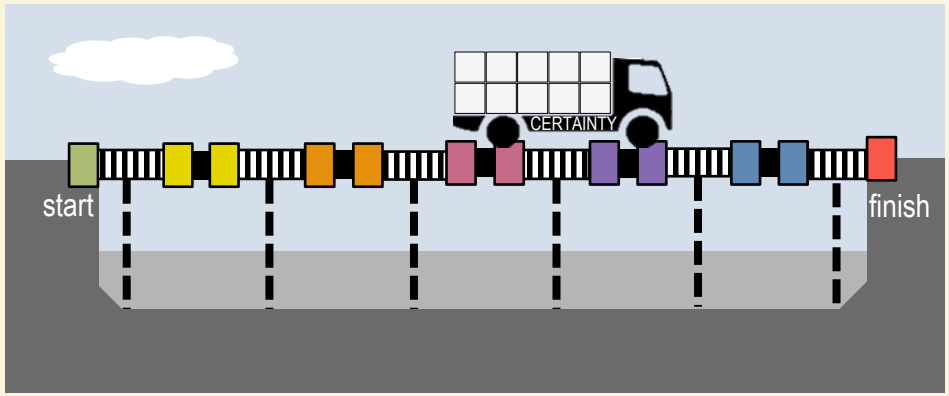
One who...
...**produced a newly recertified Hawaiian birth certificate**...
...**was born in Hawaii**.

One who...
... **produced a newly recertified Hawaiian birth certificate**...
has the Director's support of his Hawaiian birth claim.

One who...
...**was born in Hawaii**...
...**is a natural born U.S. citizen**.

One who...
... **has the Director's support of his Hawaiian birth claim**...
...**is a natural born U.S. citizen**.

Missing Sentences

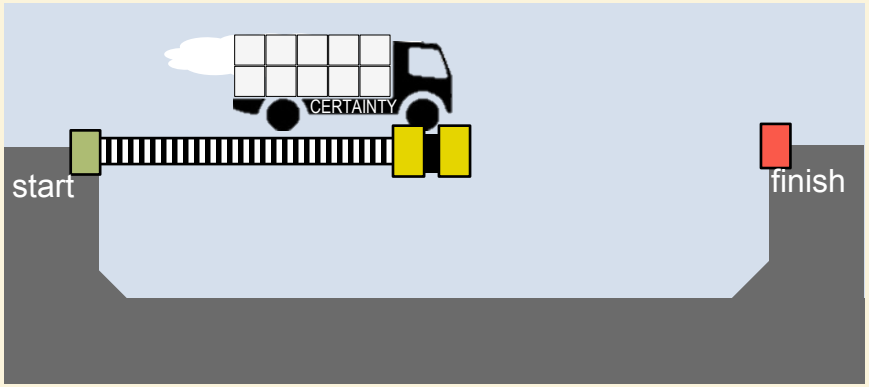


This example illustrates a line of reasoning with one missing premise. Using this incomplete structure requires that the unstated premise(s) is obvious to the audience.

COURT'S PERCEPTION

	SUBJECT COLUMN	PREDICATE COLUMN
1	The President...	... . has a valid Hawaiian birth certificate.
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	

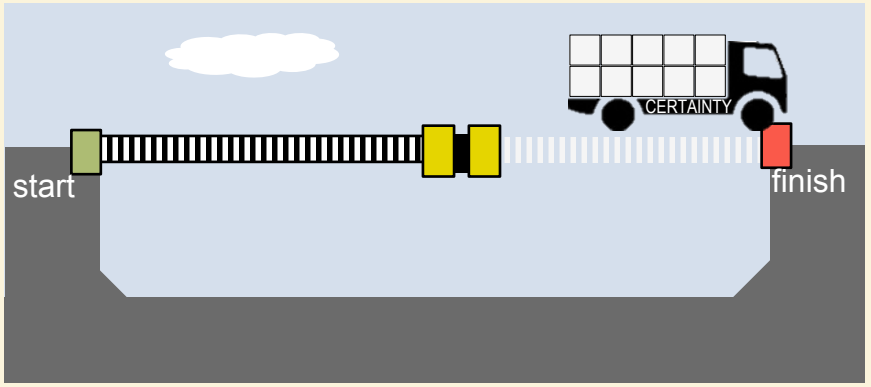
Therefore,	CONCLUSION
The President...	...was born in Hawaii.



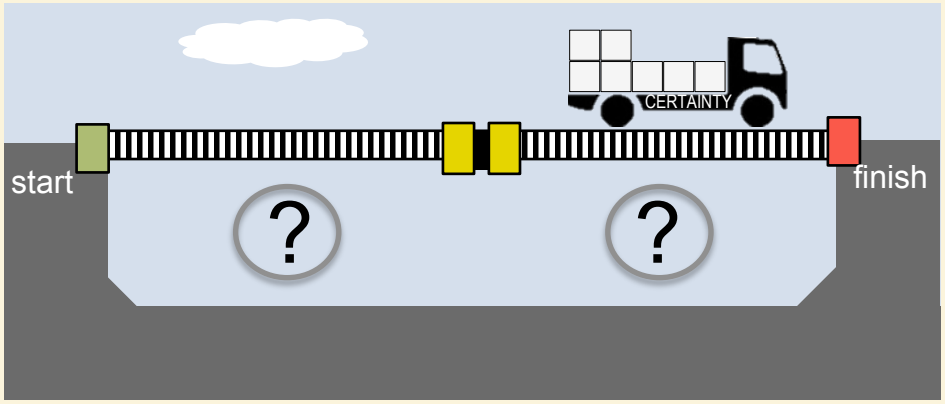
COUNSEL'S PERCEPTION

	SUBJECT COLUMN	PREDICATE COLUMN
1	The President...	... . has a valid Hawaiian birth certificate.
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	...was born in Hawaii.

Therefore,	CONCLUSION
The President...	...was born in Hawaii.



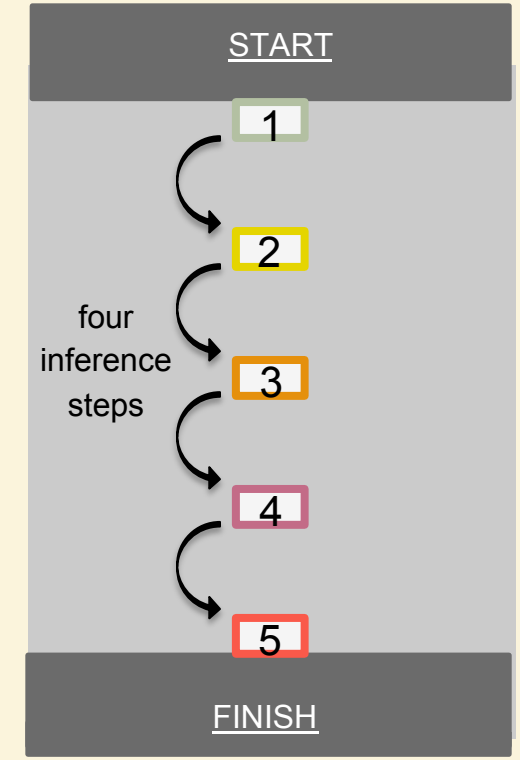
This example illustrates a line of reasoning in which the ASSUMPTIONS are left unstated. While often this incomplete structure is typically used, it does create the risk that the line of reasoning is conditional on other unstated "facts."

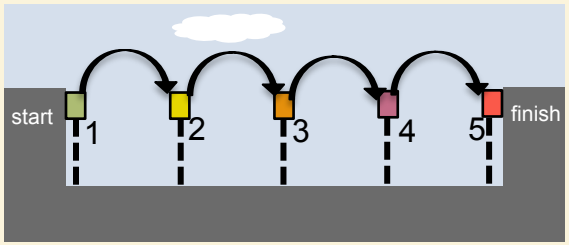


	SUBJECT COLUMN	PREDICATE COLUMN	Supporting Assumptions
1	The President...	...released to the Press a Hawaiian certificate of birth...	?
2	Any (all/one) who (that) [PREVIOUS PREDICATE]	...was born in Hawaii.	?
Therefore,		CONCLUSION	
	The President...	...was born in Hawaii.	

The DCIT STEPPING STONES TEMPLATE hides the universal generalizations joined with the Predicate/Subject matches and transforms the line of reasoning from a linked "bridge" to inferentially linked "stepping stones."

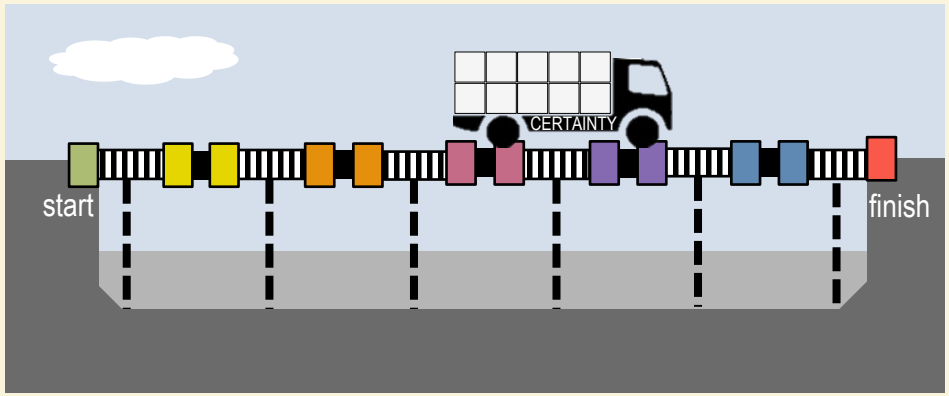
This example illustrates a STEPPING STONES TEMPLATE in which the linkages normally formed by the Predicate/Subject matching is replaced with linkages based on INFERENCE STEPS.





	SUBJECT COLUMN	PREDICATE COLUMN	Assumptions Column
1	The President...	...has a valid Hawaiian birth certificate, according to Director Fukino.	[None stated.]
2	So the President...	...has a valid Hawaiian birth certificate.	[None stated.]
3	So the President...	...was born in Hawaii.	[None stated.]
4	So the President...	...is a natural born U.S. citizen.	[None stated.]
5	So the President...	...satisfies Section 1 of Article II of the U.S. Constitution.	[None stated.]
	CONCLUSION		
	The President...	...satisfies Section 1 of Article II of the U.S. Constitution.	

Inference Leap



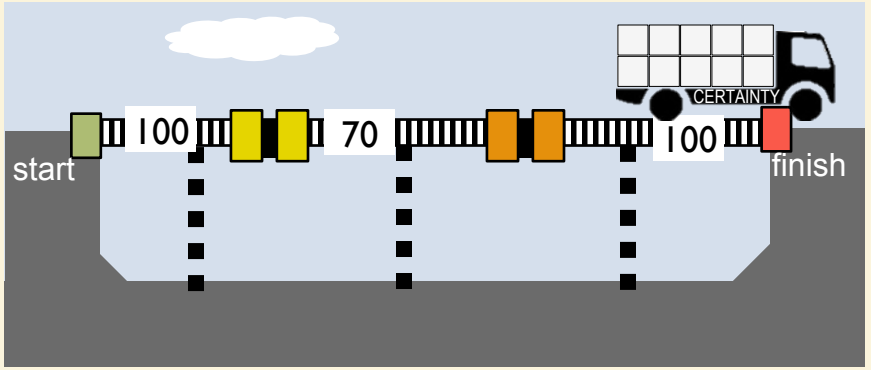
Making apparent all the inference steps at times can make the line of reasoning appear more certain.

The amount of perceived certainty for a CONCLUSION can sometimes be increased by adding more linked premises so that there is not "too big a gap" for the audience to cross.

	SUBJECT COLUMN		PREDICATE COLUMN
1	The President...	70	...was born in Kapi'olani Maternity & Gynecological Hospital.
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	0	...is a natural born U.S. citizen.
Therefore,	CONCLUSION		
	The President...	0	...is a natural born U.S. citizen.

SHORTER GAPS/MORE LINKAGES

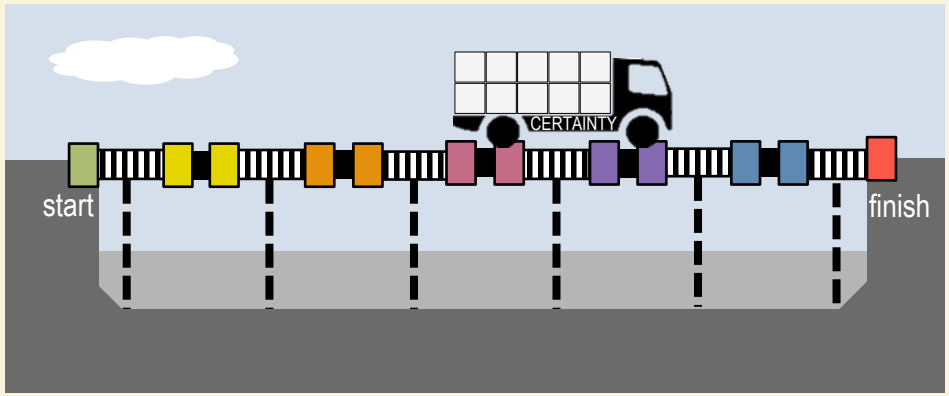
	SUBJECT COLUMN		PREDICATE COLUMN
1	The President...	70	...was born in Kapi'olani Maternity & Gynecological Hospital.
2	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	100	...was born in Hawaii.
3	Any (all/one) who (that) [REPEAT PREVIOUS PREDICATE]...	100	...is a natural born U.S. citizen.
Therefore,	CONCLUSION		
	The President...	70	...is a natural born U.S. citizen.



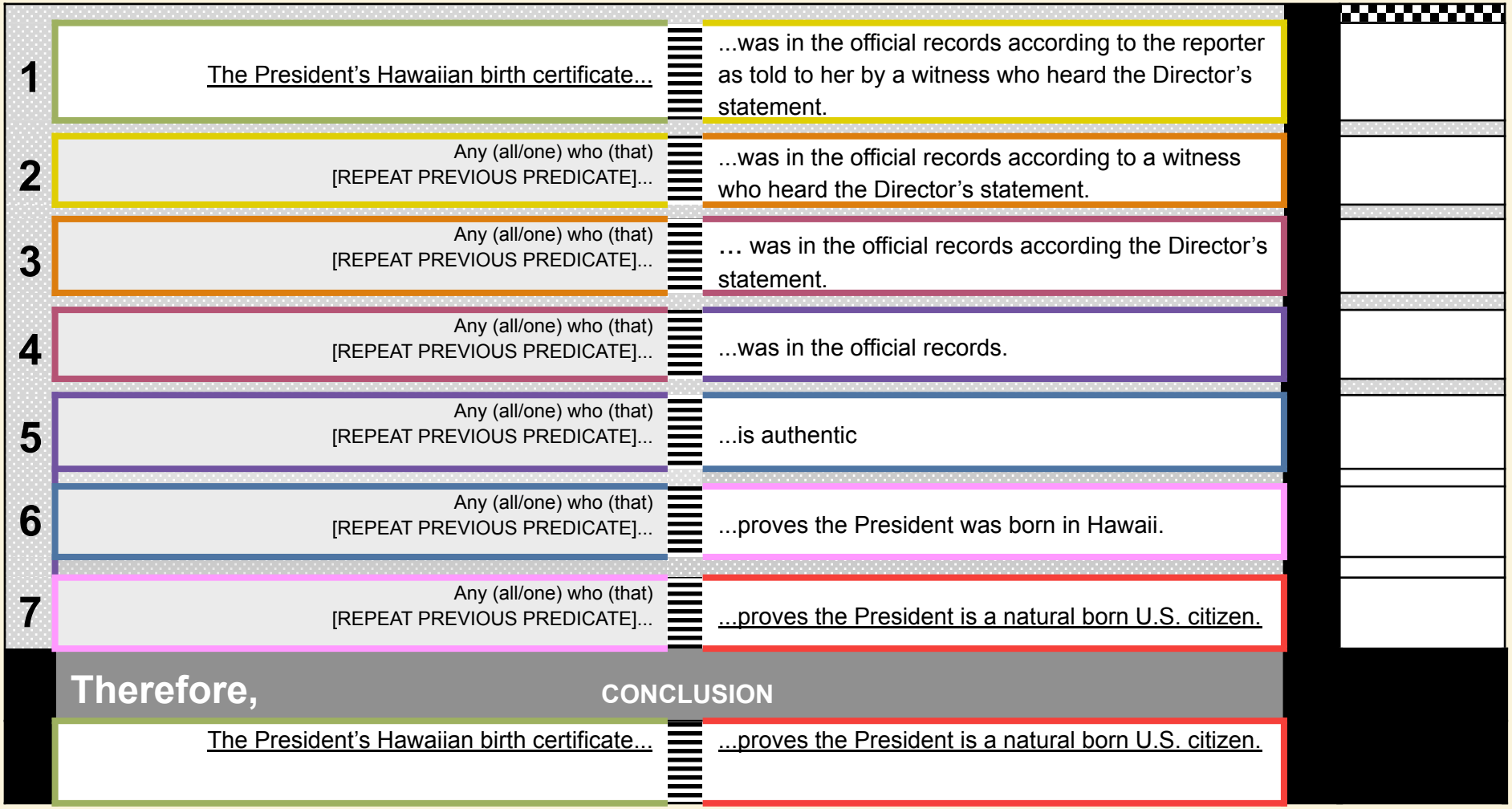
TOO BIG AN INFERENCE GAP

Inference Leap

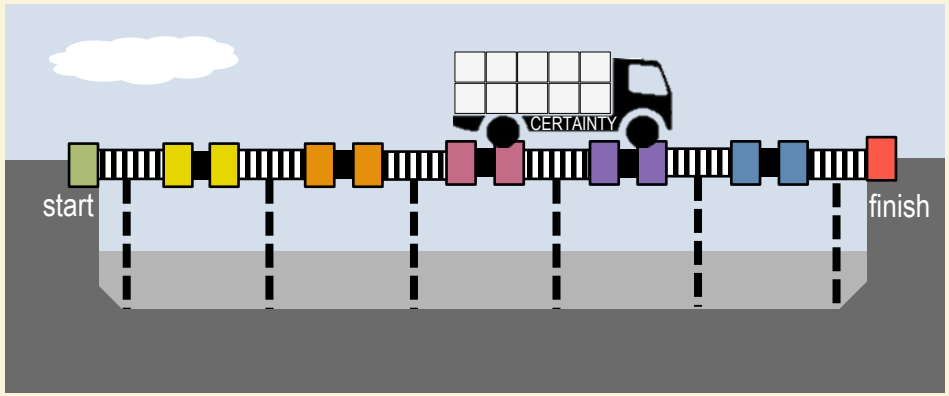
Inference upon Inference



Too many inference steps (inference-upon-inference) can become perceived as merely speculation.

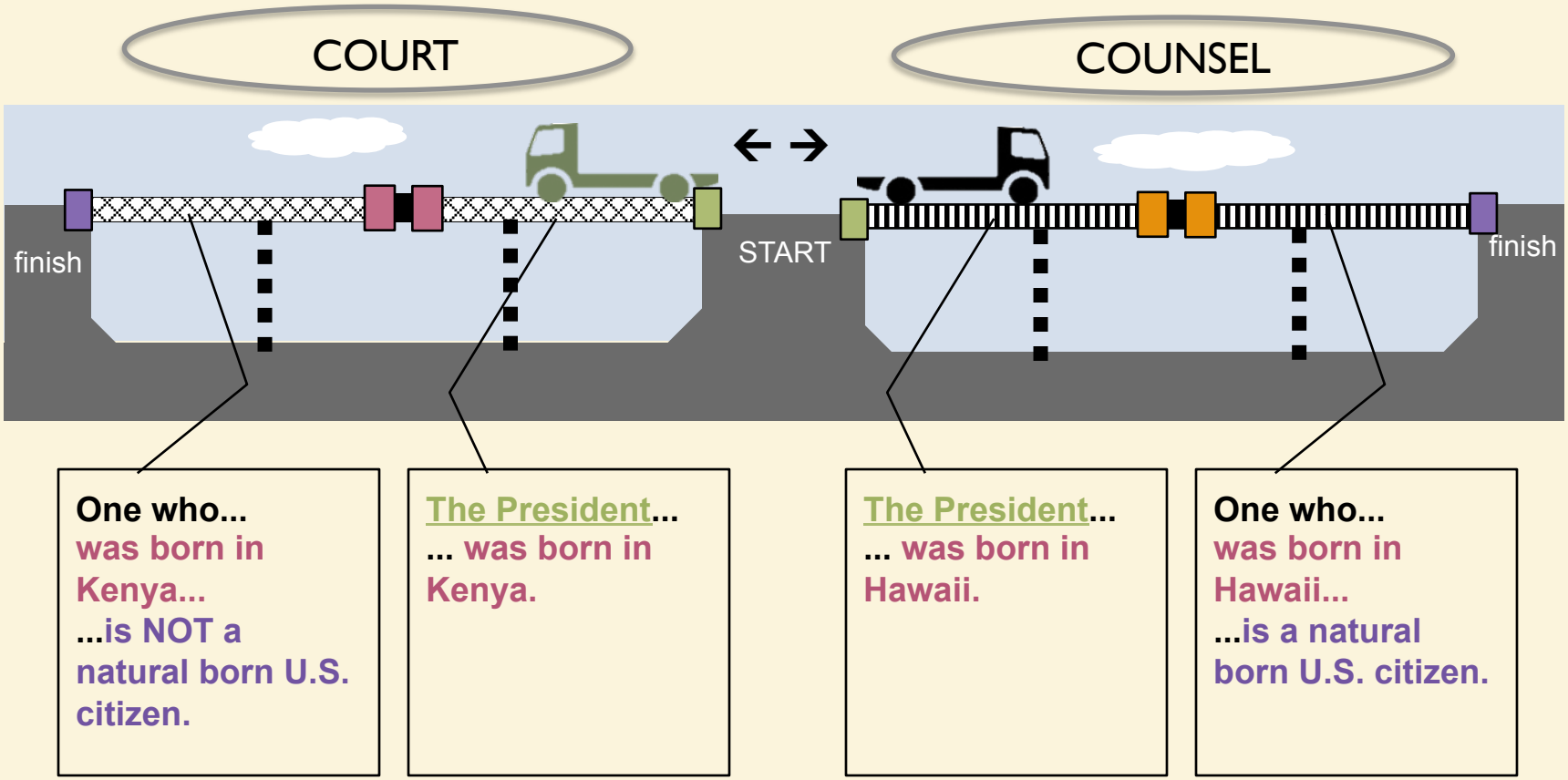


Objections (attacks)



An OPPOSING attack provides support for an opposite CONCLUSION from the same staring point.

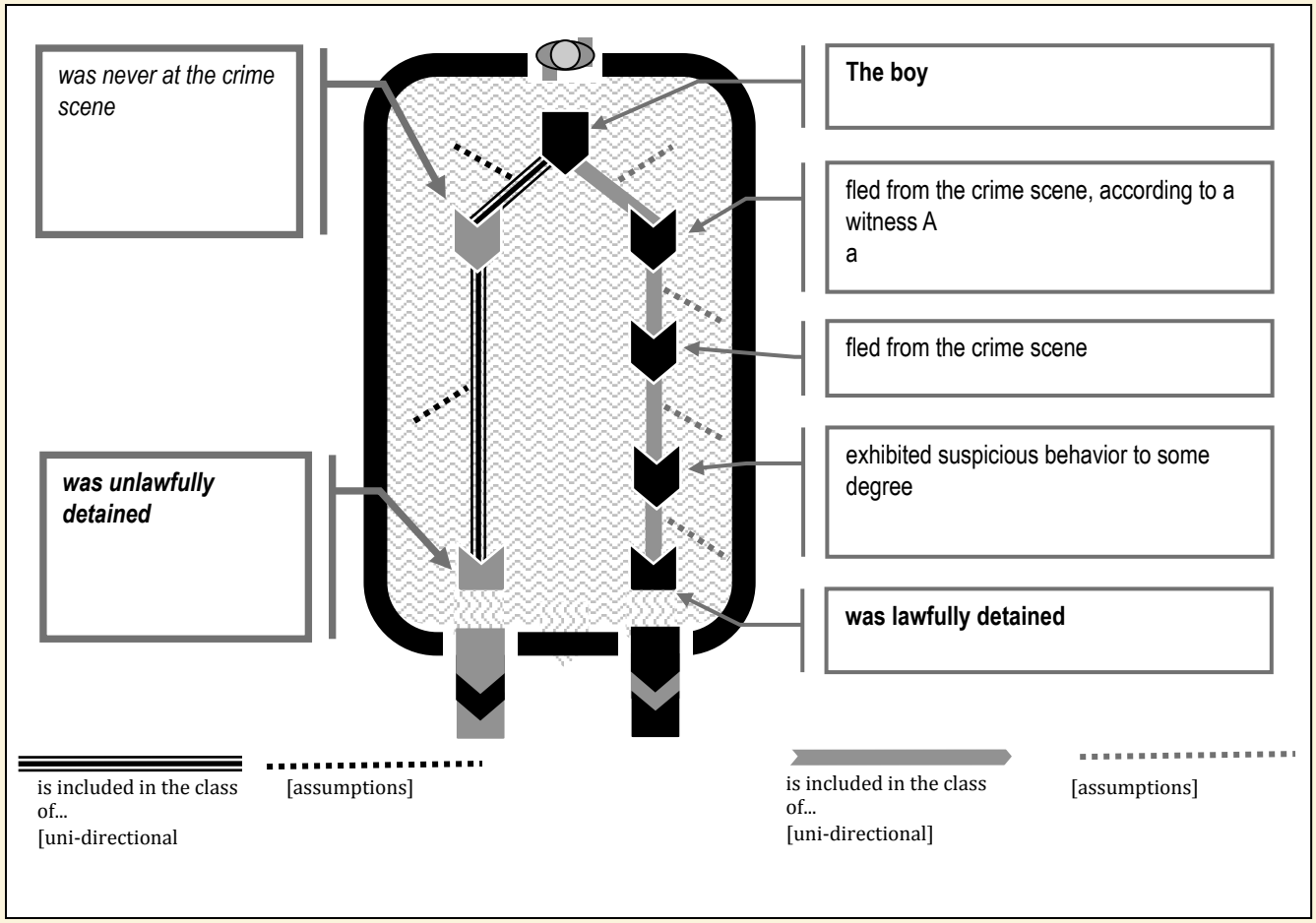
There are a number of possible types of attack against a logical line of reasoning. This type is named an OPPOSING attack since it leads the in the opposing direction from the START.



OPPOSING ATTACK ←→

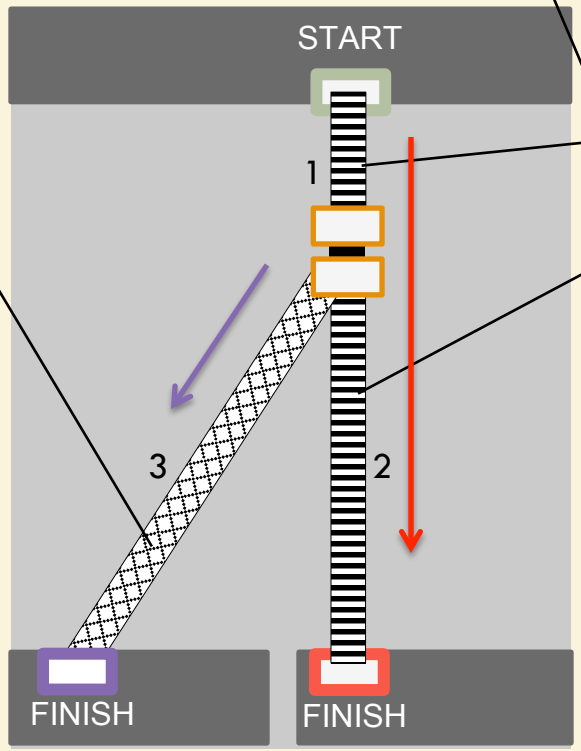
An OPPOSING attack provides support for an opposite CONCLUSION from the same staring point.

There are a number of possible types of attack against a logical line of reasoning. This type is named an OPPOSING attack since it leads the in the opposing direction from the START.



This is a DIVERTING type of attack since it attempts to divert the flow of certainty within the original line of reasoning.

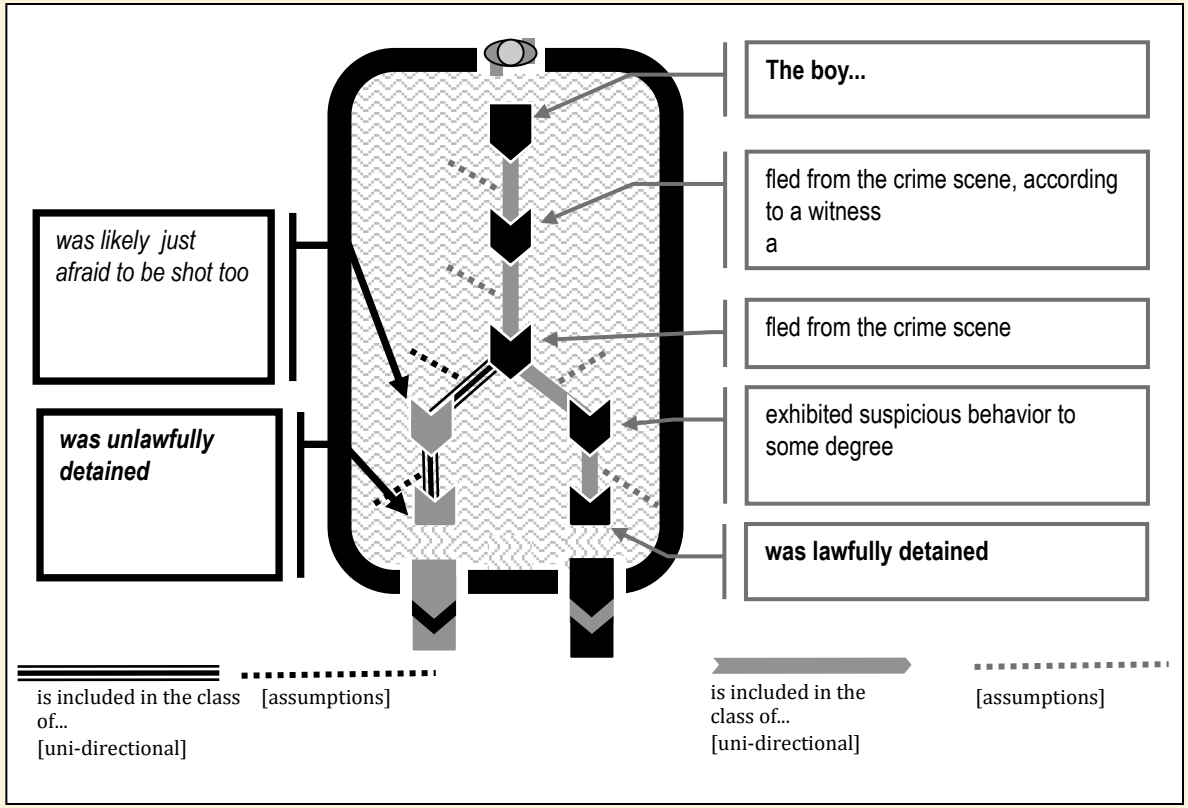
The President...
...**only produced a recertified Hawaiian birth certificate**.



One who...
...**only produced a recertified Hawaiian birth certificate**...
...**does NOT have an Original Hawaiian birth certificate**.

One who...
...**only produced a recertified Hawaiian birth certificate**...
...**has an Original Hawaiian birth certificate**.

This is a DIVERTING type of attack since it attempts to divert the flow of certainty within the original line of reasoning.

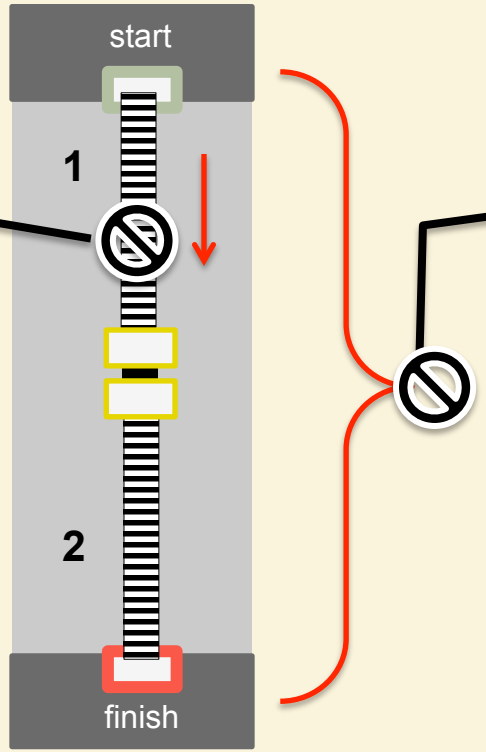


FINISH FINISH

This is an OBSTRUCTING type of attack since it attempts to block the movement of certainty within the line of reasoning.

Examples:

The premise/assumption is:
- Inconsistent
- Ambiguous
- Vague
- Conditional
- False
- Weak
- Irrelevant
- Unsubstantiated
- Over generalized
- Not authoritative



Examples:

The line of reasoning is:
- Illogical
- Irrelevant
- Inconsistent
- Conditional
- Incomplete
- Weak
- Fallacious
- Piling inference-upon-inference

This is an OBSTRUCTING type of attack since it attempts to block the movement of certainty within the line of reasoning.

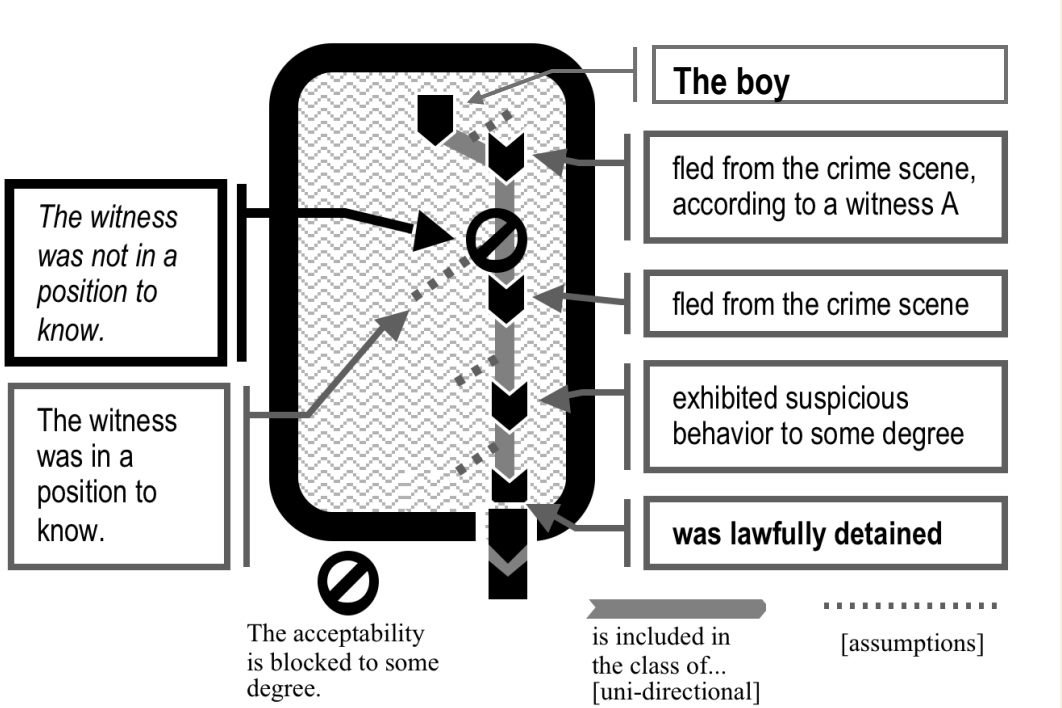
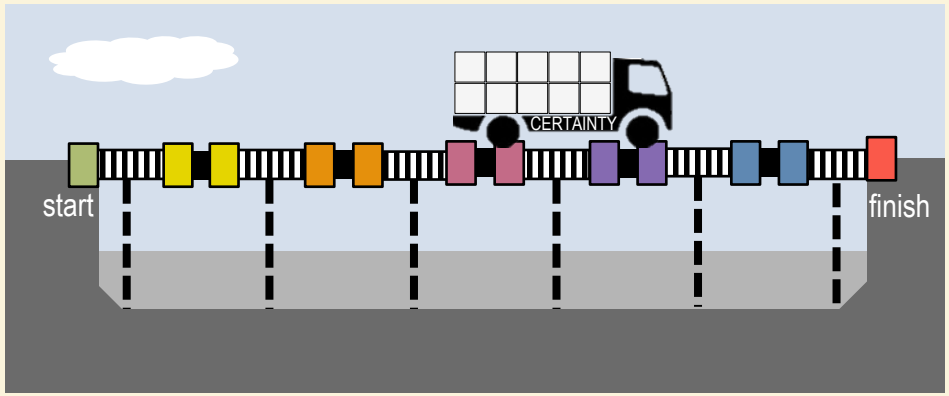


Figure 44

Structural Errors 1



"A defining stage in the AFP's history was the Winchester tragedy. The highest ranking police officer in Australia to be murdered, Assistant Commissioner Colin Winchester was shot twice in the head at point blank range as he was stepping from his car outside his Deakin home in the ACT at about 9.15pm on January 10, 1989.

* * *

The investigation which followed ran for more than five years and led to David Harold Eastman, a Commonwealth public servant on long-term sick leave, being charged with the murder, his trial beginning in the ACT Supreme Court on May 2, 1995.

David Eastman was found guilty by unanimous jury verdict on November 3 the same year and was sentenced to life imprisonment by Justice Kenneth Carruthers, a retired judge of the NSW Court of Criminal Appeal who had been appointed by the ACT executive on a temporary basis as an Acting Judge of the ACT Supreme Court.

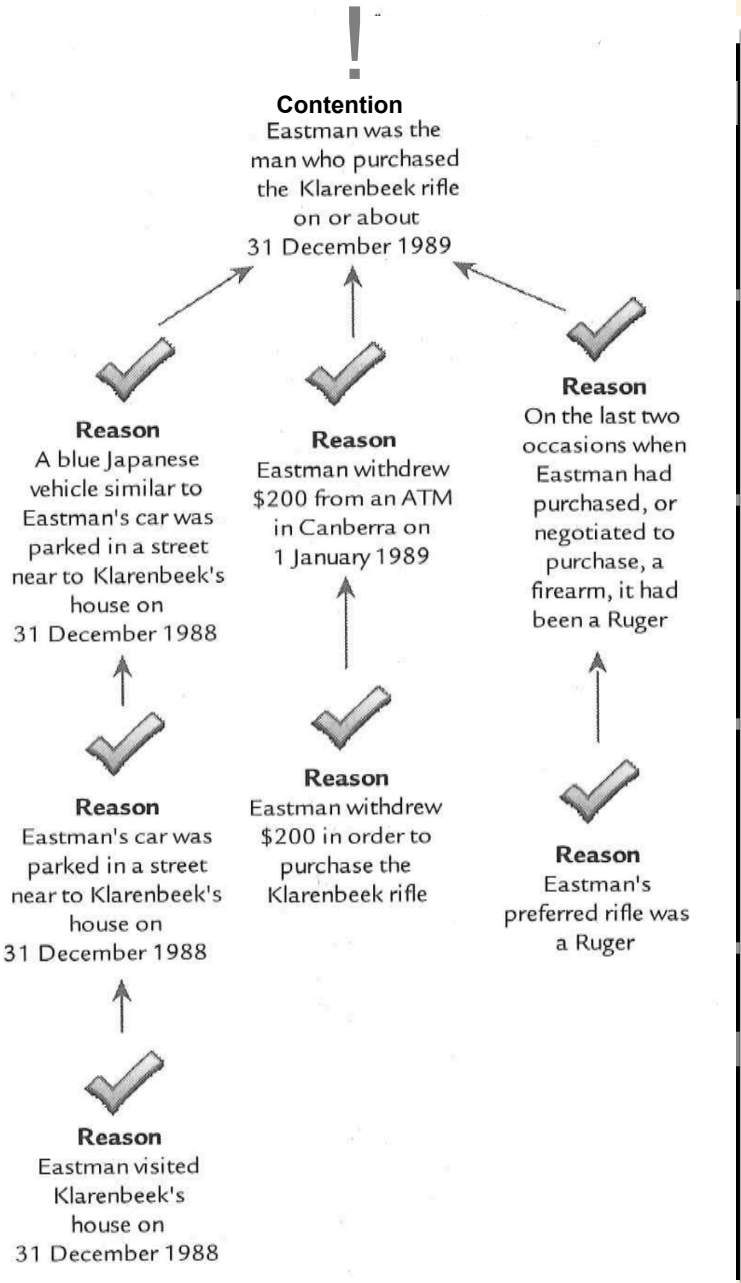
* * *

After the trial, AFP Commissioner Mick Palmer said the investigation had been one of the most complex criminal prosecutions ever launched in this country.

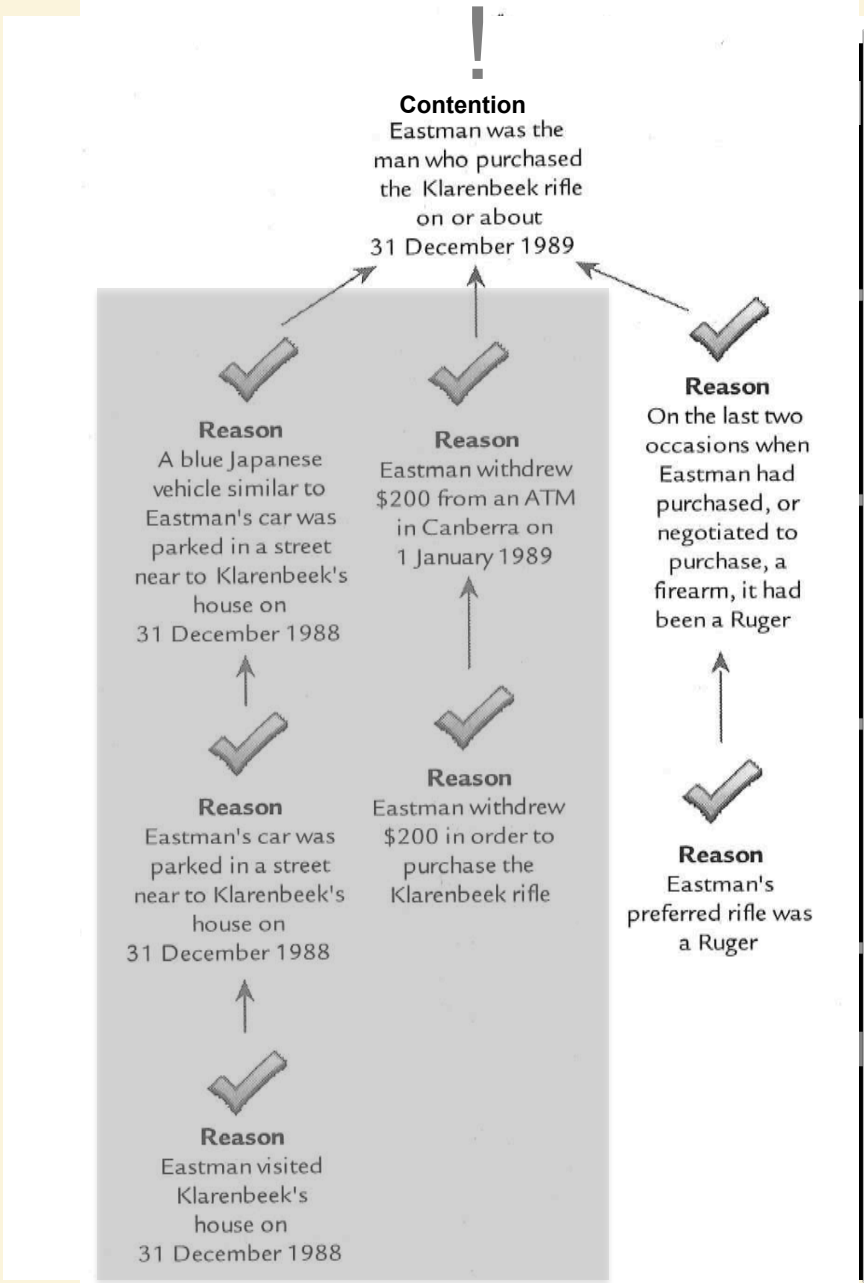
It is always a difficult task to build a case based largely on circumstantial evidence. To successfully prosecute a circumstantial case against the width of public allegations and innuendo which related to the Winchester killing was, I believe, quite exceptional."

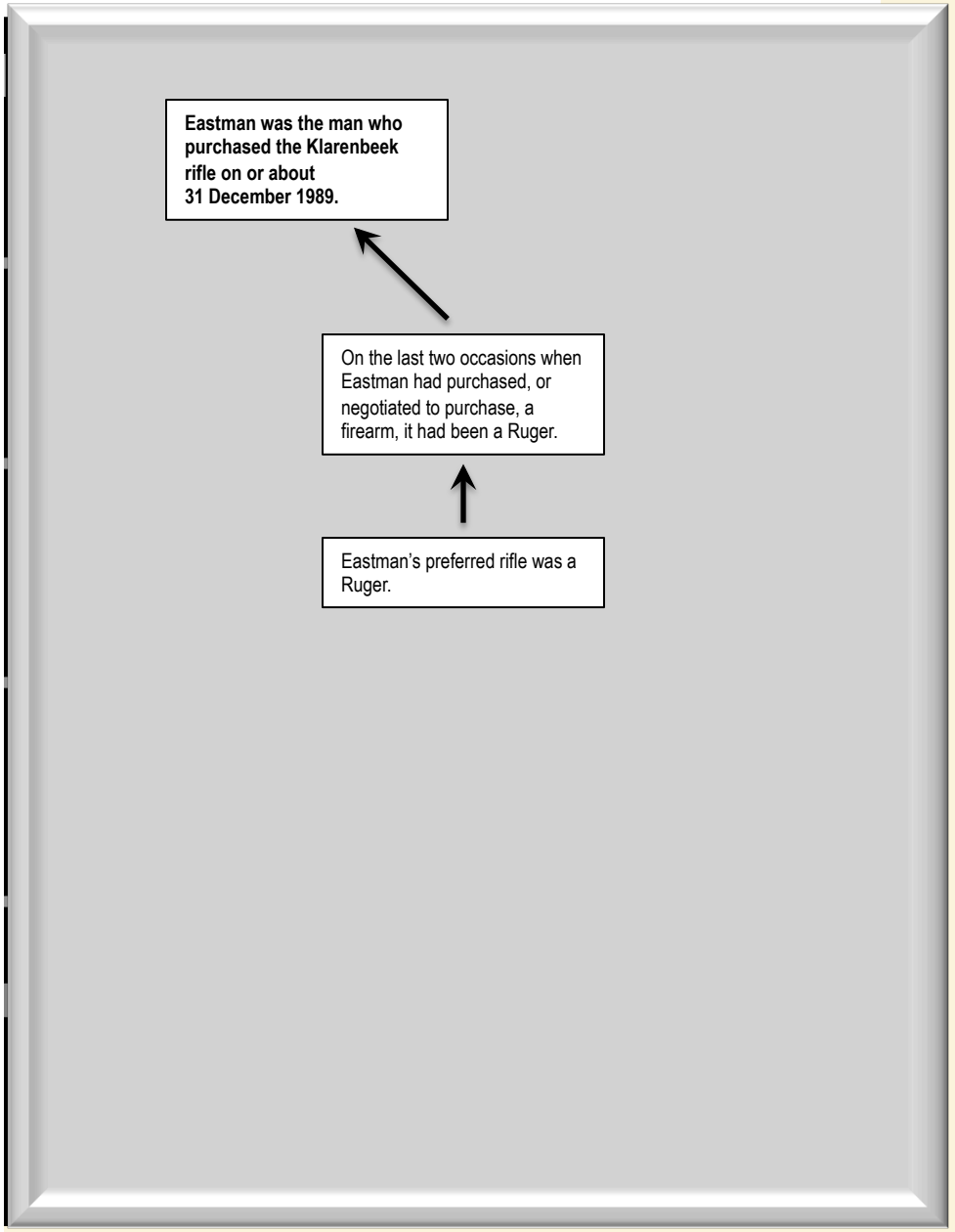
http://www.afp.gov.au/media-centre/publications/platypus/previous-editions/1999/october-1999/murder.aspx

*Andrew Palmer, *Proof: How to Analyse Evidence in Preparation for Trial* (Law Book Company, 2nd ed 2010)

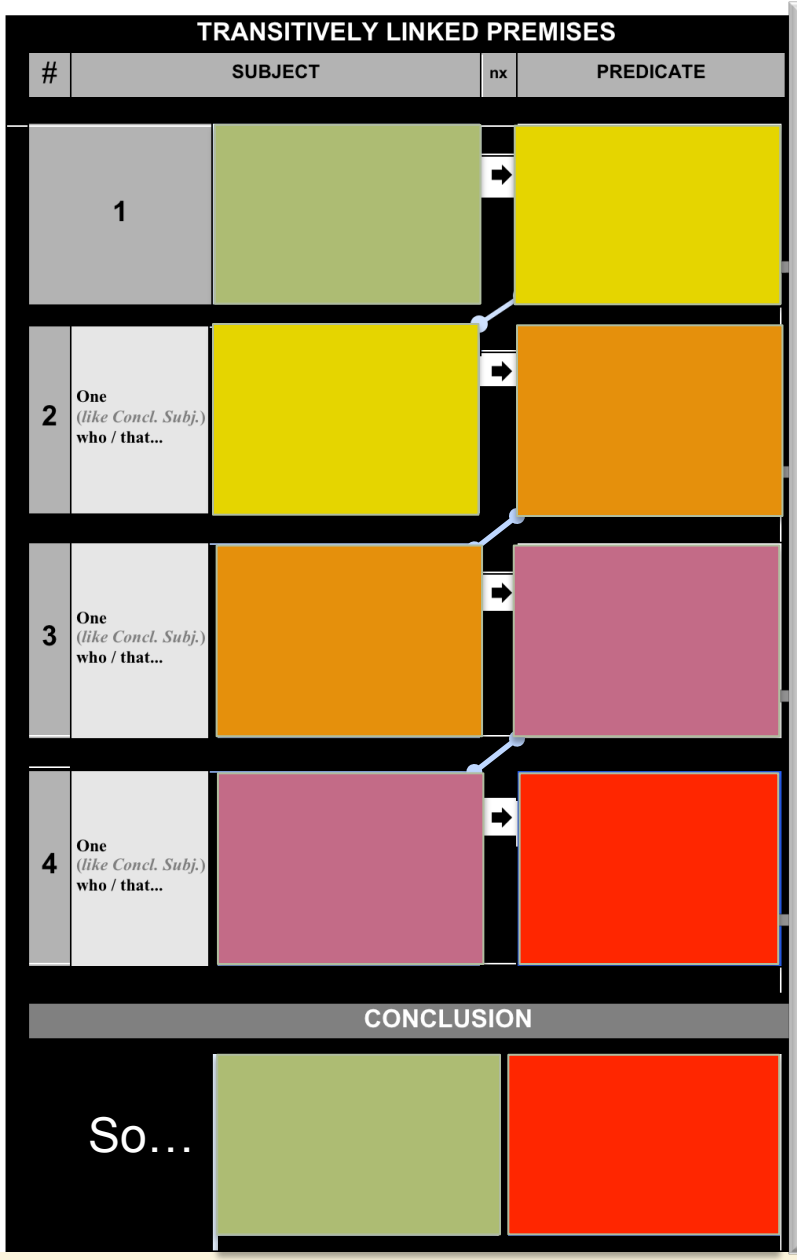


CORRECTING STRUCTURAL ERRORS*





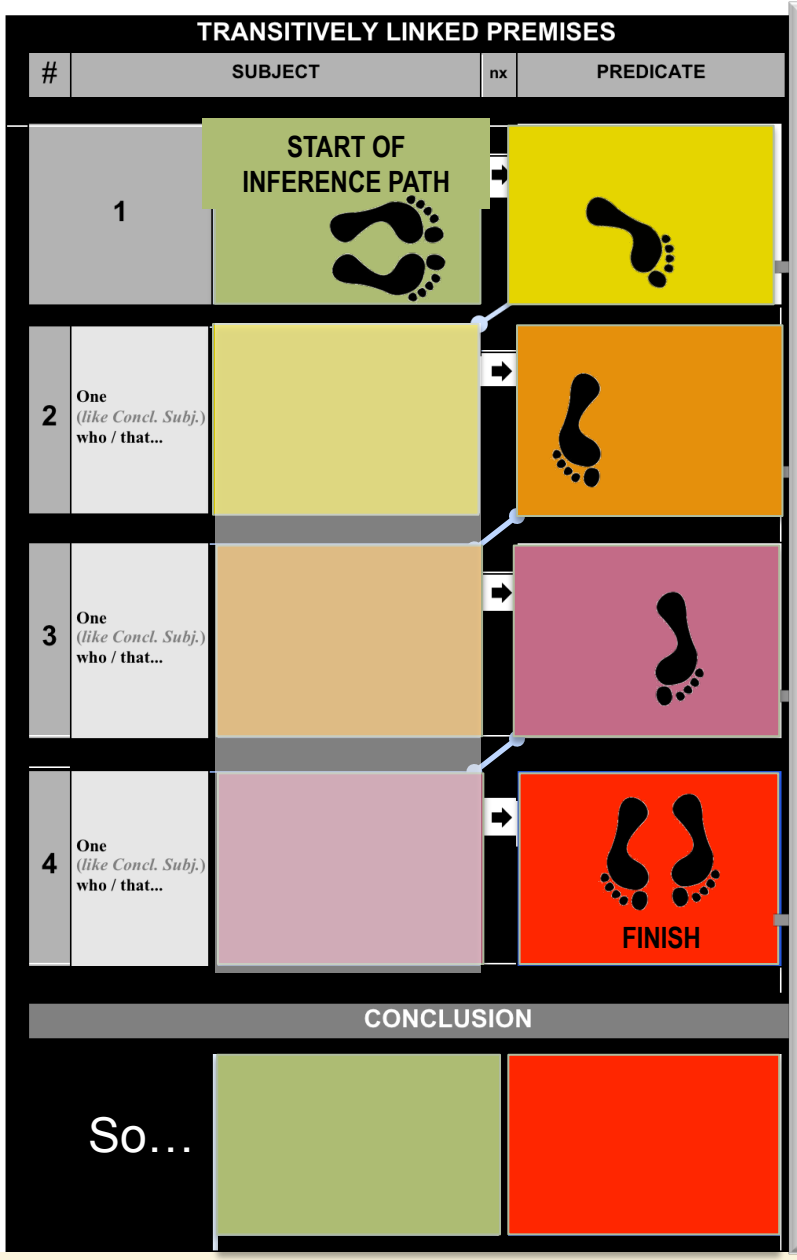
CORRECTING STRUCTURAL ERRORS

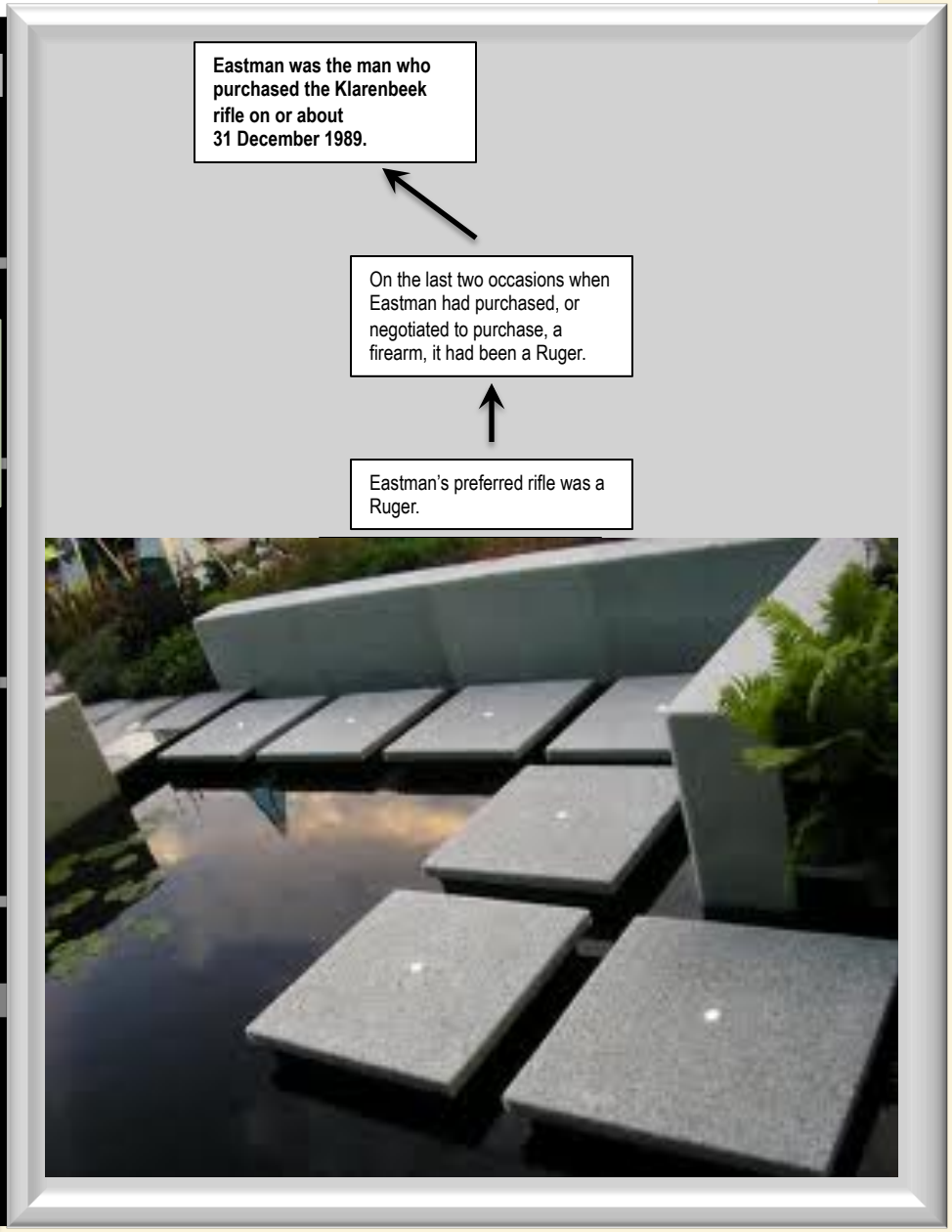


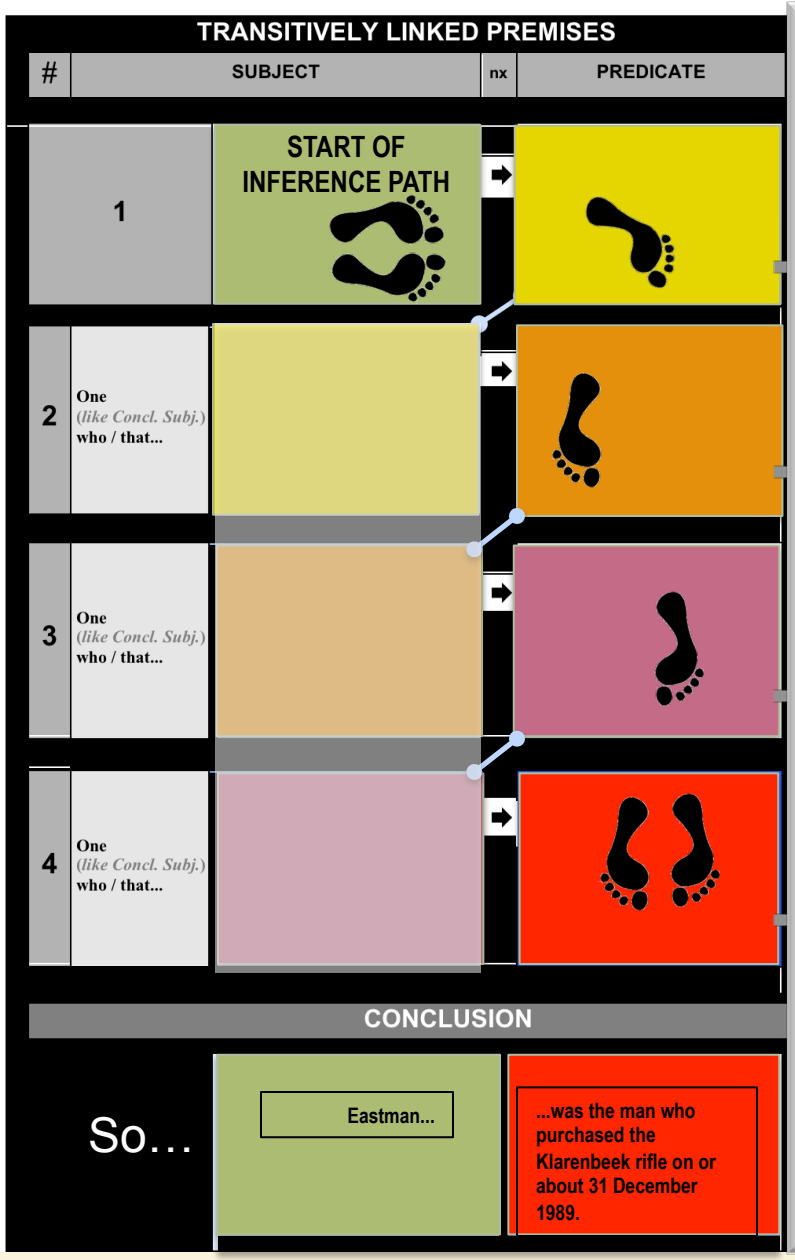
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

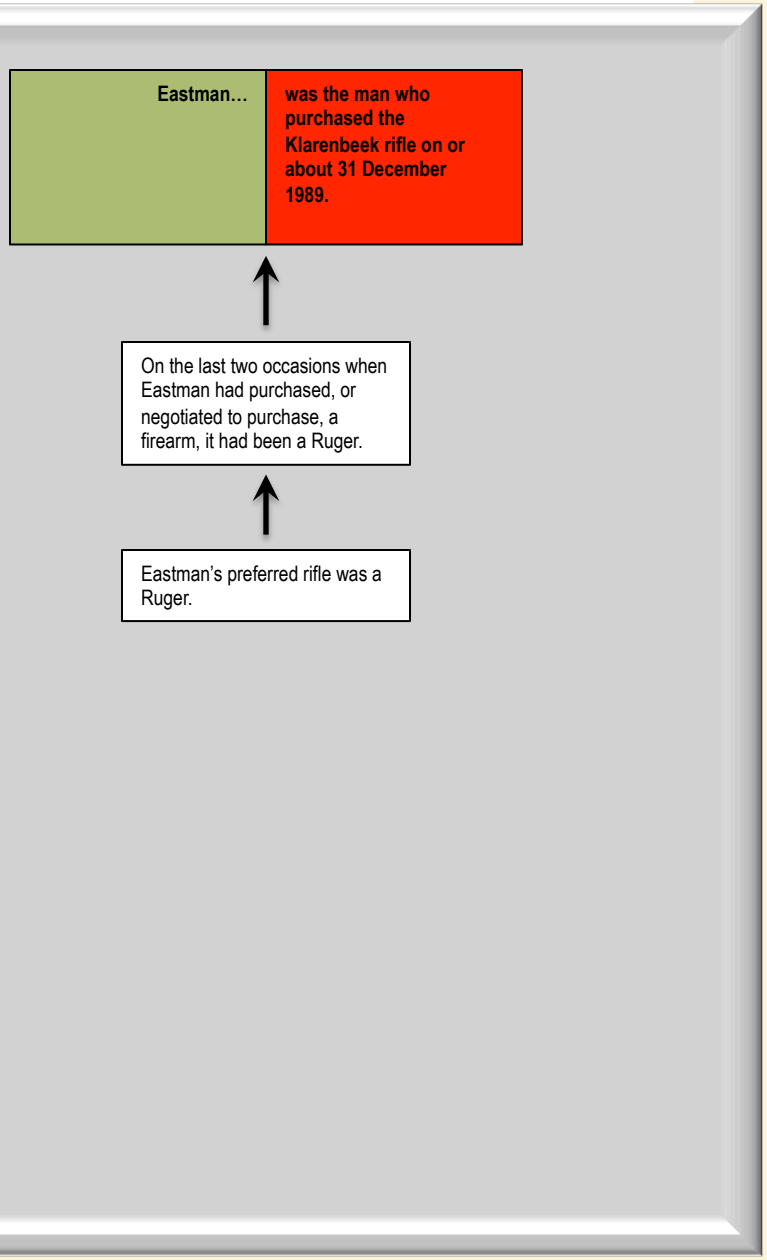
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.

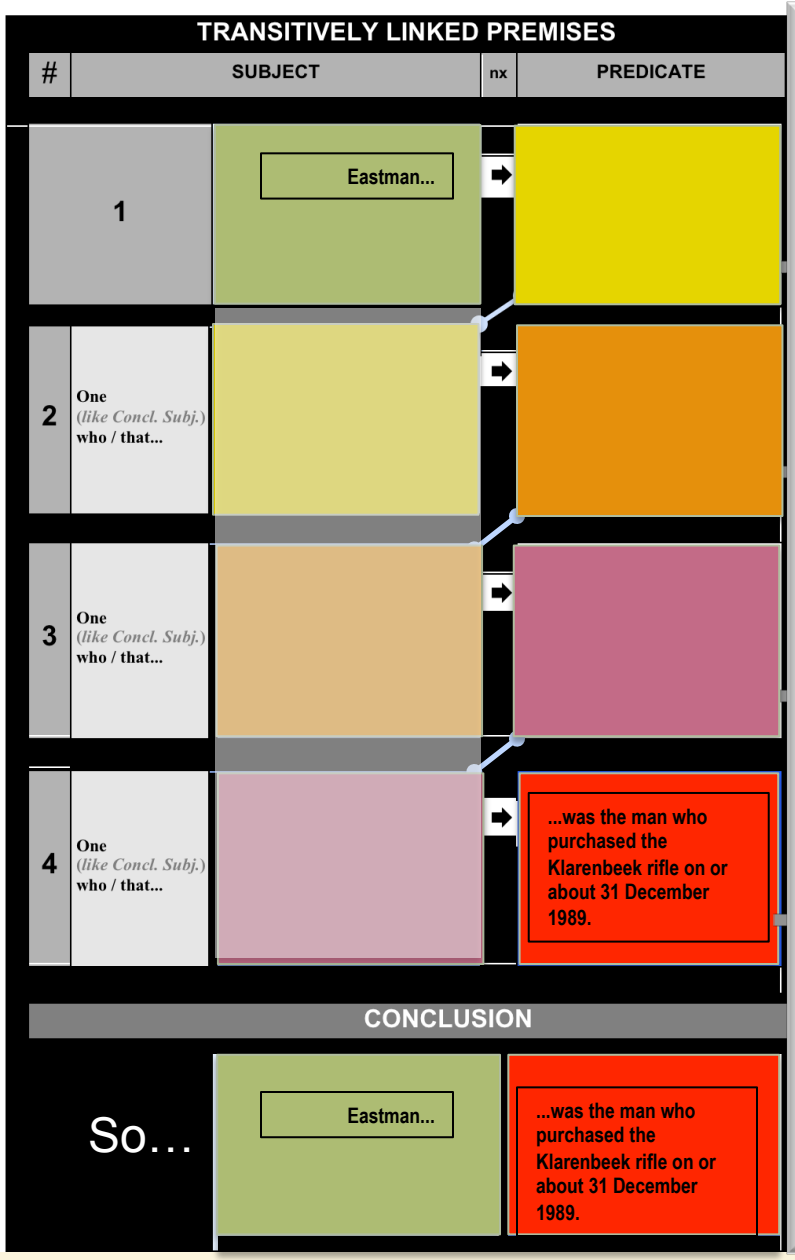
Eastman's preferred rifle was a Ruger.

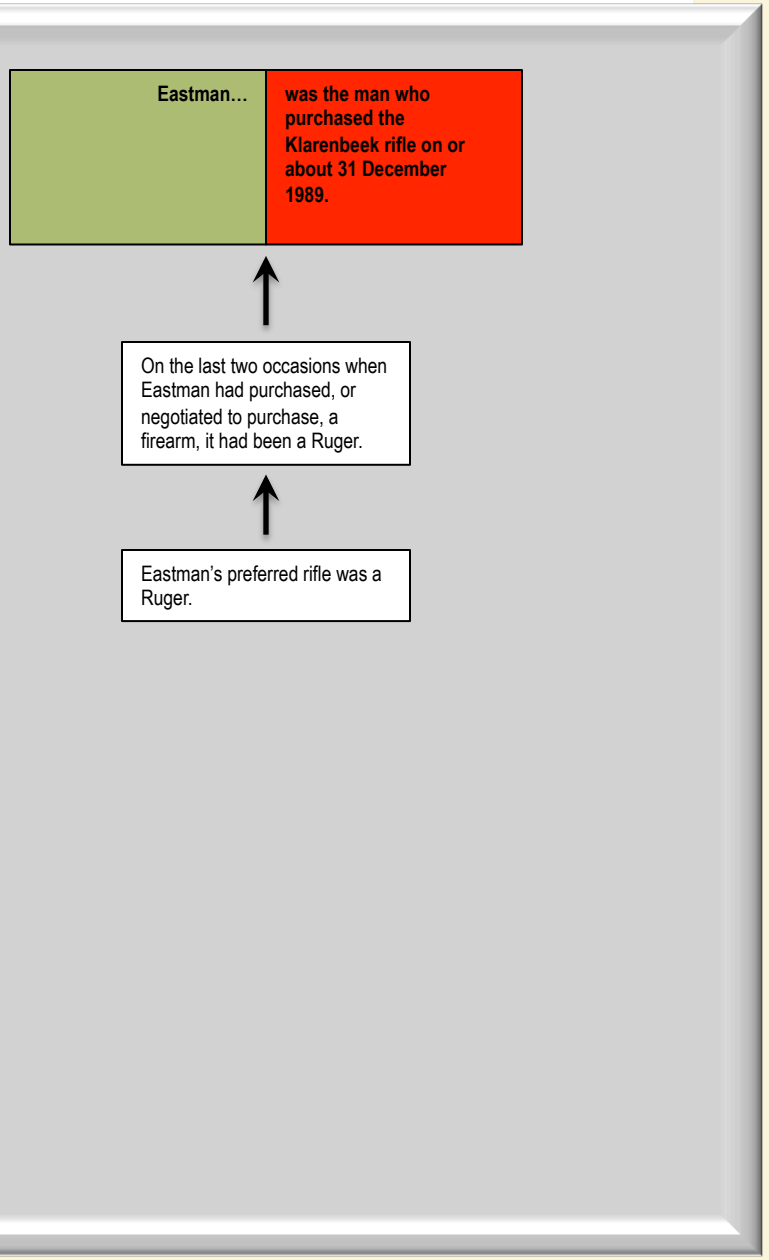

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
START OF INFERENCE PATH
1
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
FINISH
CONCLUSION
=
So…

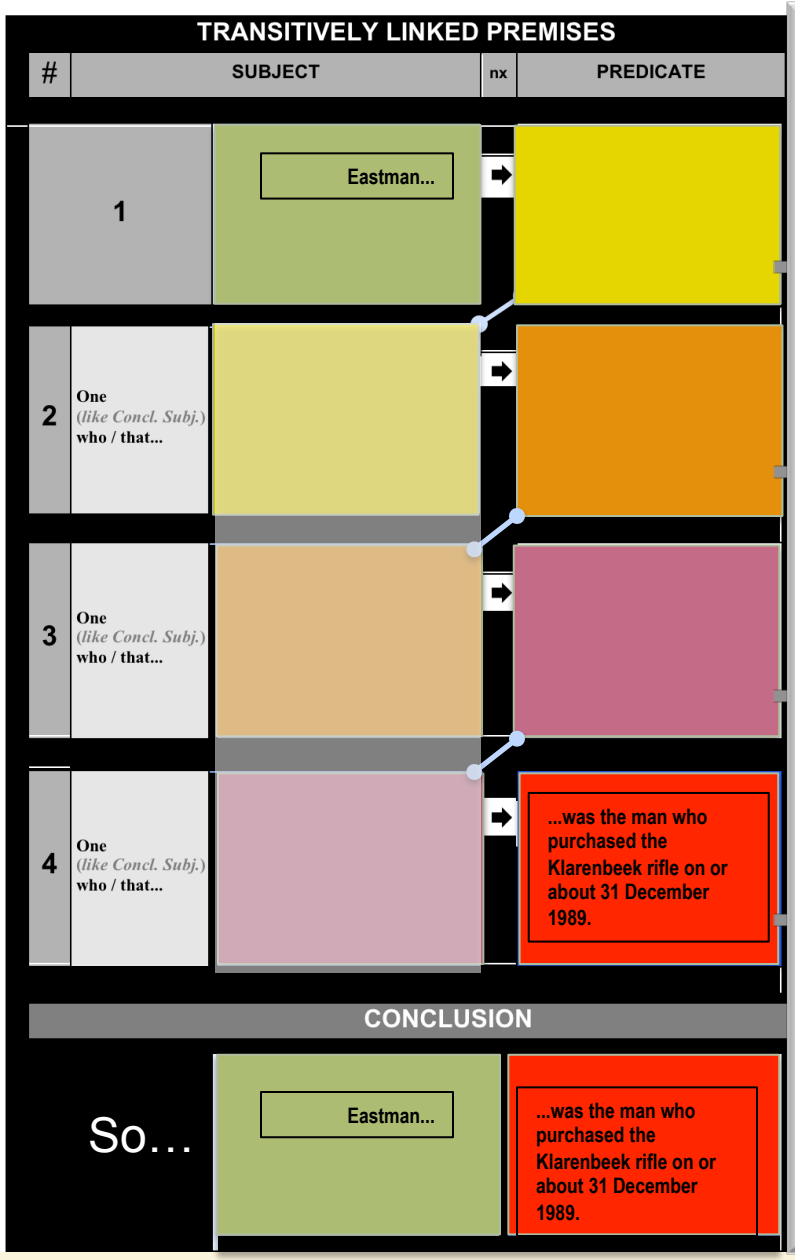

Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.
Eastman's preferred rifle was a Ruger.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
START OF INFERENCE PATH
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.


Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.
Eastman's preferred rifle was a Ruger.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.


Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.
Eastman's preferred rifle was a Ruger.

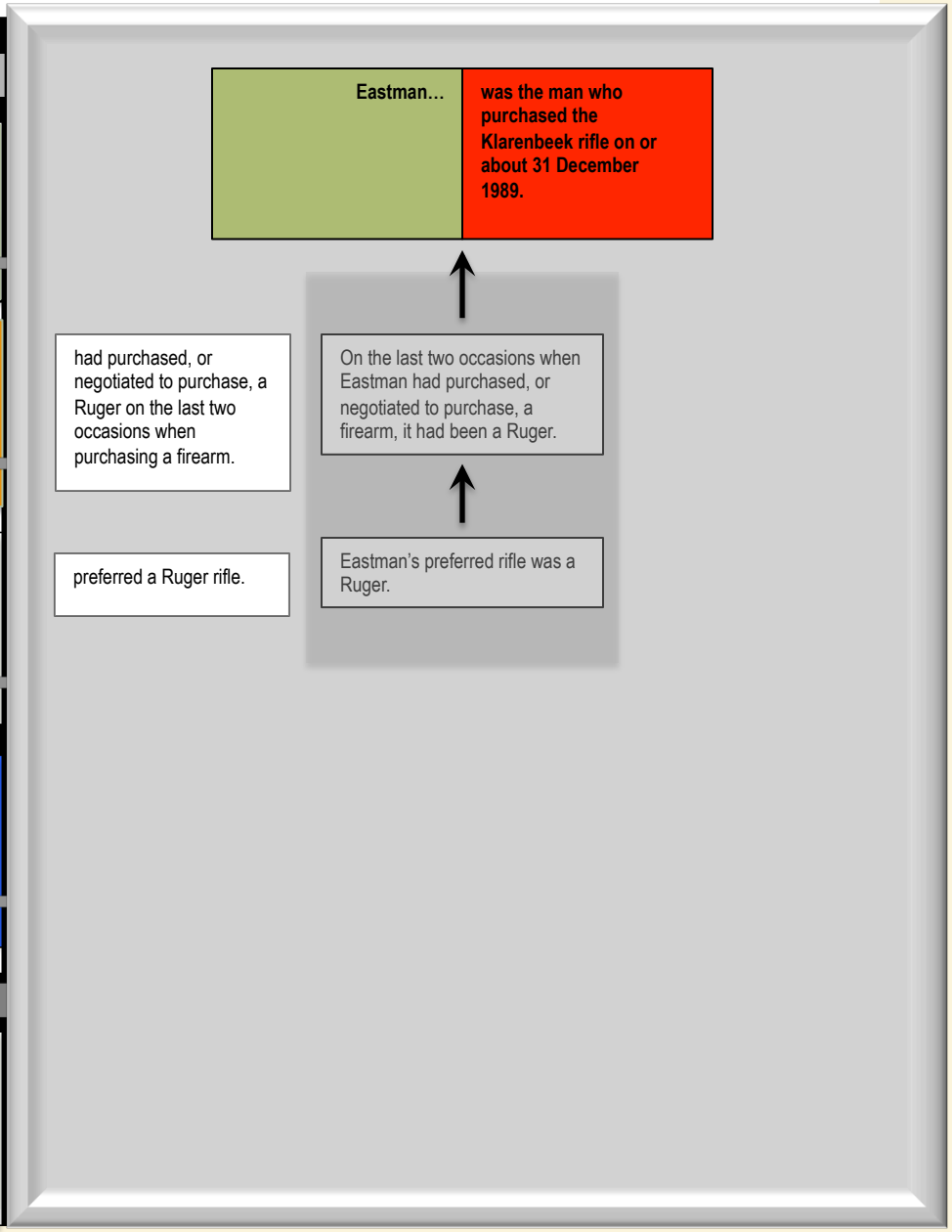

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
2
One
(like Concl. Subj.)
who / that...
3
One
(like Concl. Subj.)
who / that...
4
One
(like Concl. Subj.)
who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

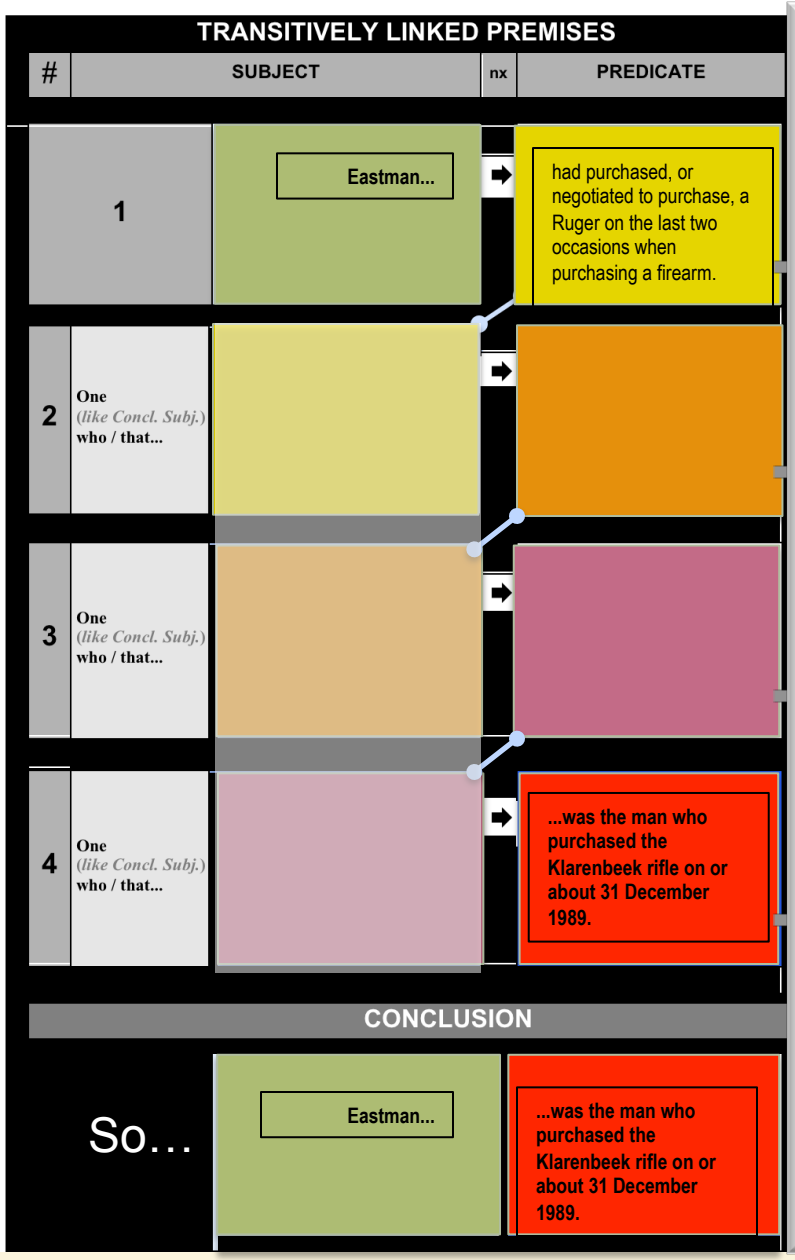
X

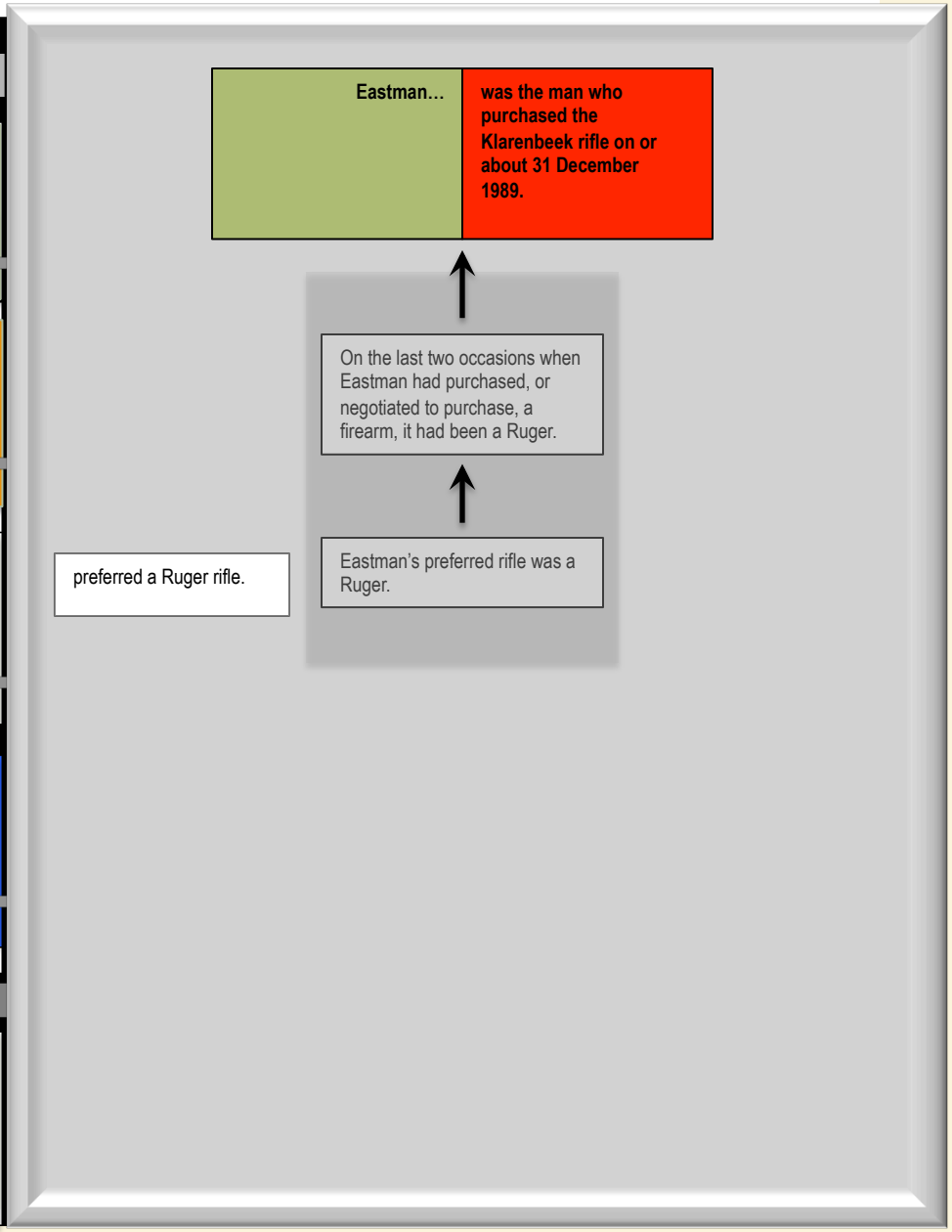
X

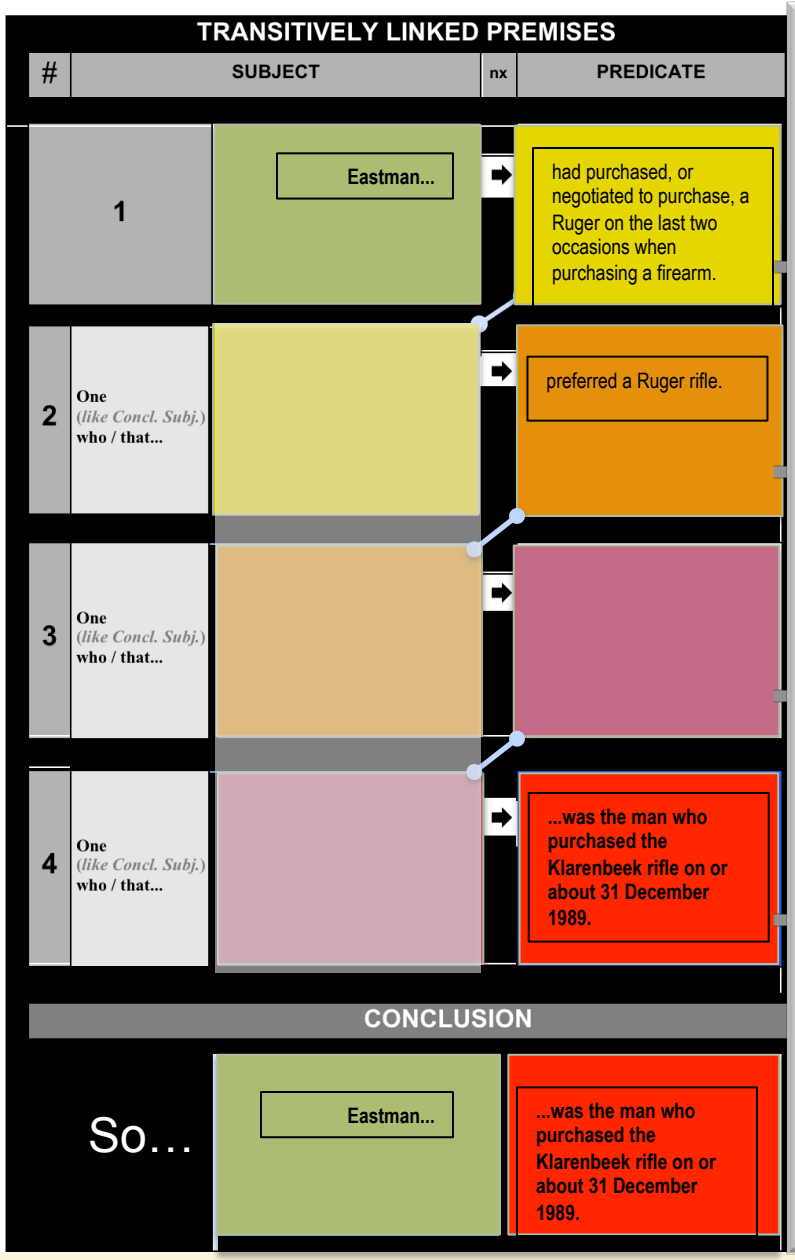
X

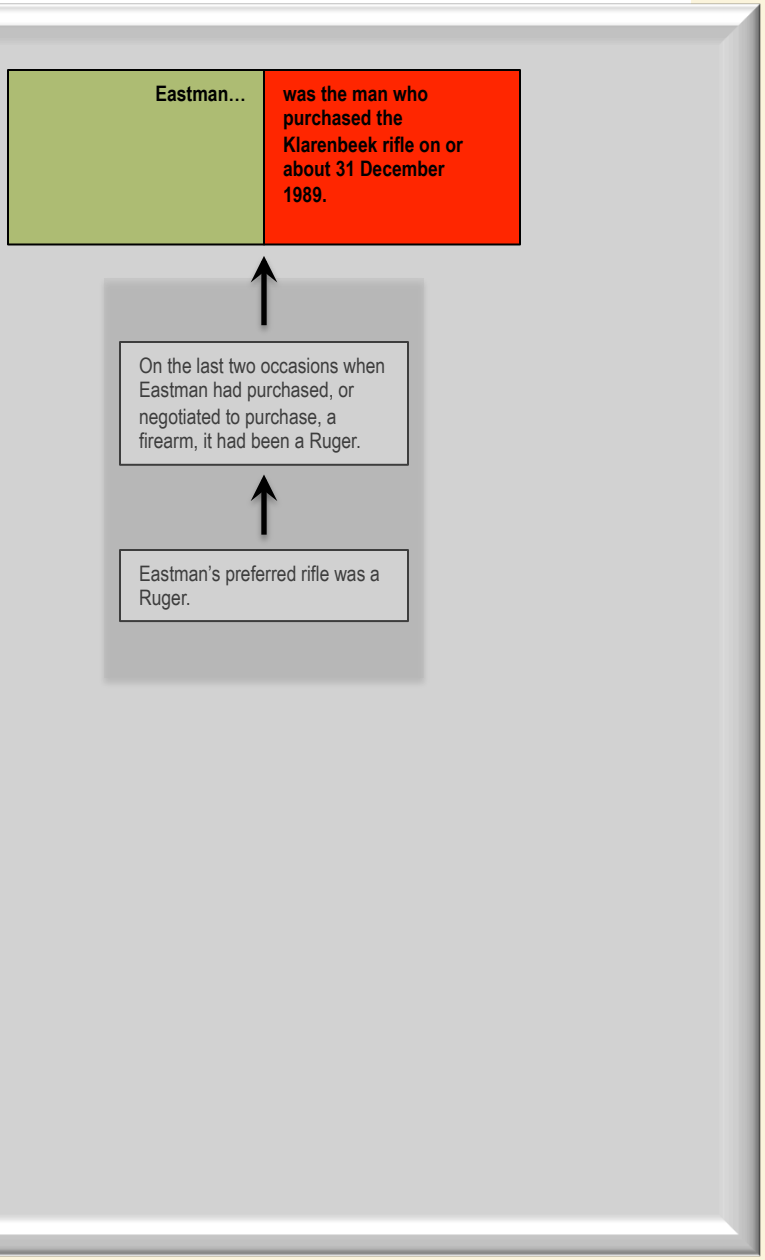
=

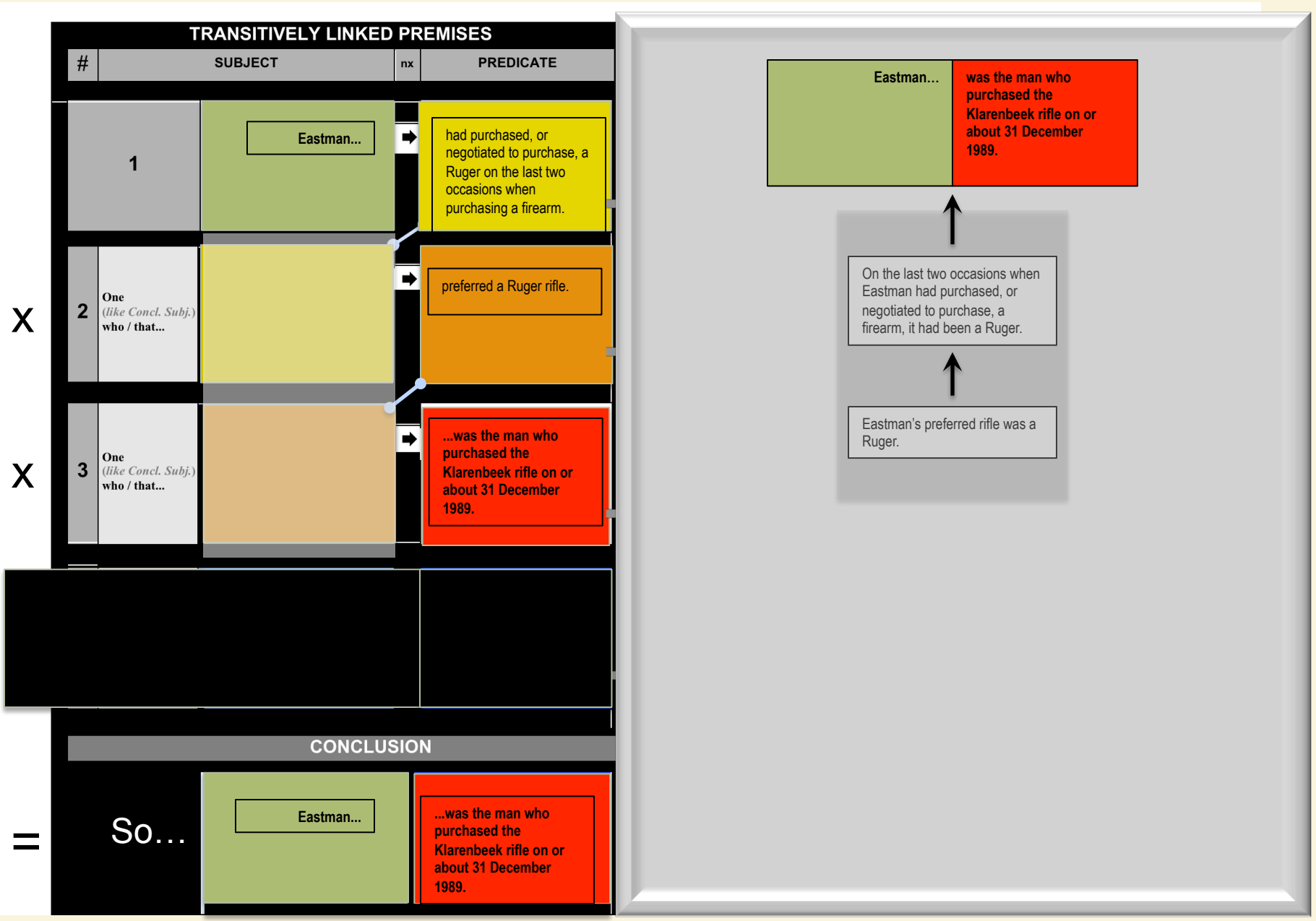

Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.
preferred a Ruger rifle.
Eastman's preferred rifle was a Ruger.

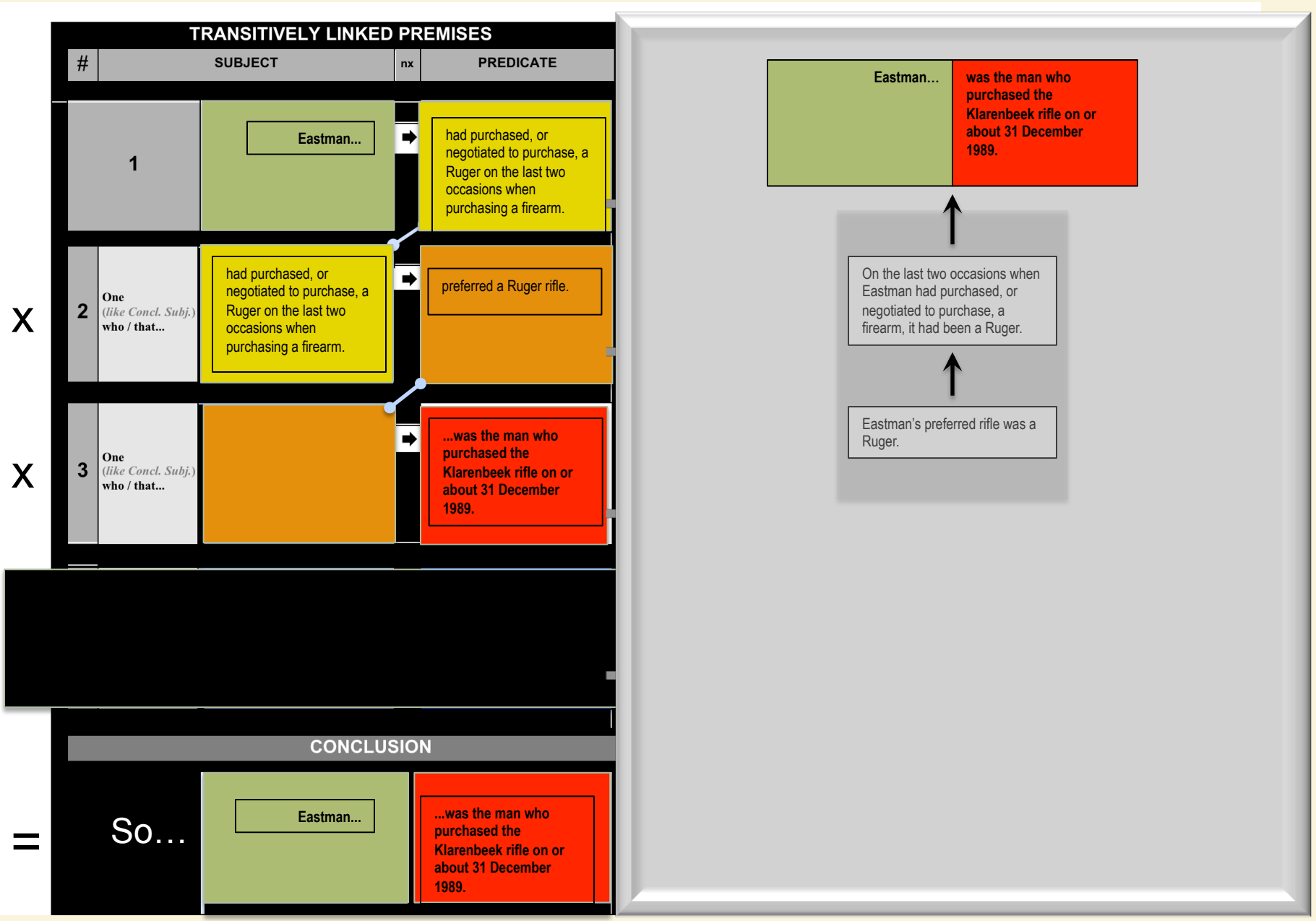

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
X
2
One (like Concl. Subj.) who / that...
X
3
One (like Concl. Subj.) who / that...
preferred a Ruger rifle.
X
4
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

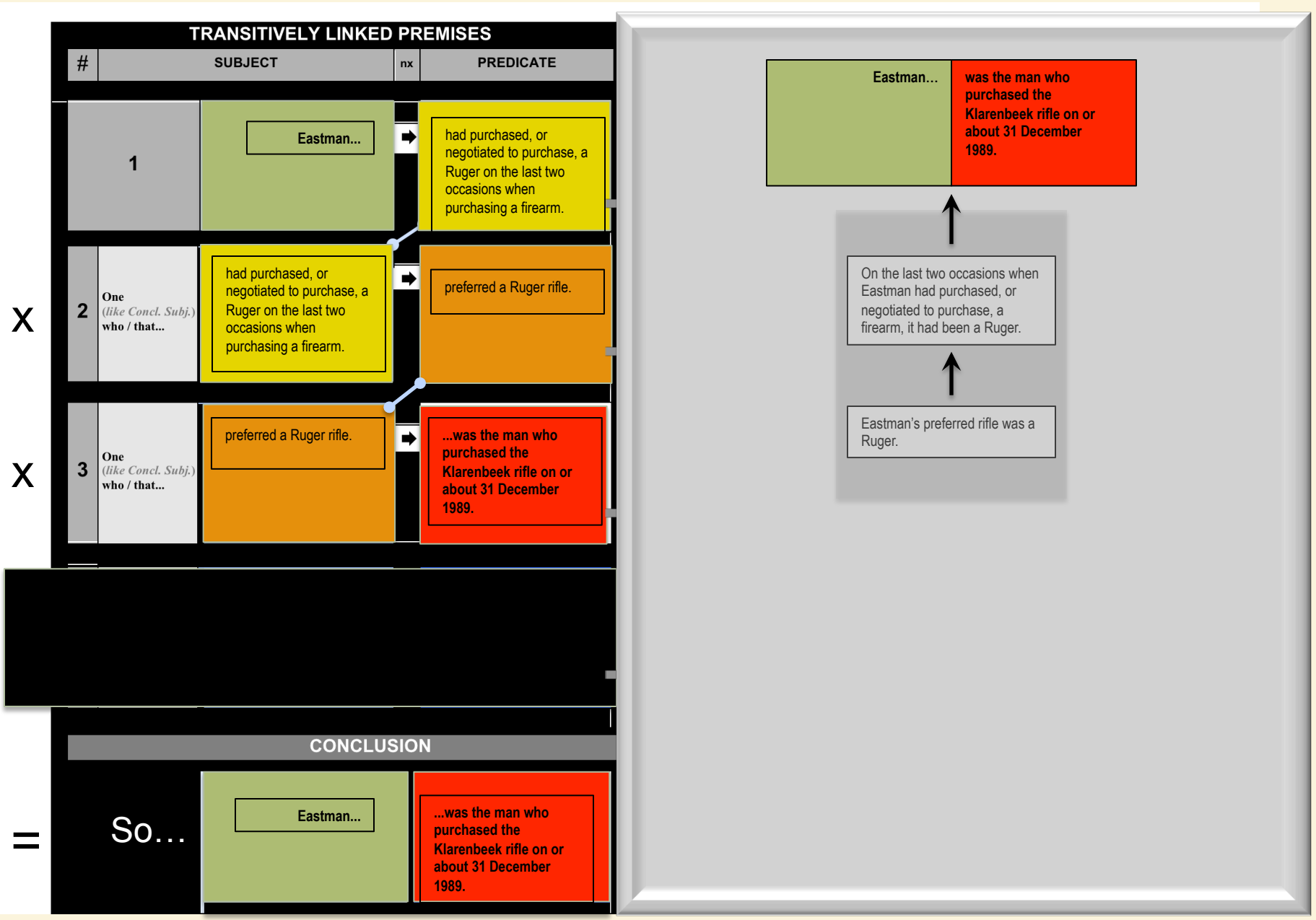

Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.
Eastman's preferred rifle was a Ruger.

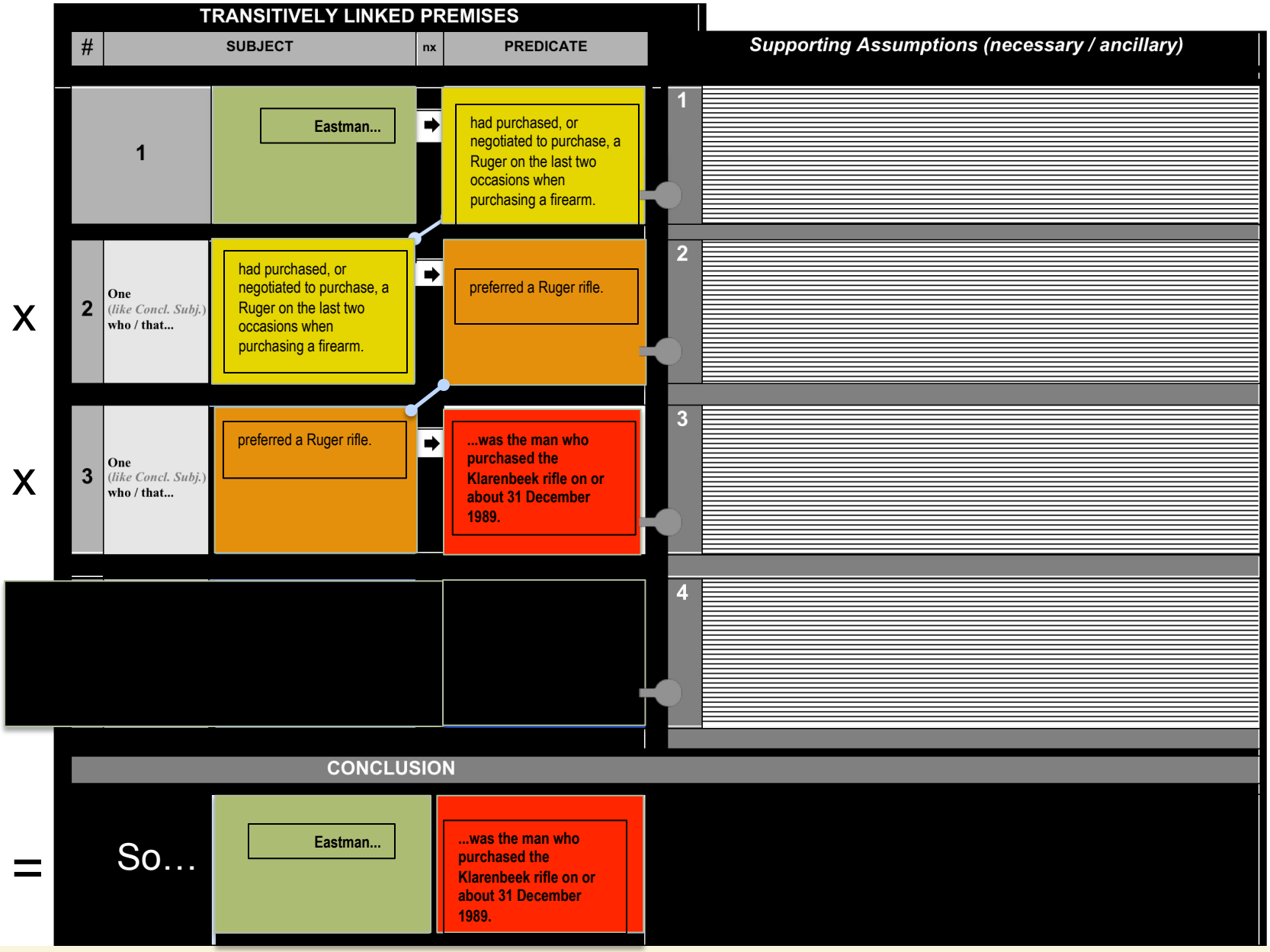

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
X
2
One (like Concl. Subj.) who / that...
preferred a Ruger rifle.
X
3
One (like Concl. Subj.) who / that...
X
4
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

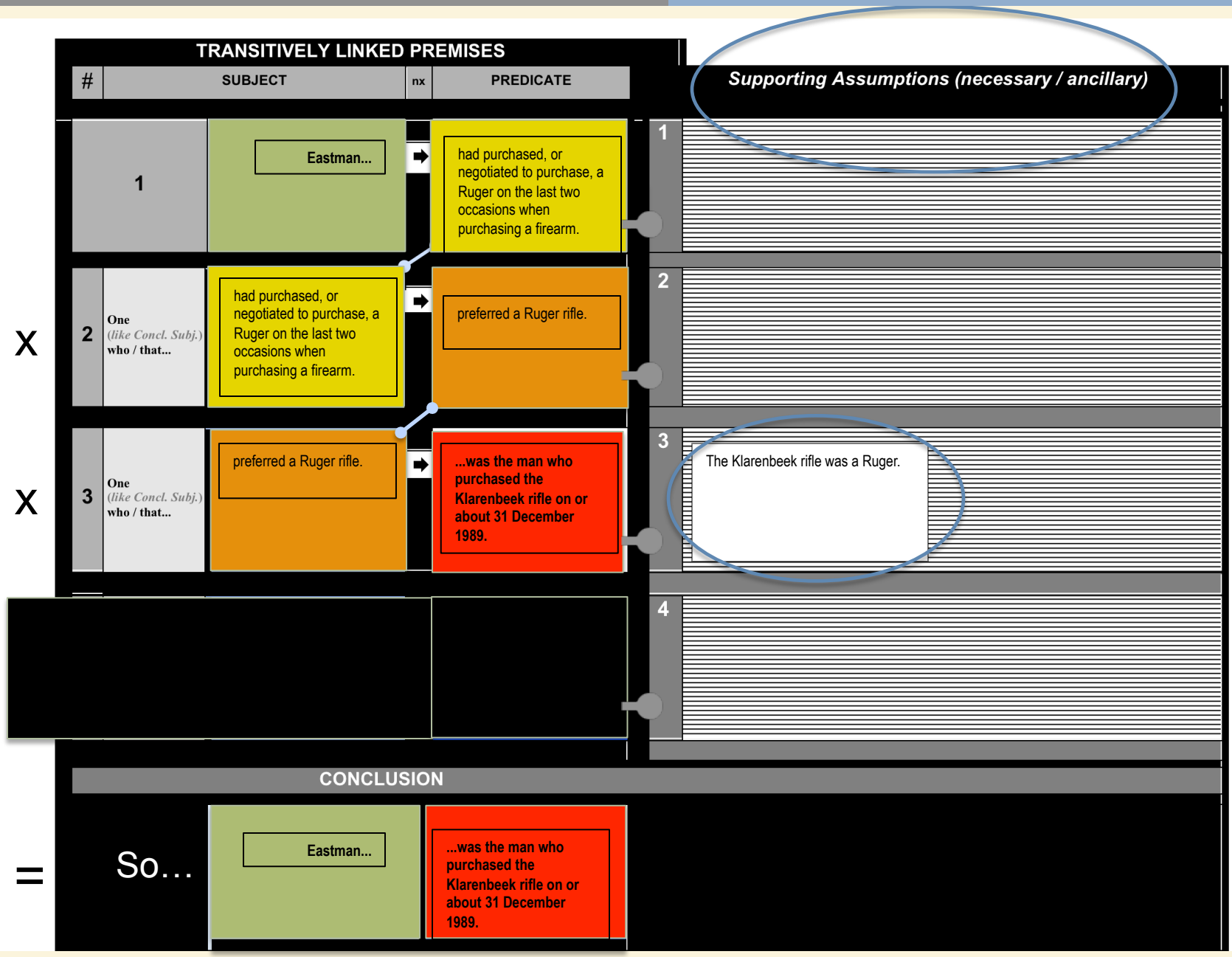

Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.
Eastman's preferred rifle was a Ruger.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
X
2
One (like Concl. Subj.) who / that...
preferred a Ruger rifle.
X
3
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
=
CONCLUSION
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.
Eastman's preferred rifle was a Ruger.

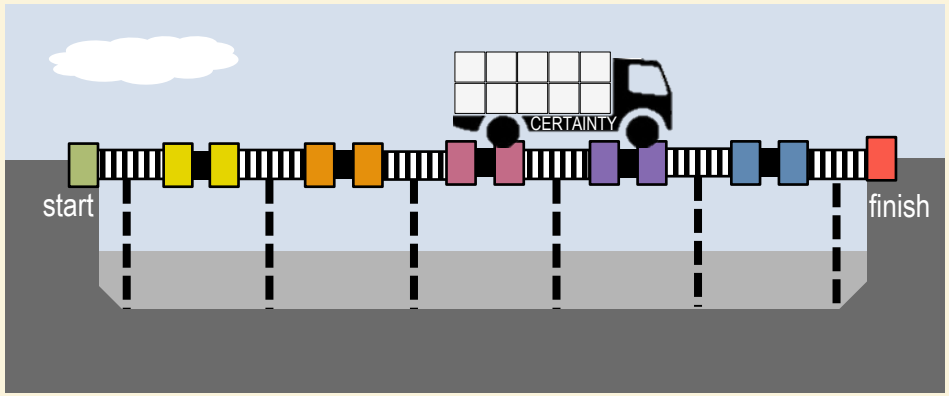

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
X
2
One (like Concl. Subj.) who / that...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
preferred a Ruger rifle.
X
3
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.
Eastman's preferred rifle was a Ruger.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
X
2
One (like Concl. Subj.) who / that...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
preferred a Ruger rifle.
X
3
One (like Concl. Subj.) who / that...
preferred a Ruger rifle.
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
On the last two occasions when Eastman had purchased, or negotiated to purchase, a firearm, it had been a Ruger.
Eastman's preferred rifle was a Ruger.

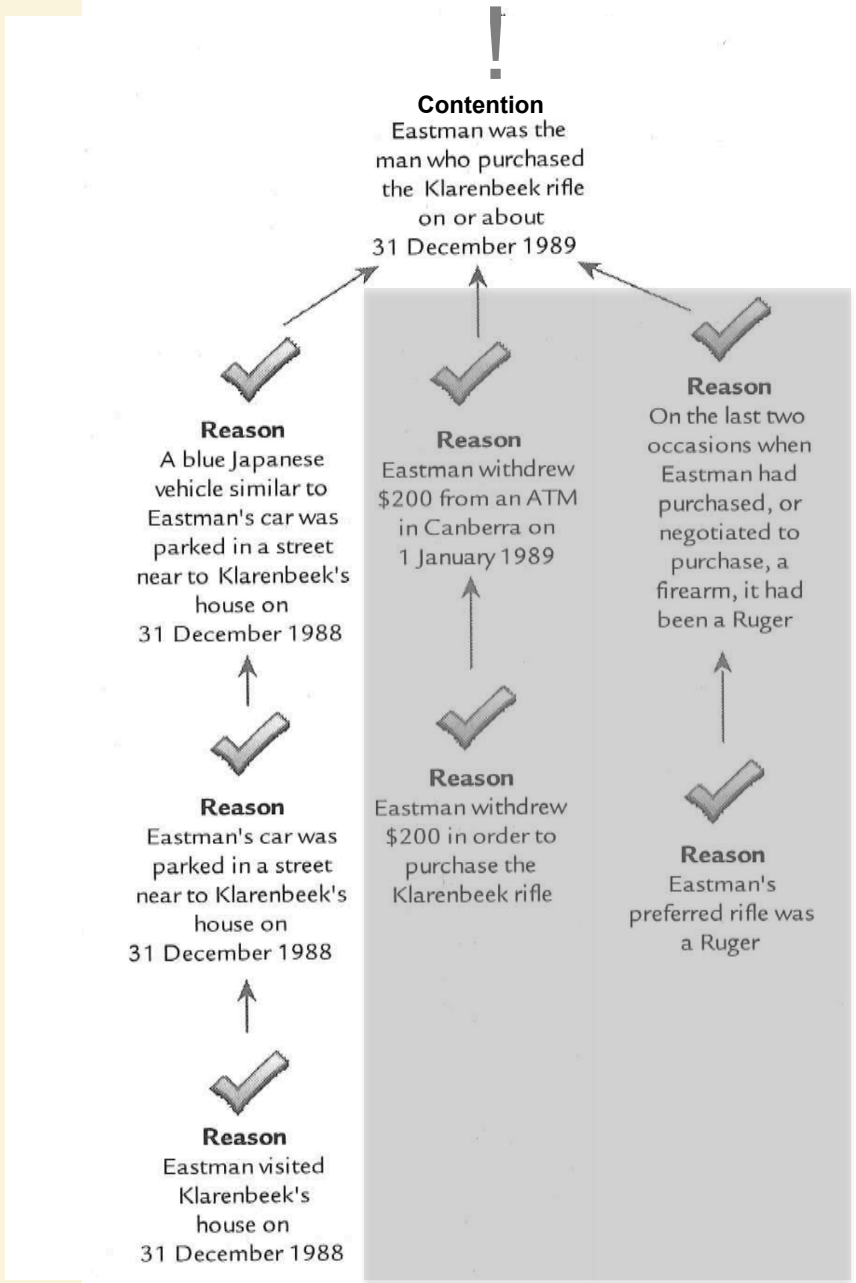

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
Supporting Assumptions (necessary / ancillary)
1
Eastman...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
1
X
2
One (like Concl. Subj.) who / that...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
preferred a Ruger rifle.
2
X
3
One (like Concl. Subj.) who / that...
preferred a Ruger rifle.
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
3
4
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

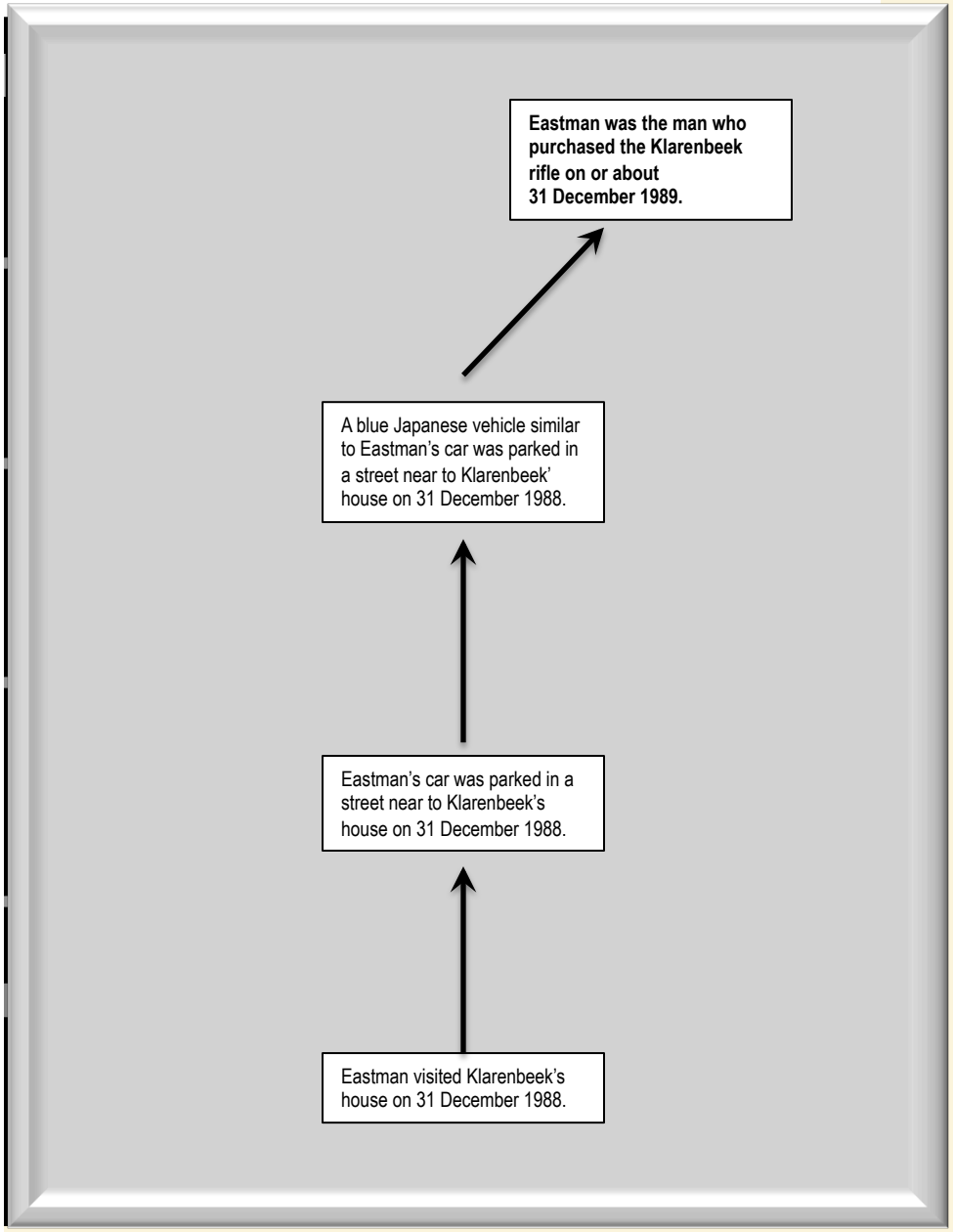

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
Supporting Assumptions (necessary / ancillary)
1
Eastman...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
X
2
One (like Concl. Subj.) who / that...
had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
preferred a Ruger rifle.
X
3
One (like Concl. Subj.) who / that...
preferred a Ruger rifle.
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The Klarenbeek rifle was a Ruger.
4
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

Structural Errors 2

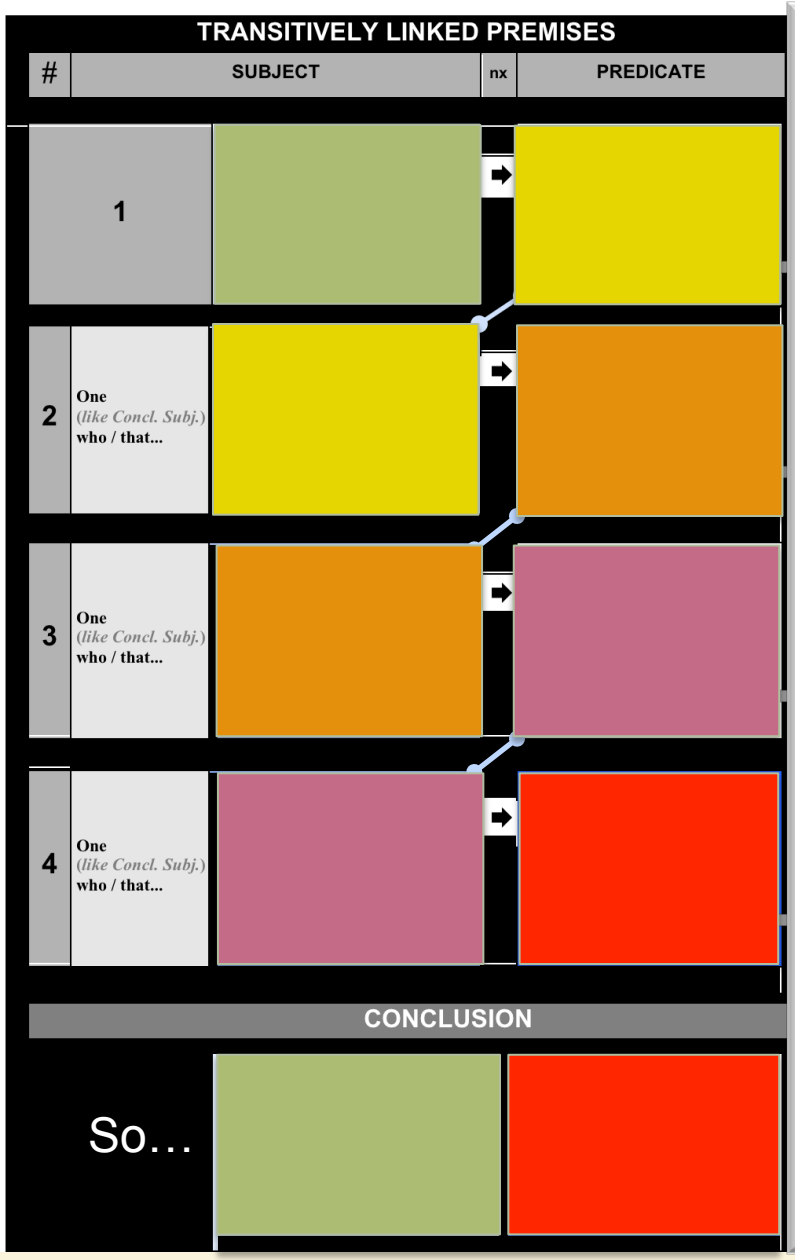


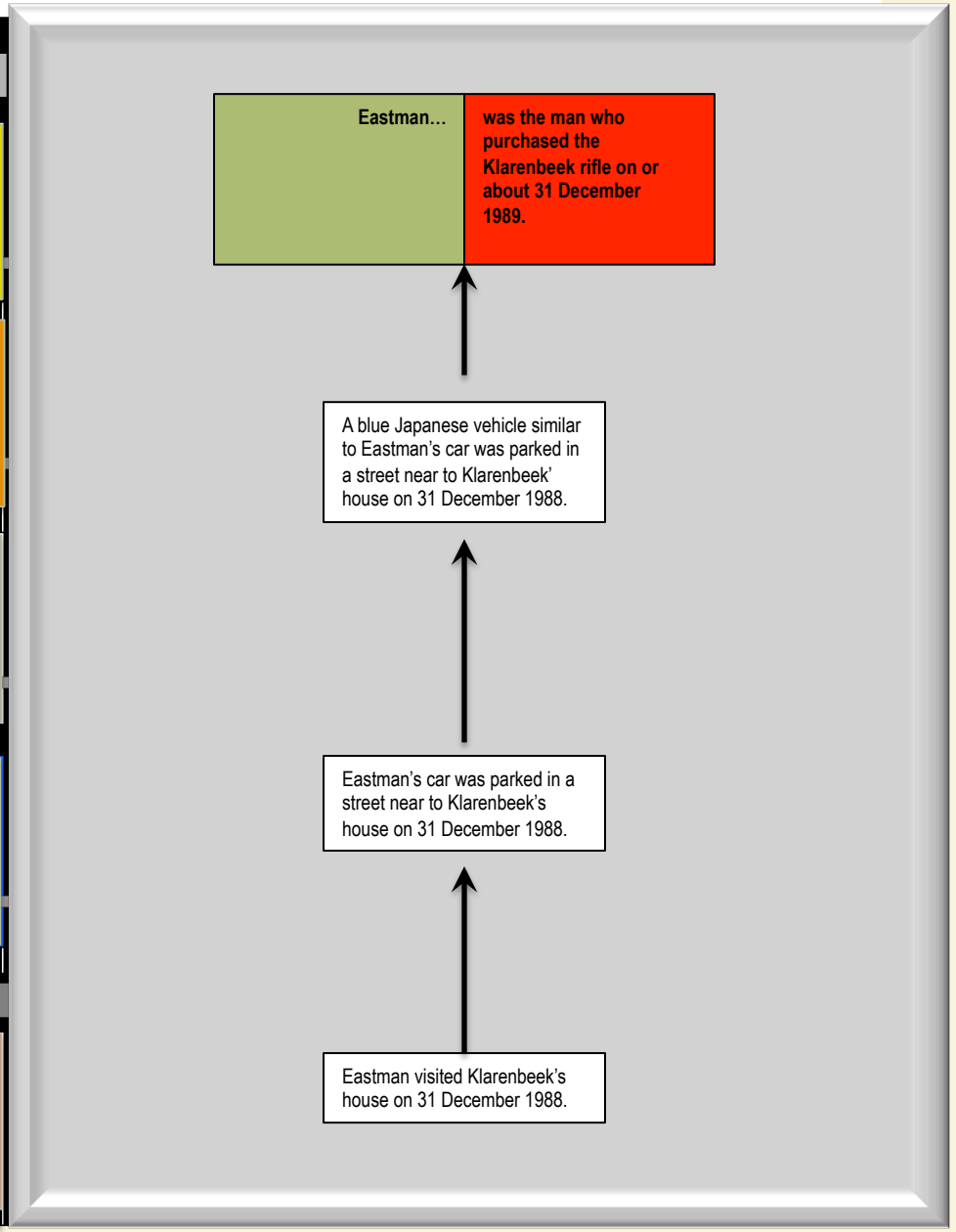
*Andrew Palmer, *Proof: How to Analyse Evidence in Preparation for Trial* (Law Book Company, 2nd ed 2010)





CORRECTING STRUCTURAL ERRORS*


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
2
One
(like Concl. Subj.)
who / that...
3
One
(like Concl. Subj.)
who / that...
4
One
(like Concl. Subj.)
who / that...
X
X
X
=
CONCLUSION
So…


Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
A blue Japanese vehicle similar to Eastman's car was parked in a street near to Klarenbeek' house on 31 December 1988.
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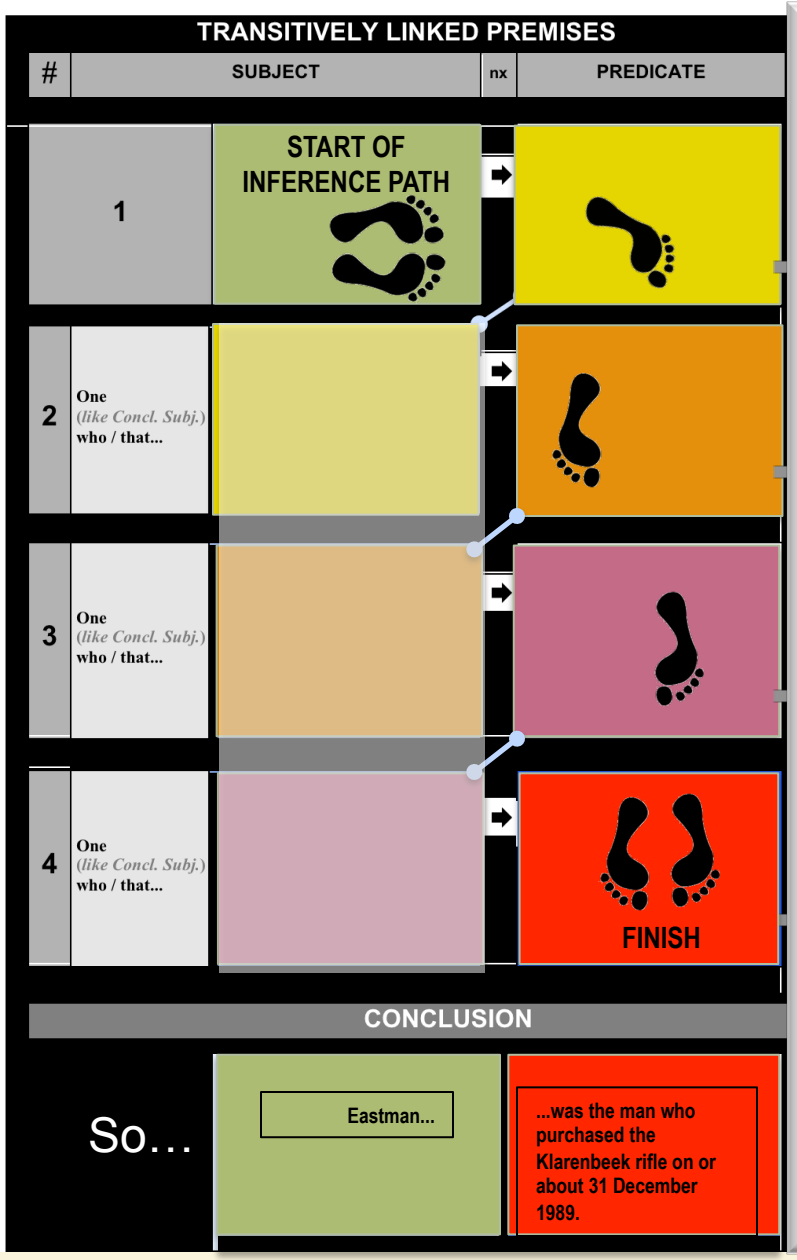
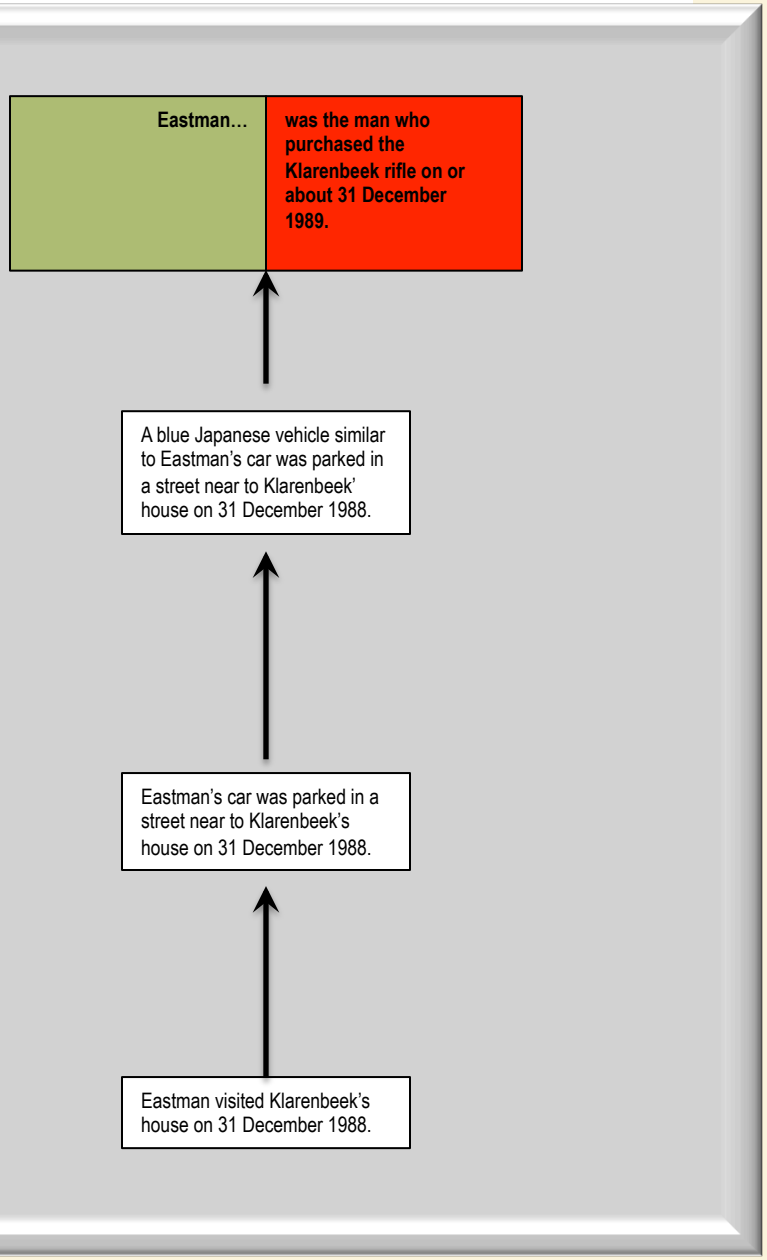

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
START OF INFERENCE PATH
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
FINISH
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.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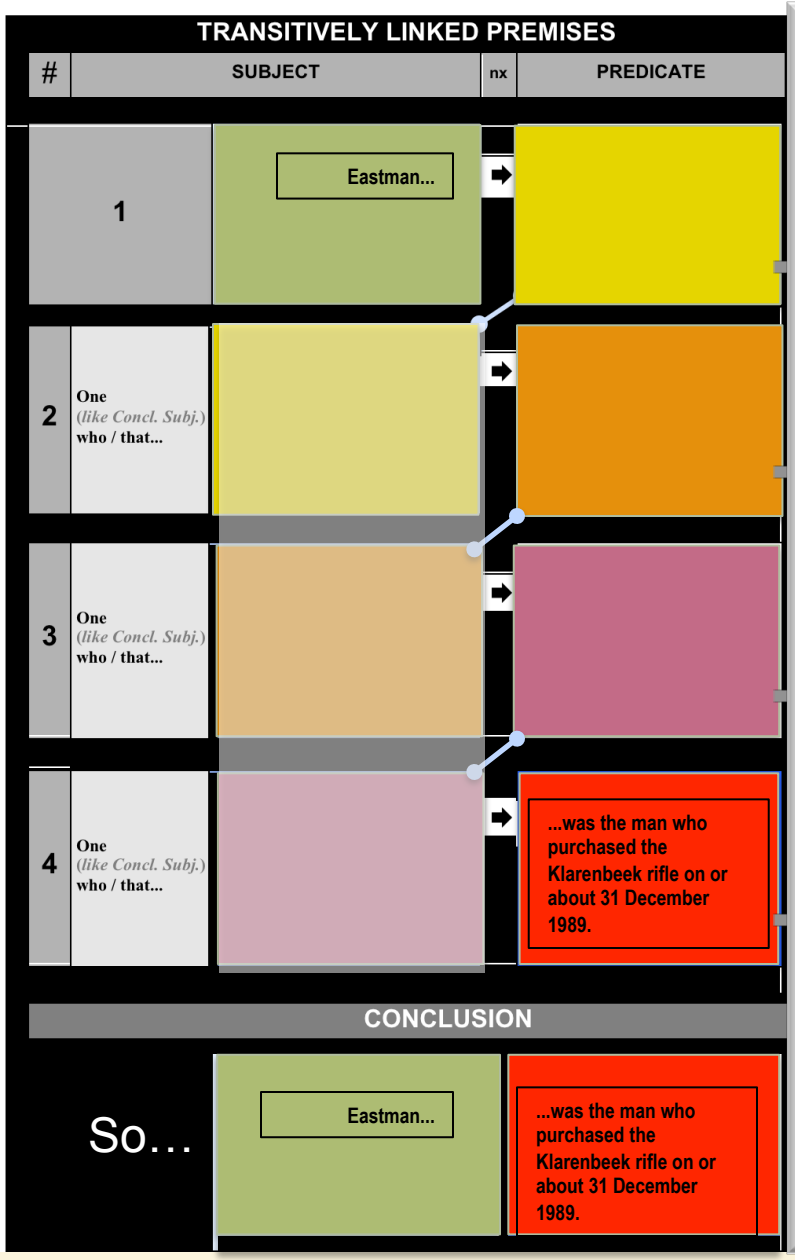
TRANSITIVELY LINKED PREMISES
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SUBJECT
nx
PREDICATE
1
Eastman...
X
2
One
(like Concl. Subj.)
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who / that...
X
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who / that...
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CONCLUSION
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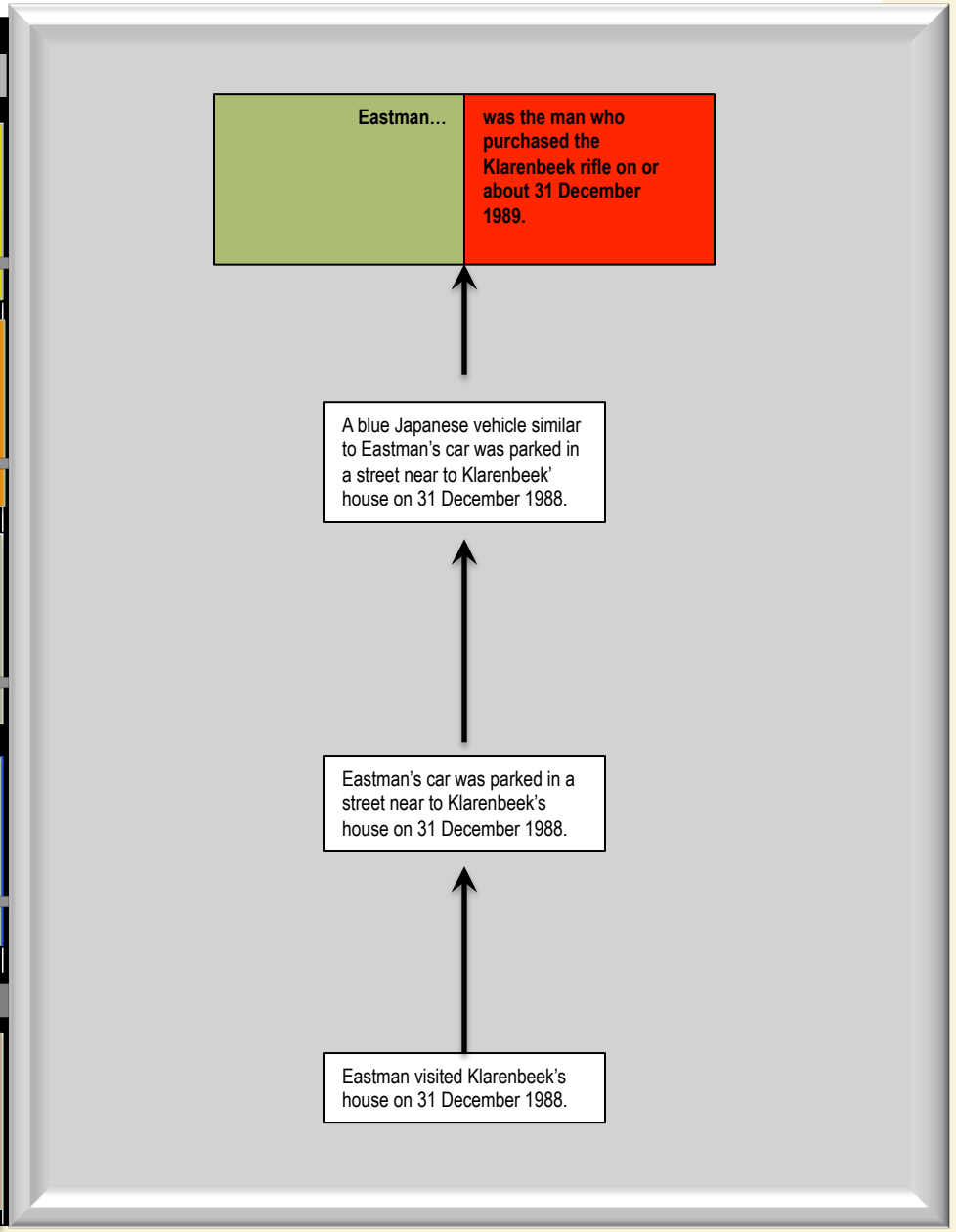
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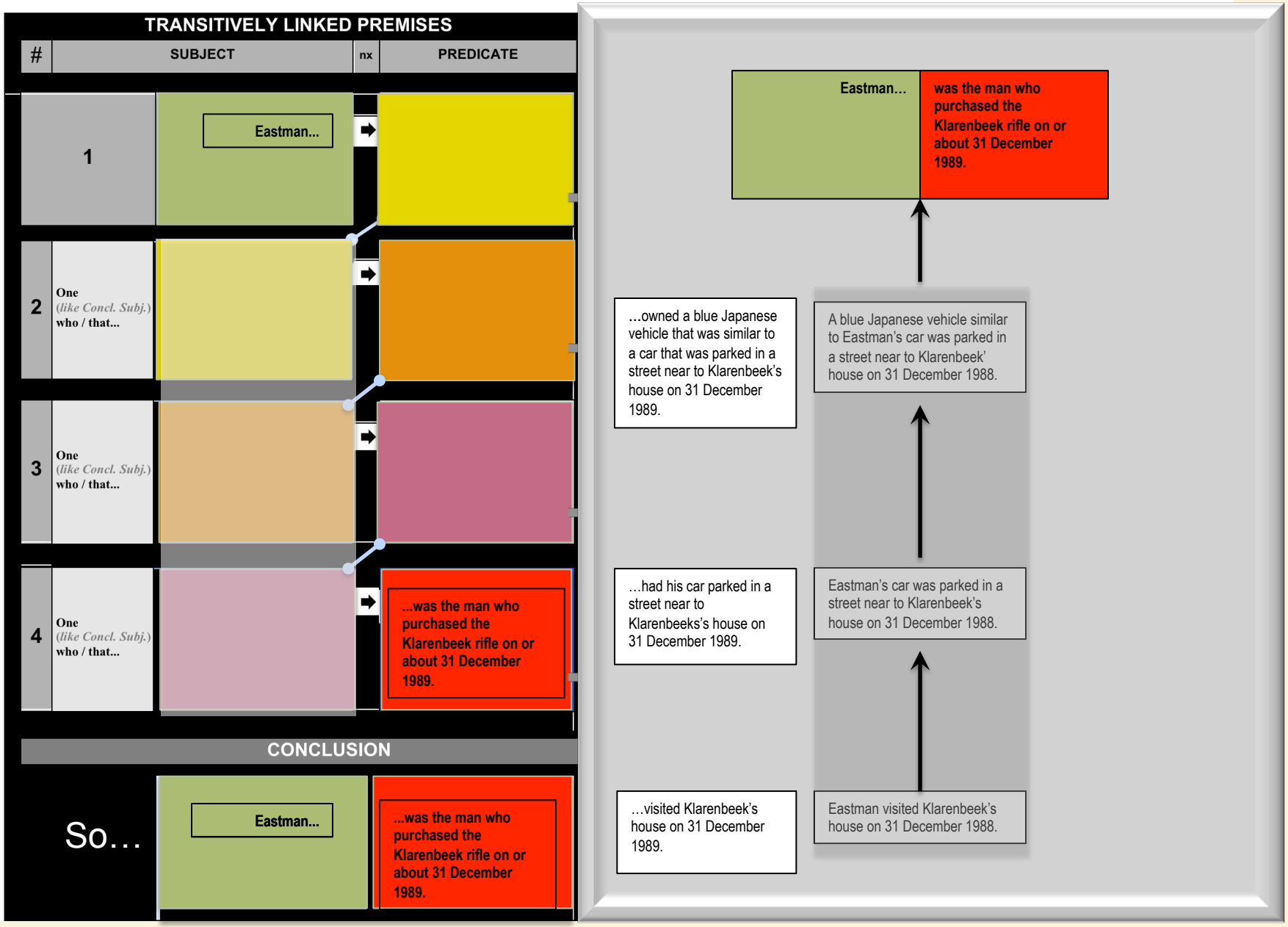
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Eastman…
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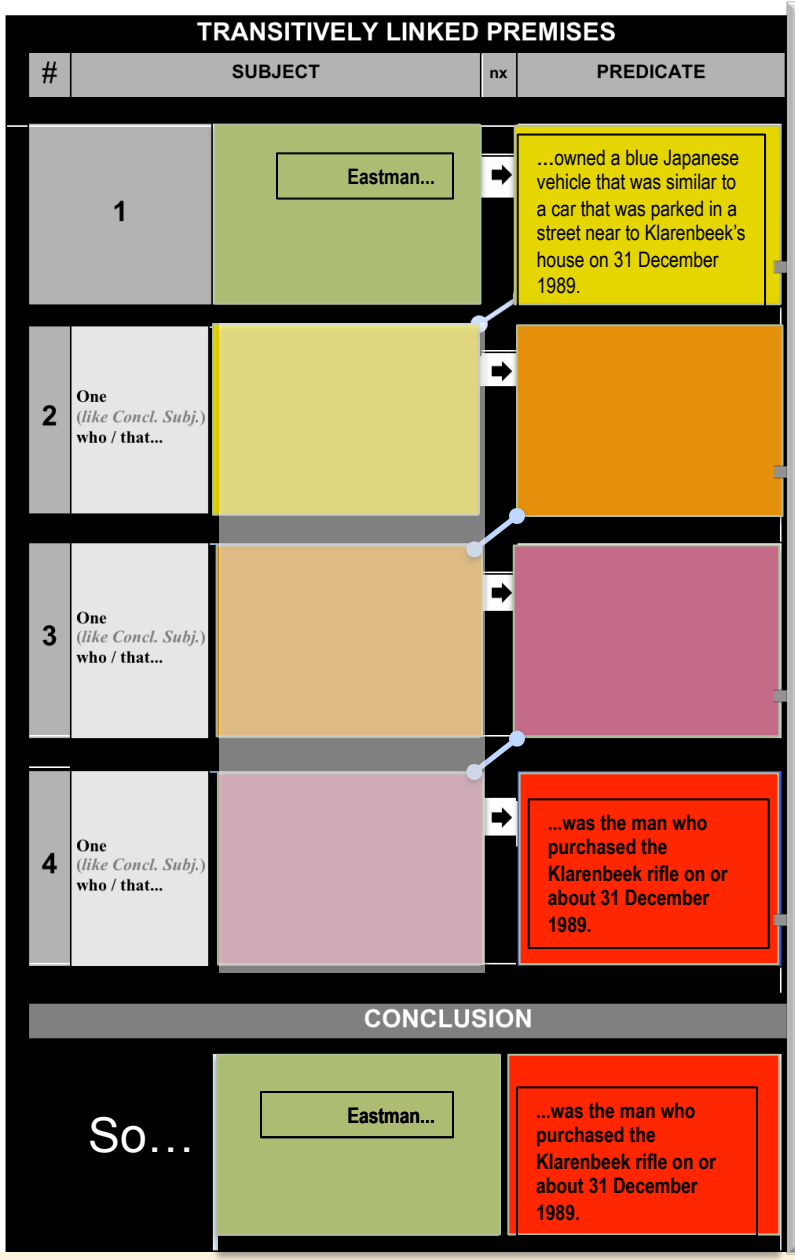
TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
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Eastman...
...owned a blue Japanese vehicle that was similar to a car that was parked in a street near to Klarenbeek's house on 31 December 1989.
X
2
One (like Concl. Subj.) who / that...
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X
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One (like Concl. Subj.) who / that...
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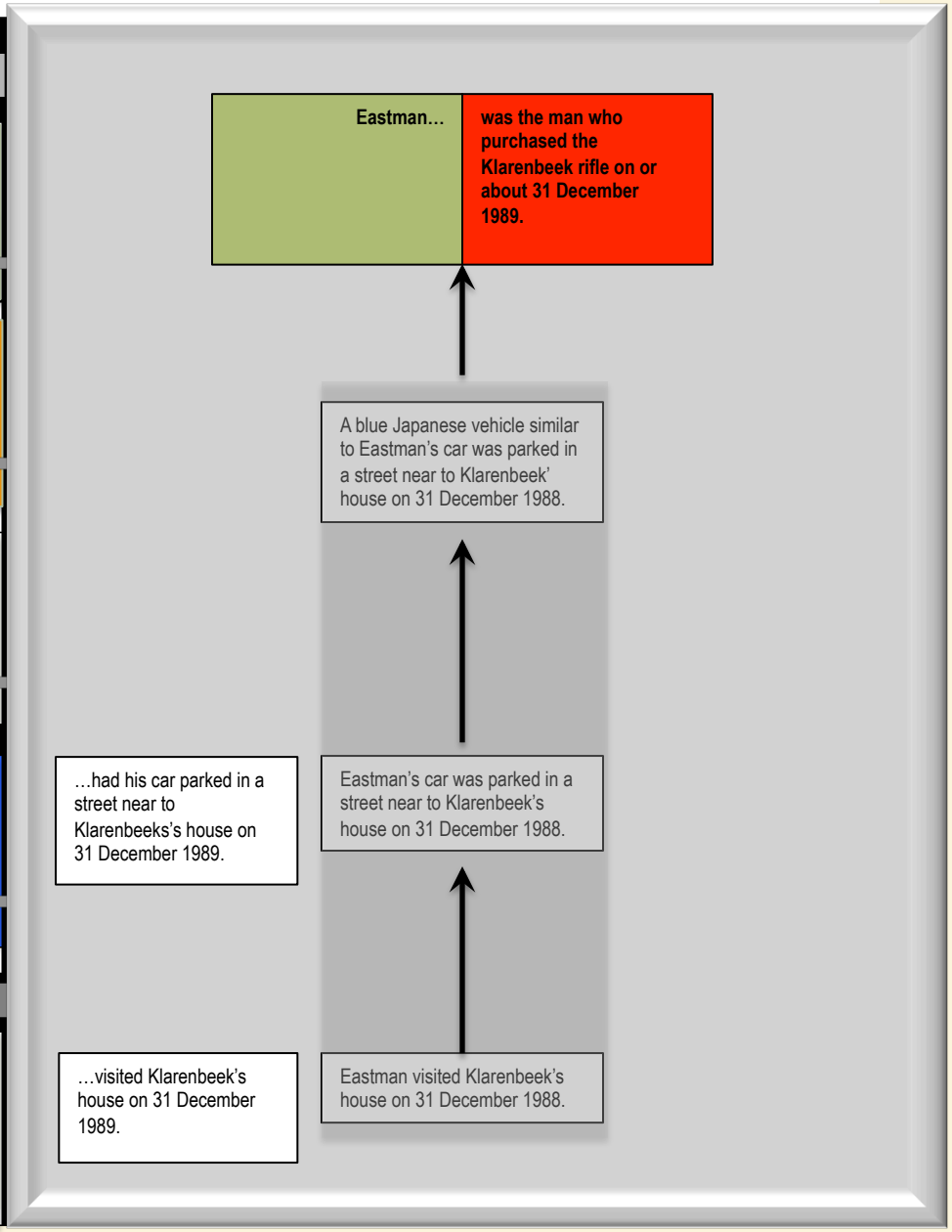
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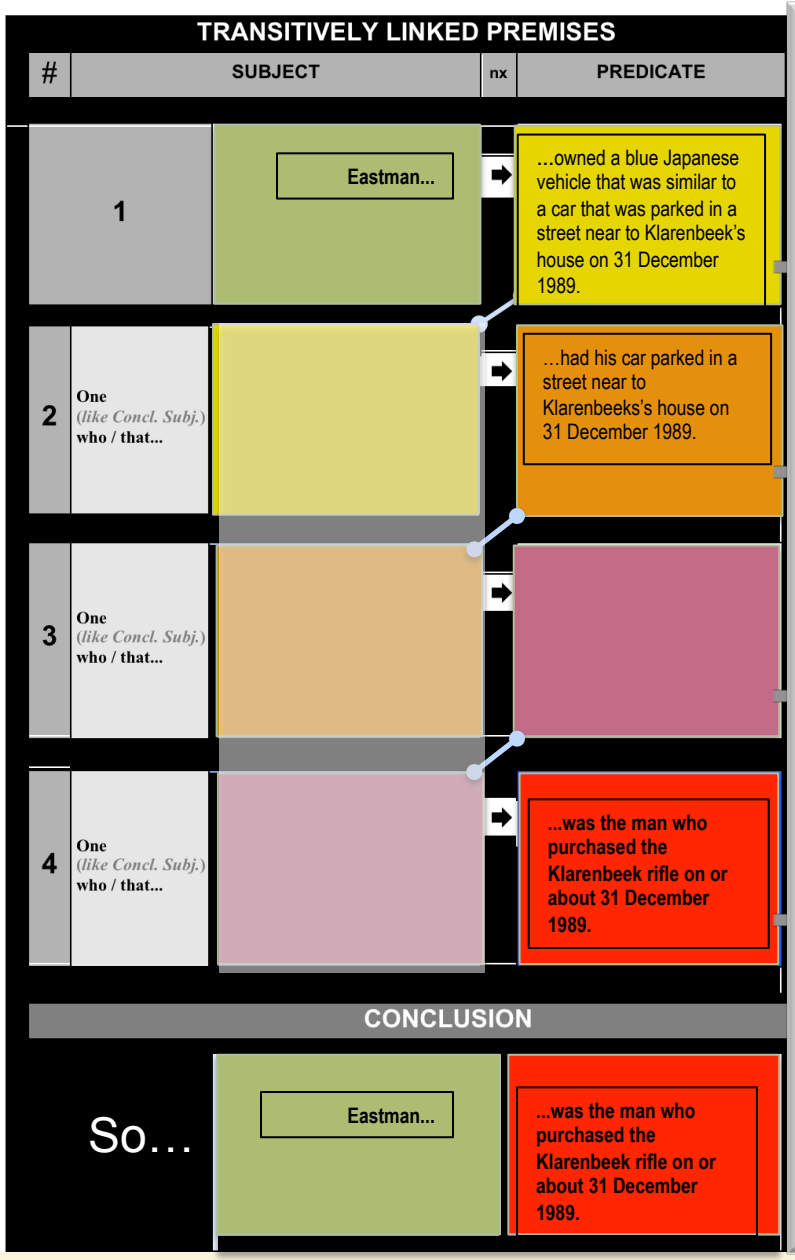
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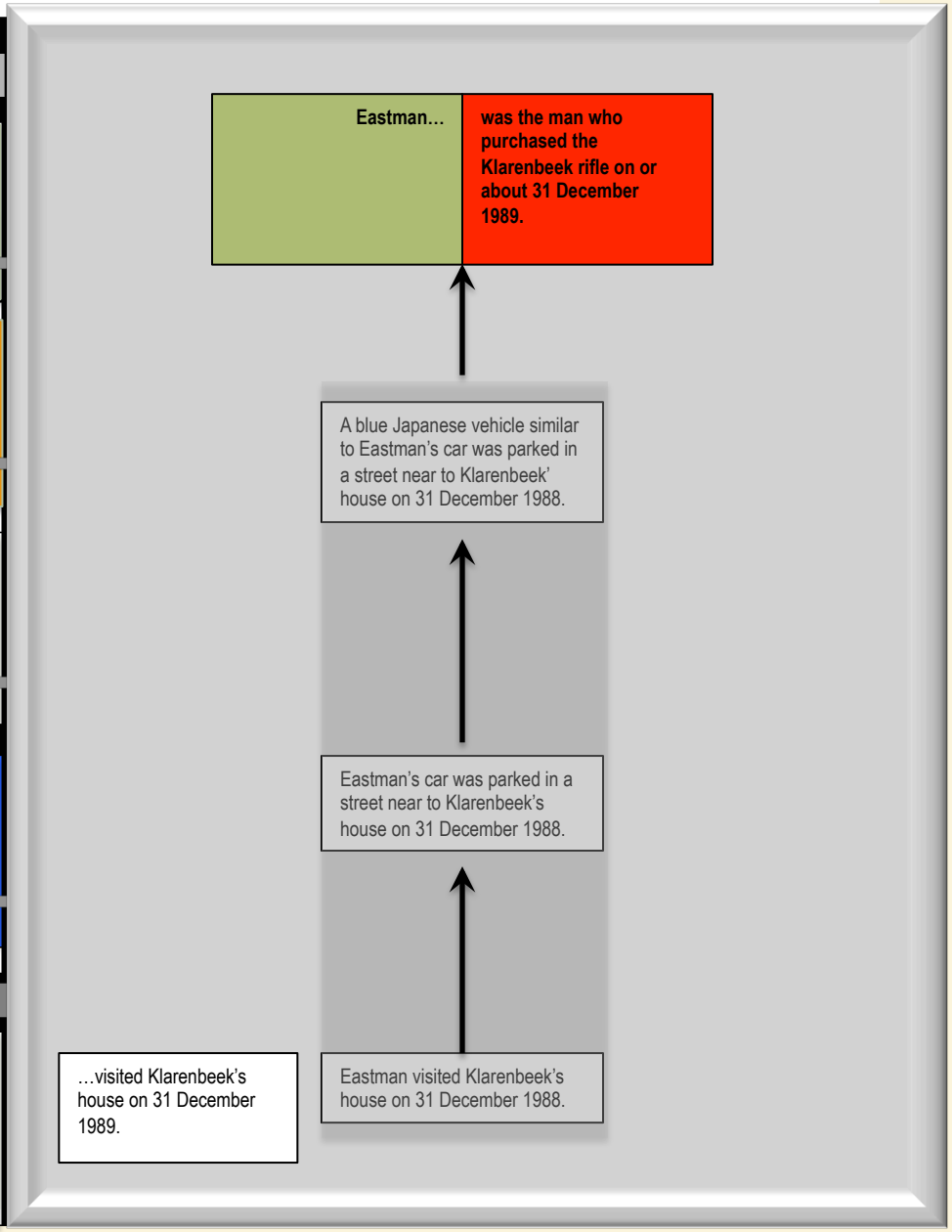
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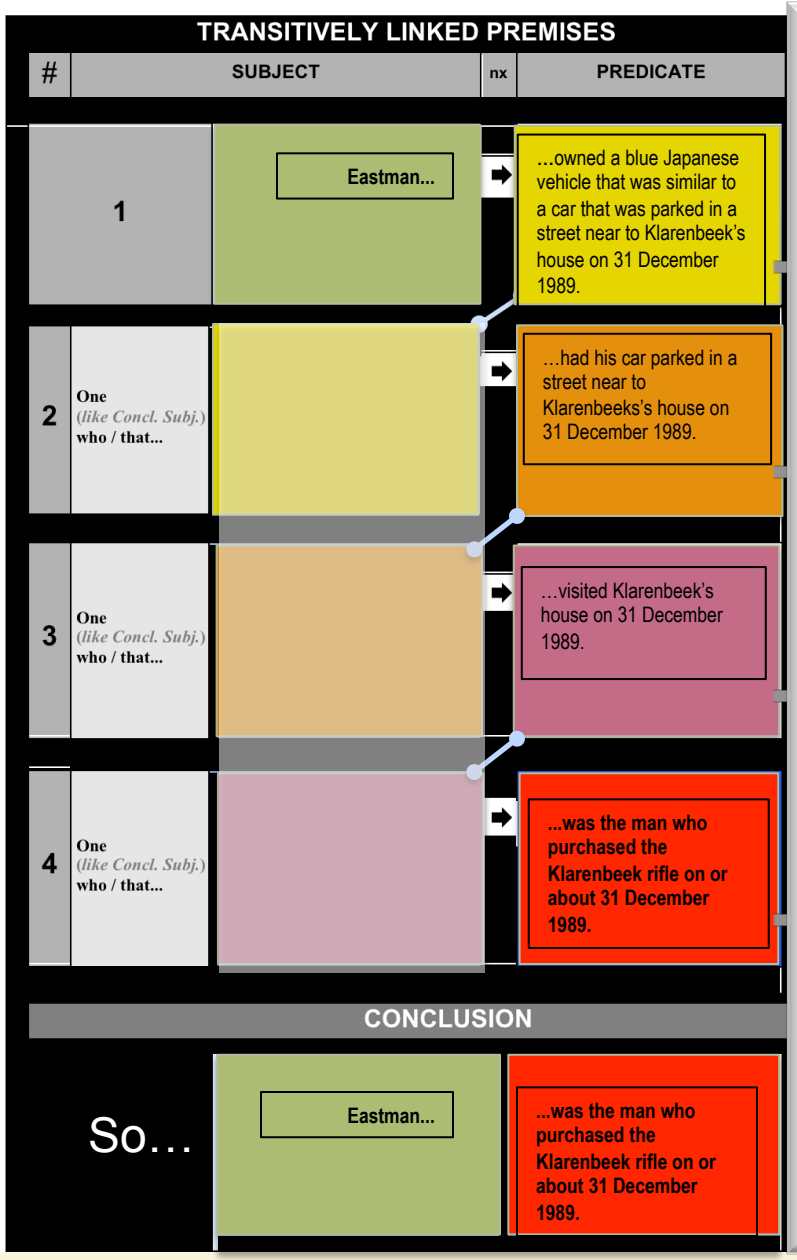
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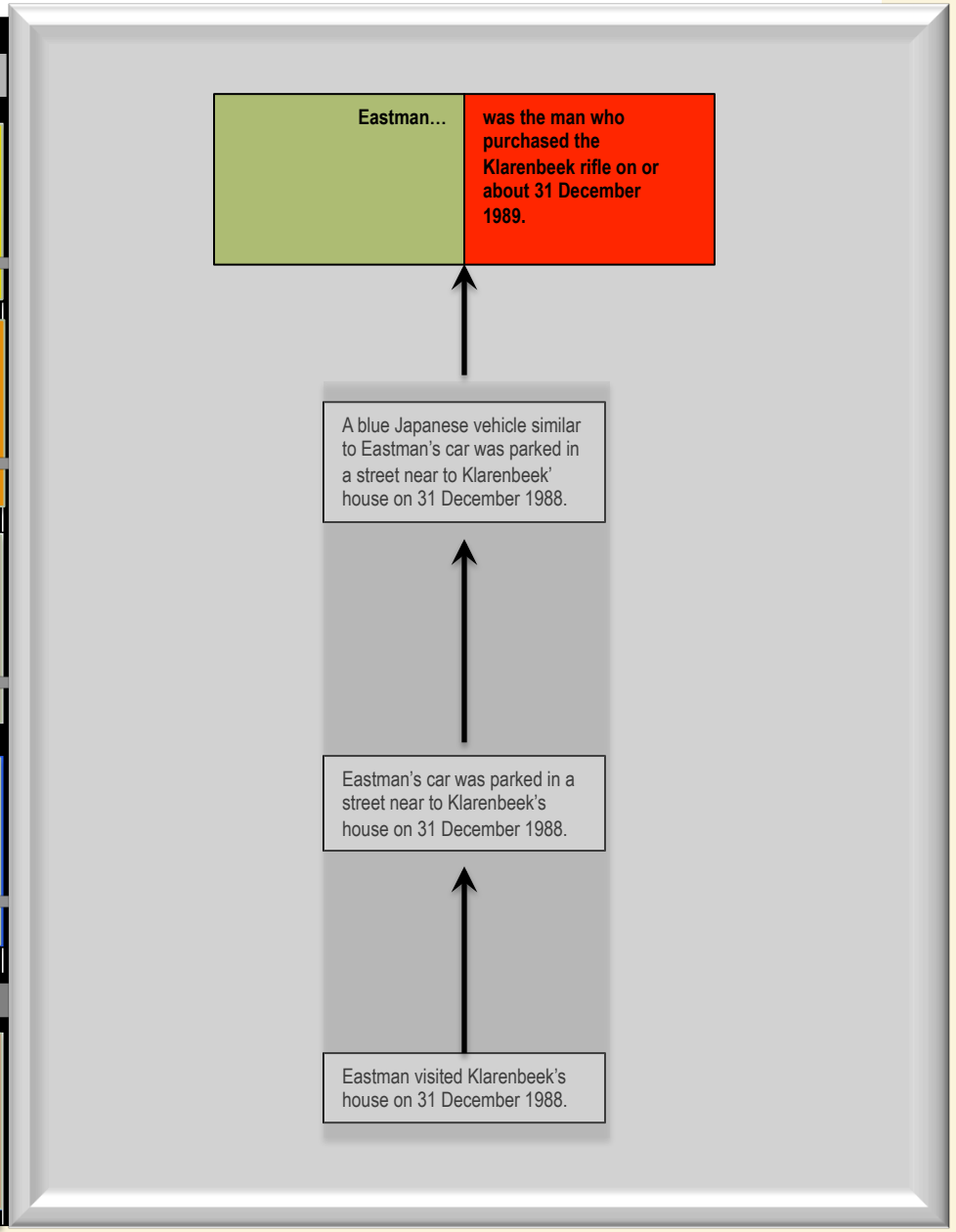
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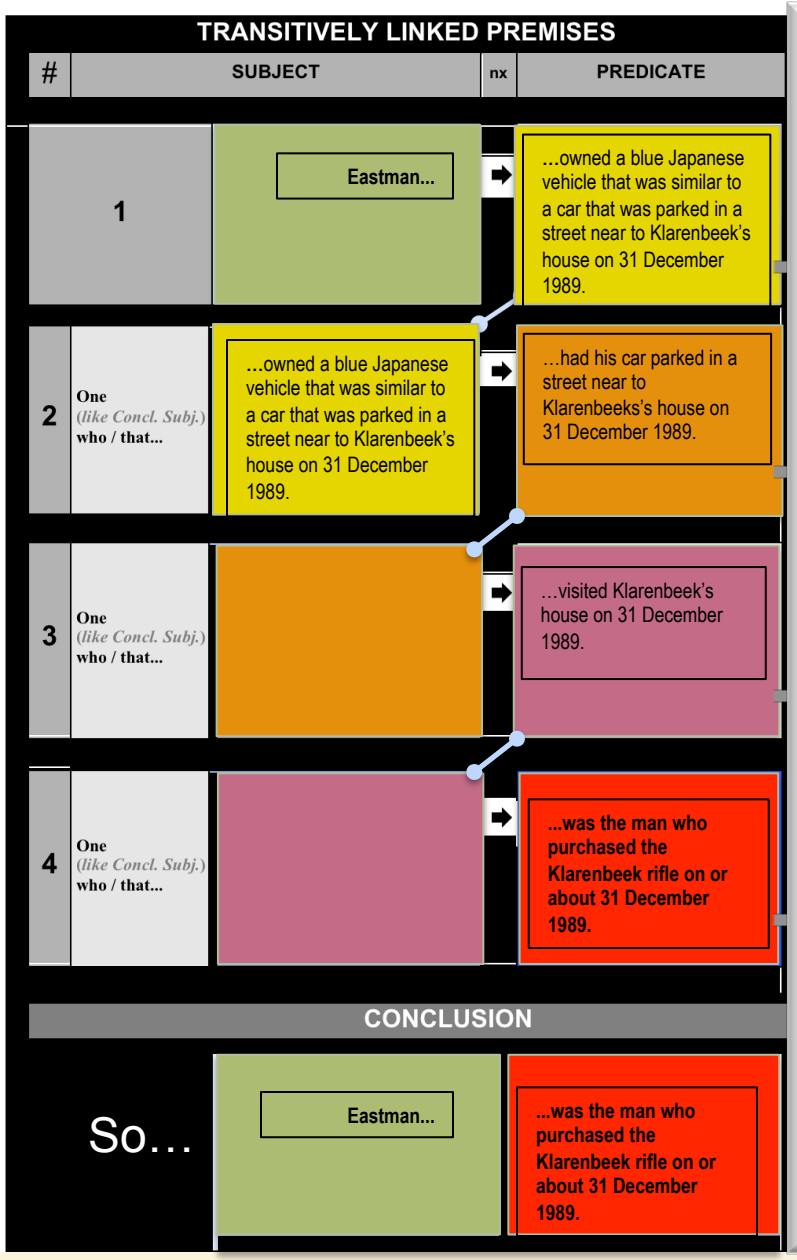
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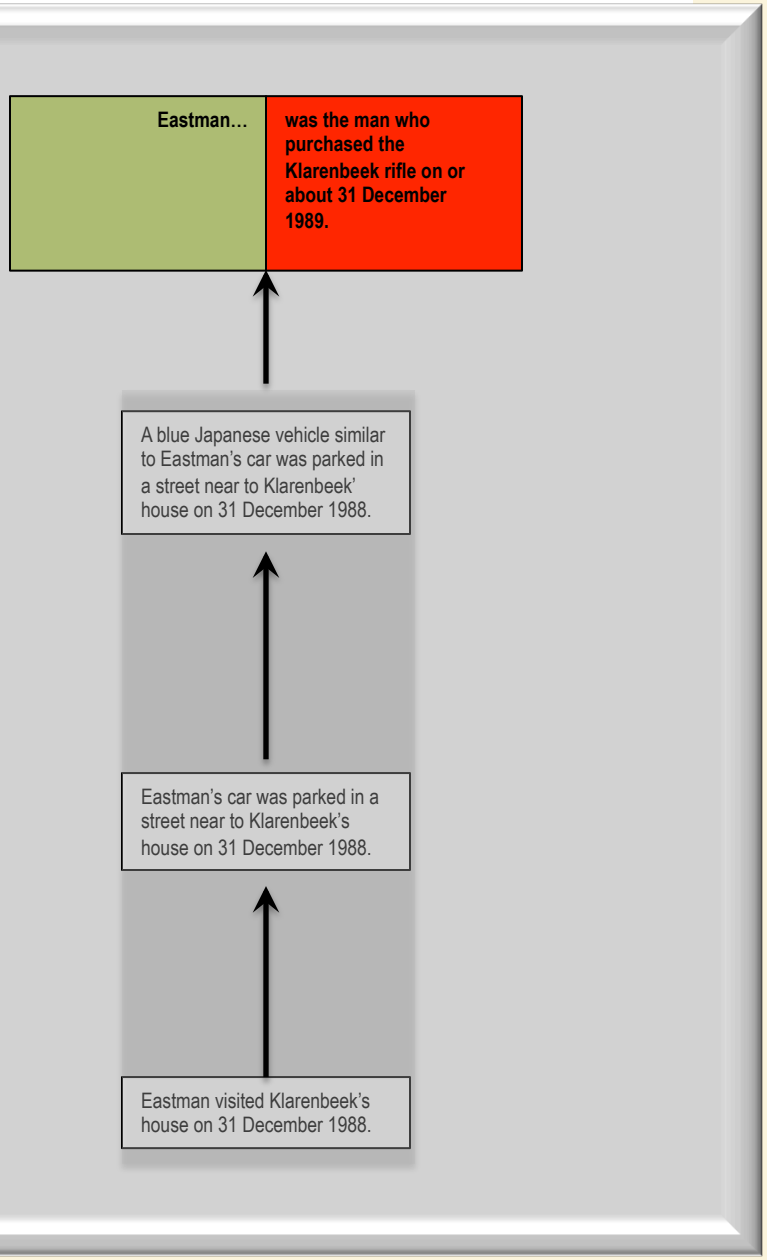
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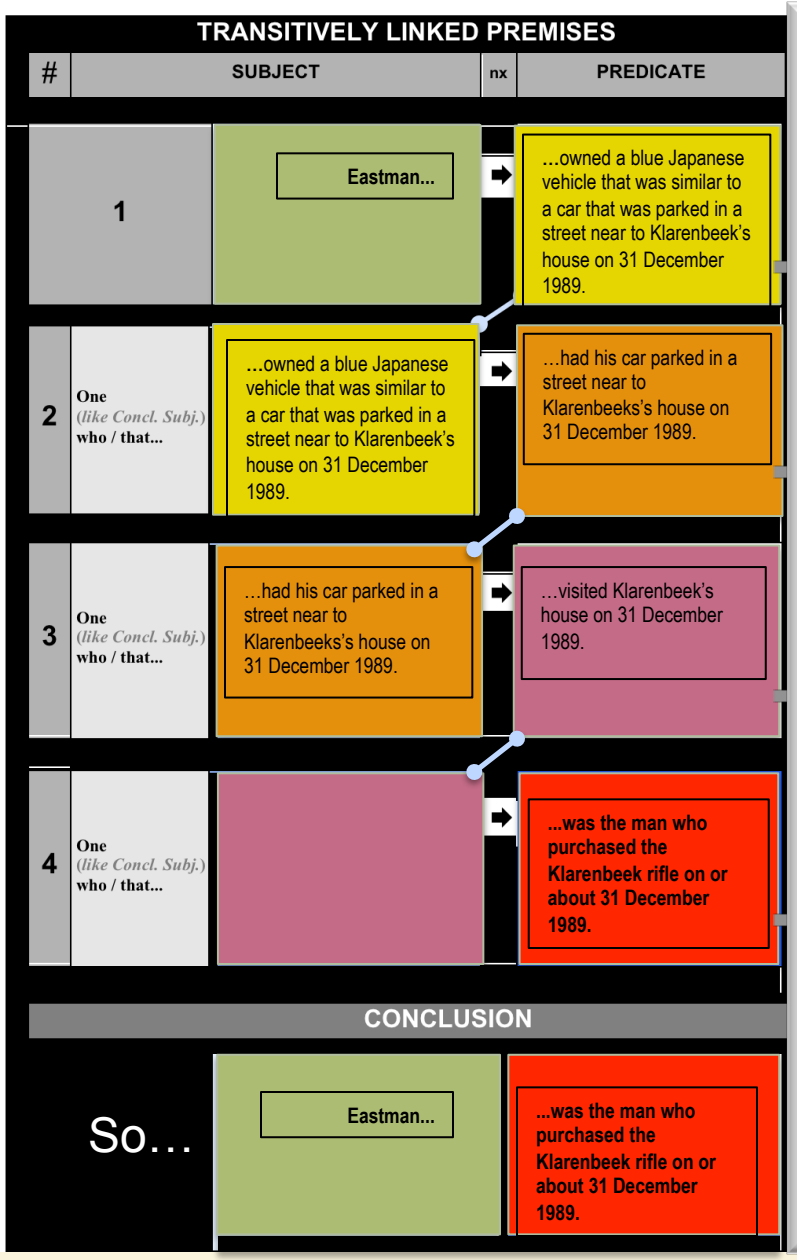
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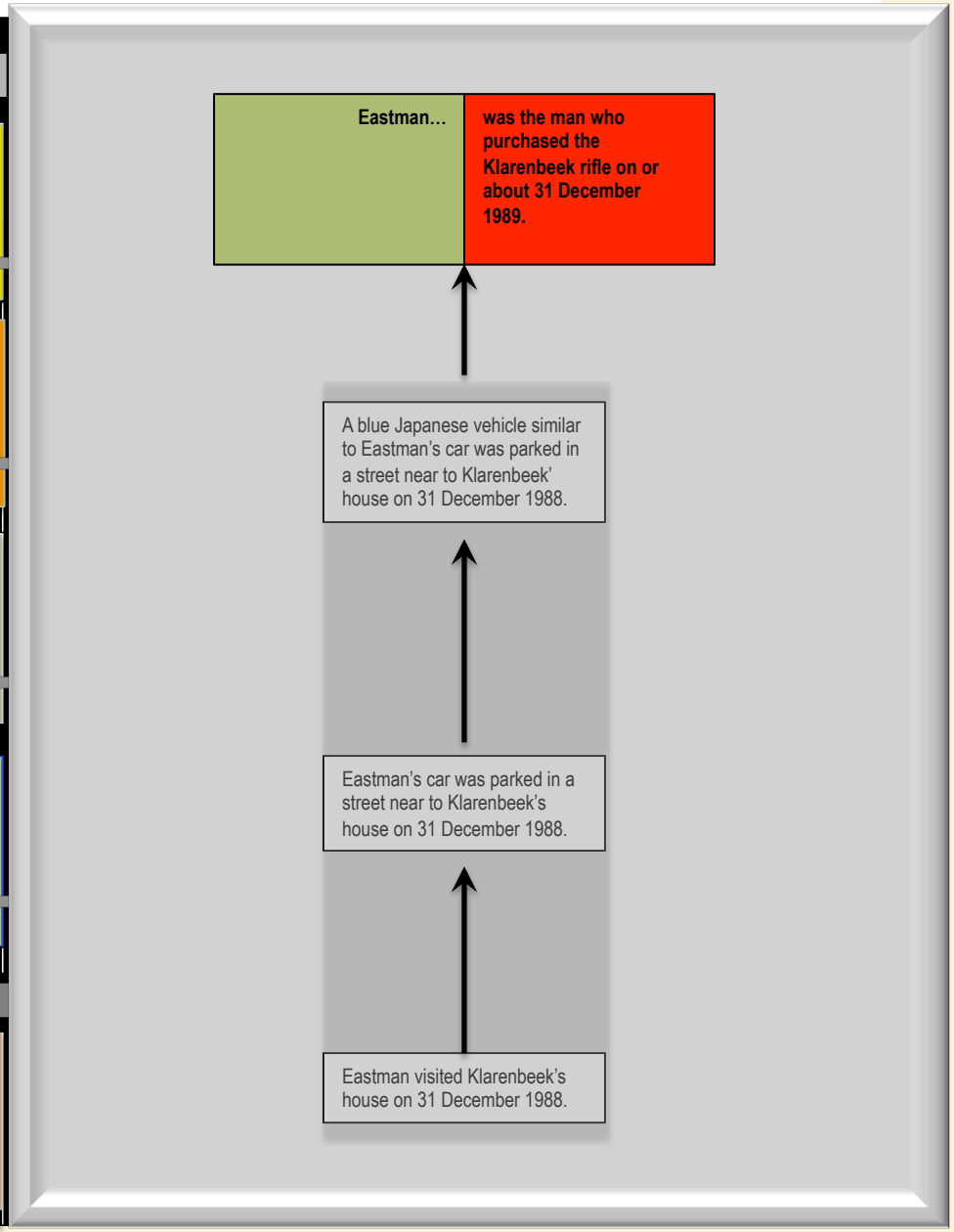
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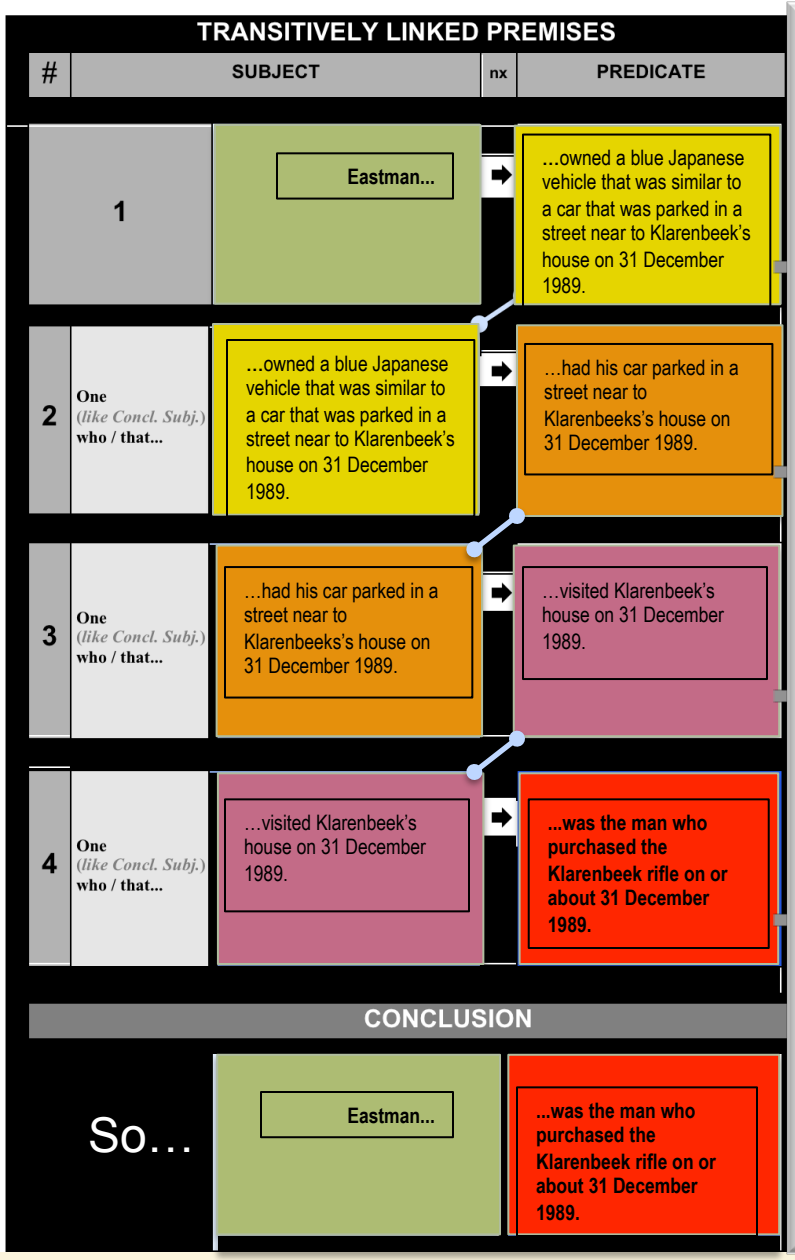
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SUBJECT
nx
PREDICATE
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Eastman...
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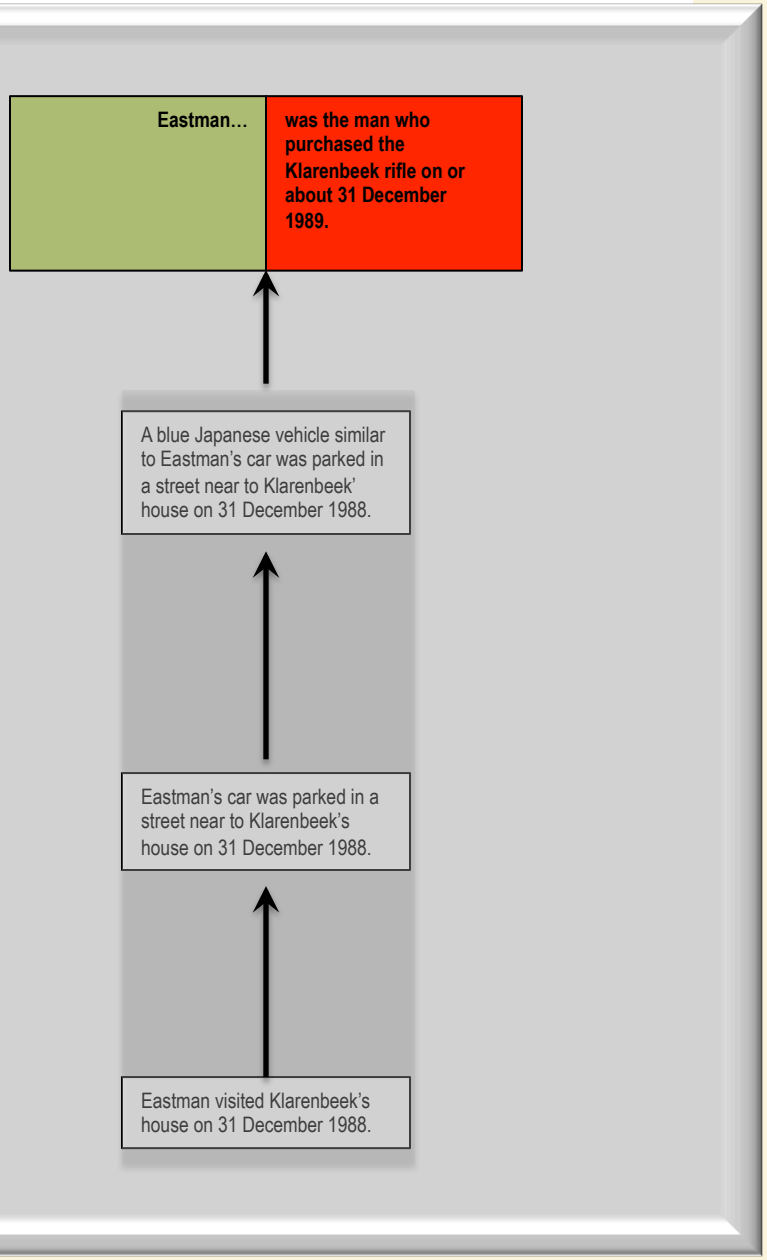
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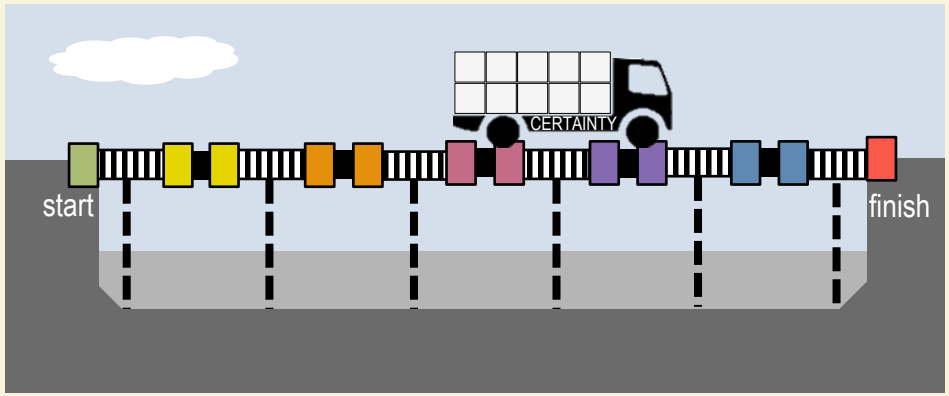
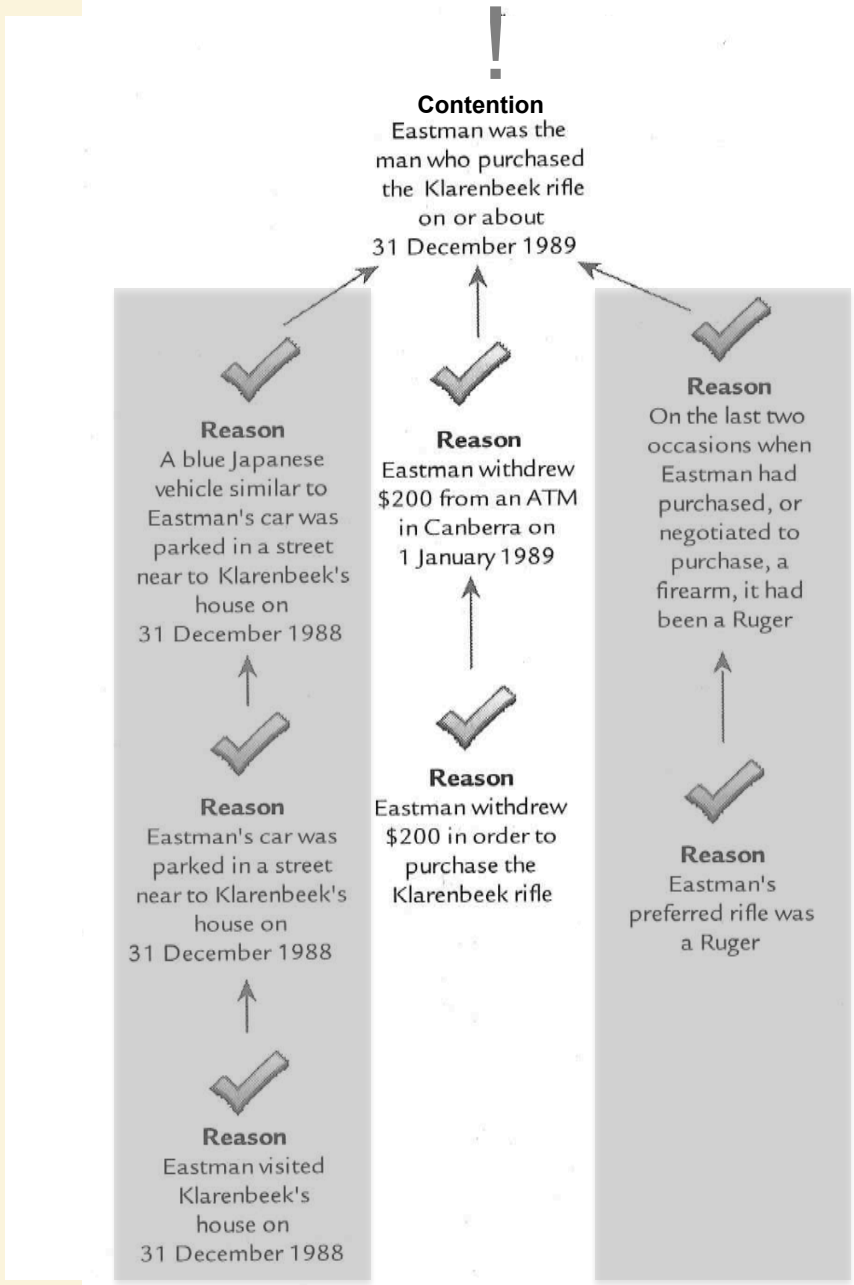
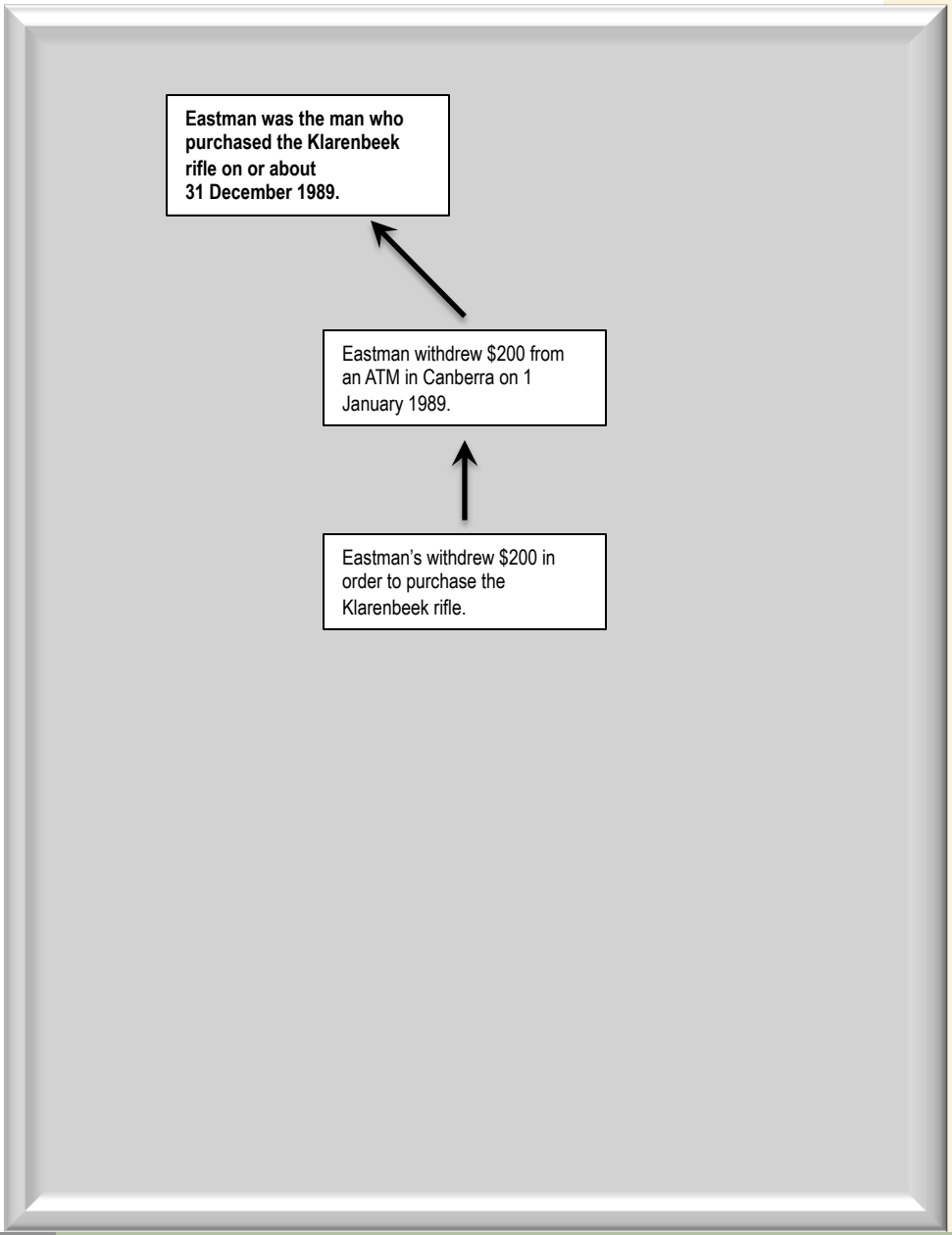
Structural Errors 3

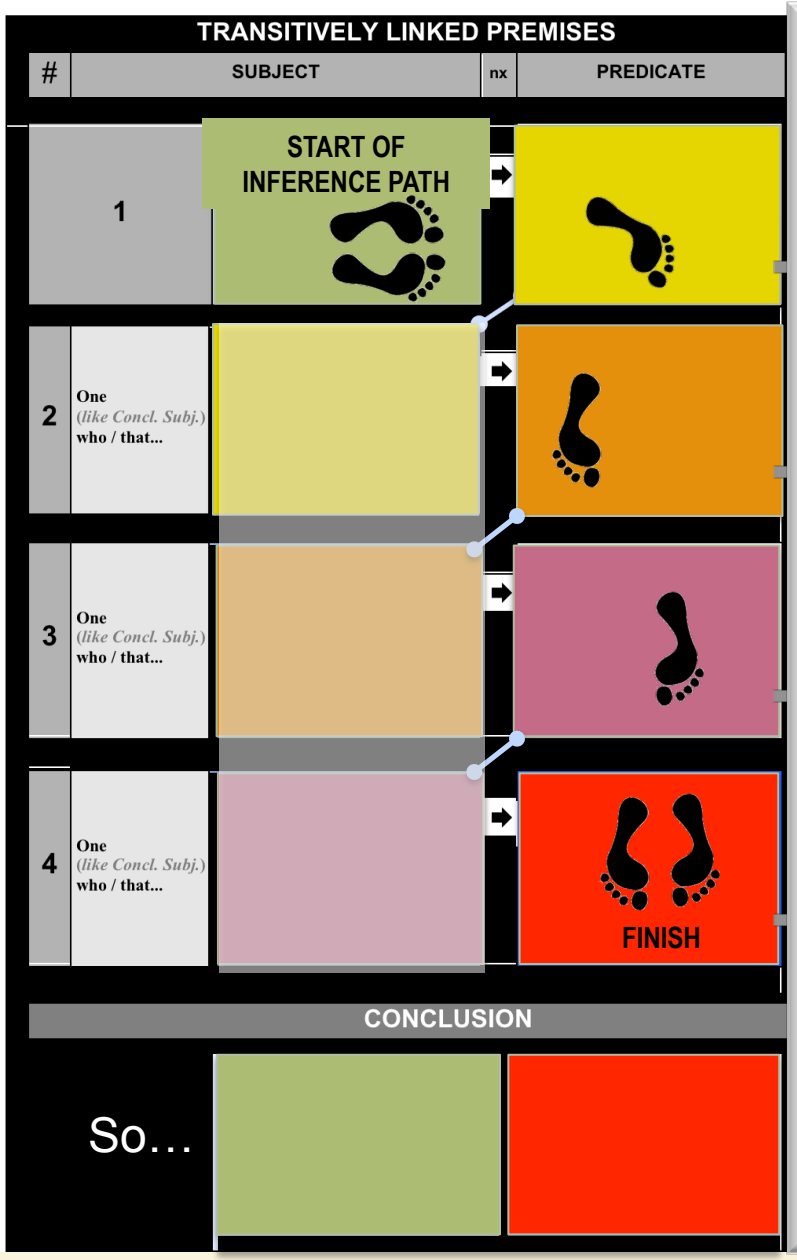


*Andrew Palmer, *Proof: How to Analyse Evidence in Preparation for Trial* (Law Book Company, 2nd ed 2010)





CORRECTING STRUCTURAL ERRORS*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1
X
2
One
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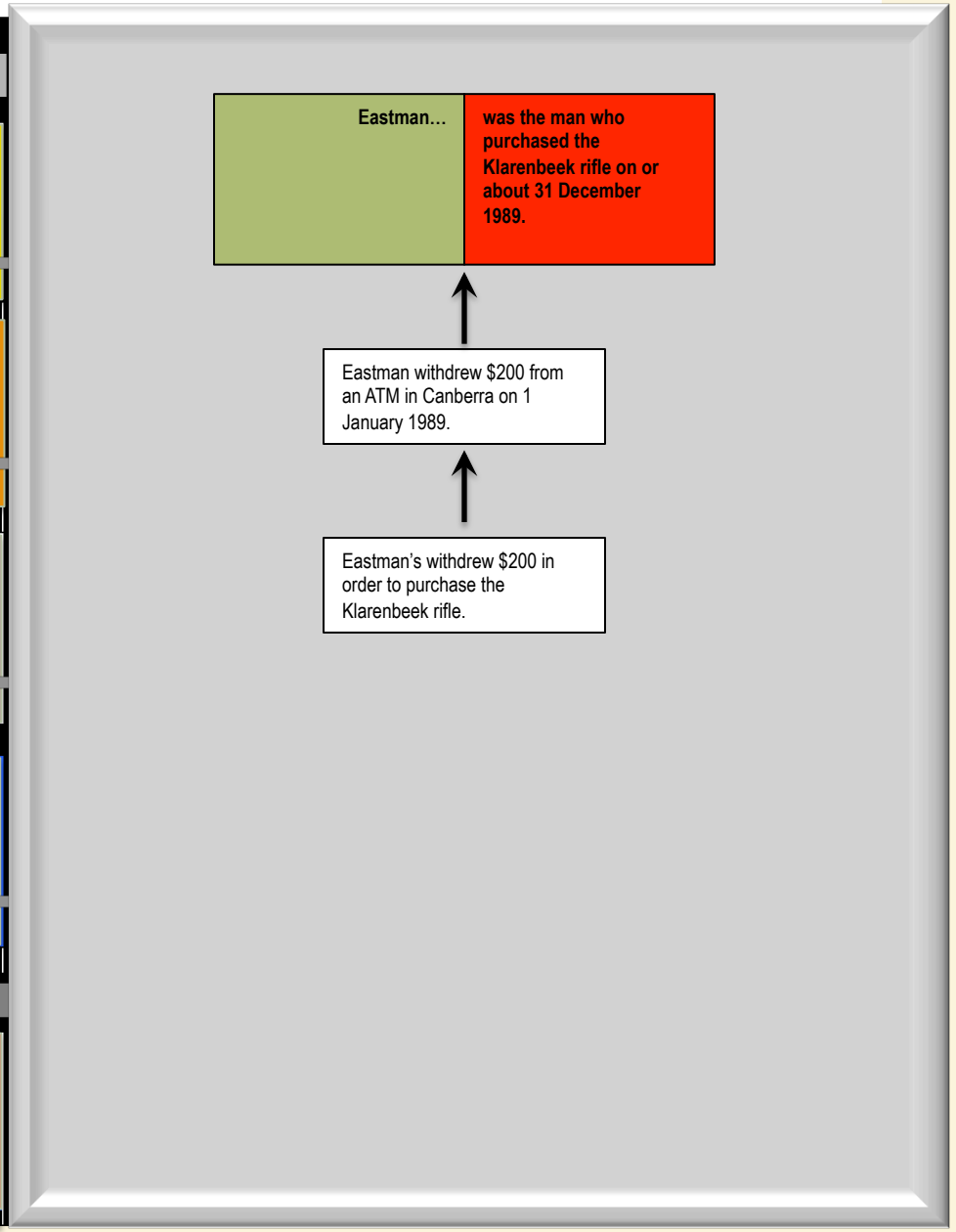
who / that...
X
4
One
(like Concl. Subj.)
who / that...
FINISH
CONCLUSION
=
So…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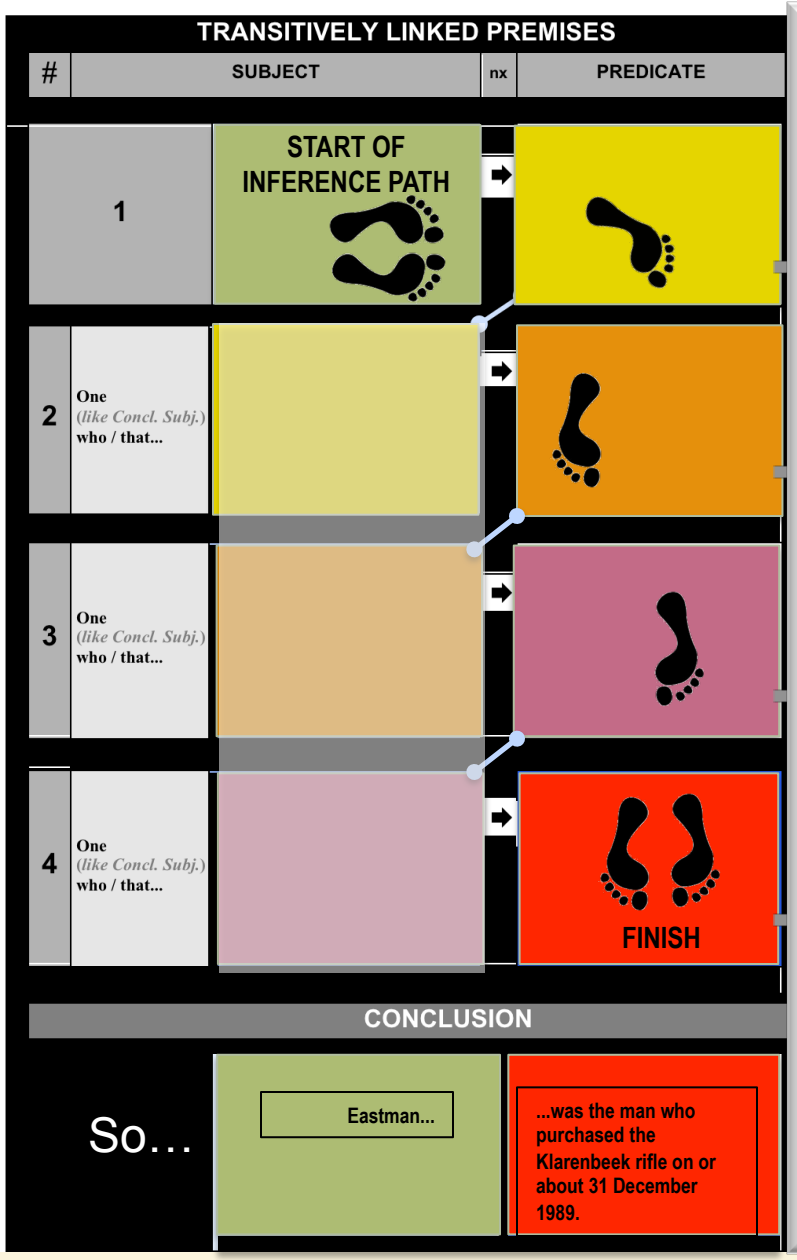
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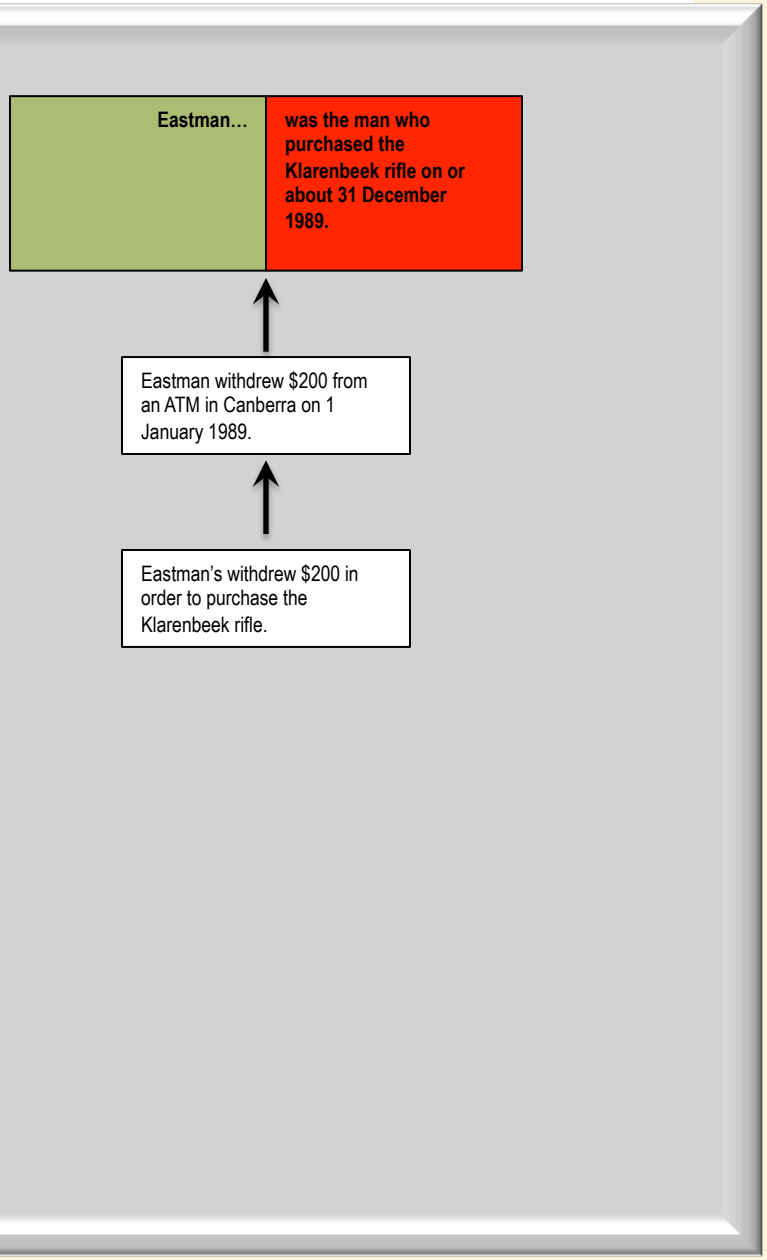
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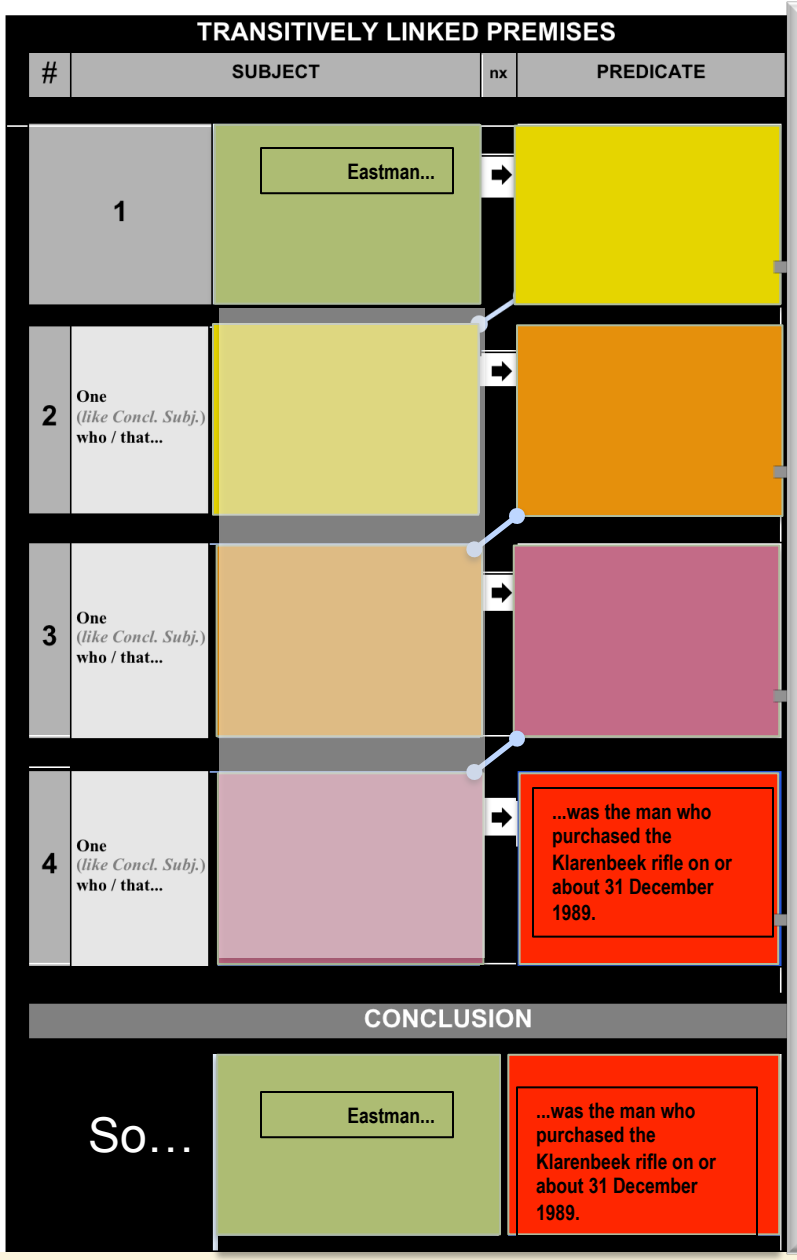
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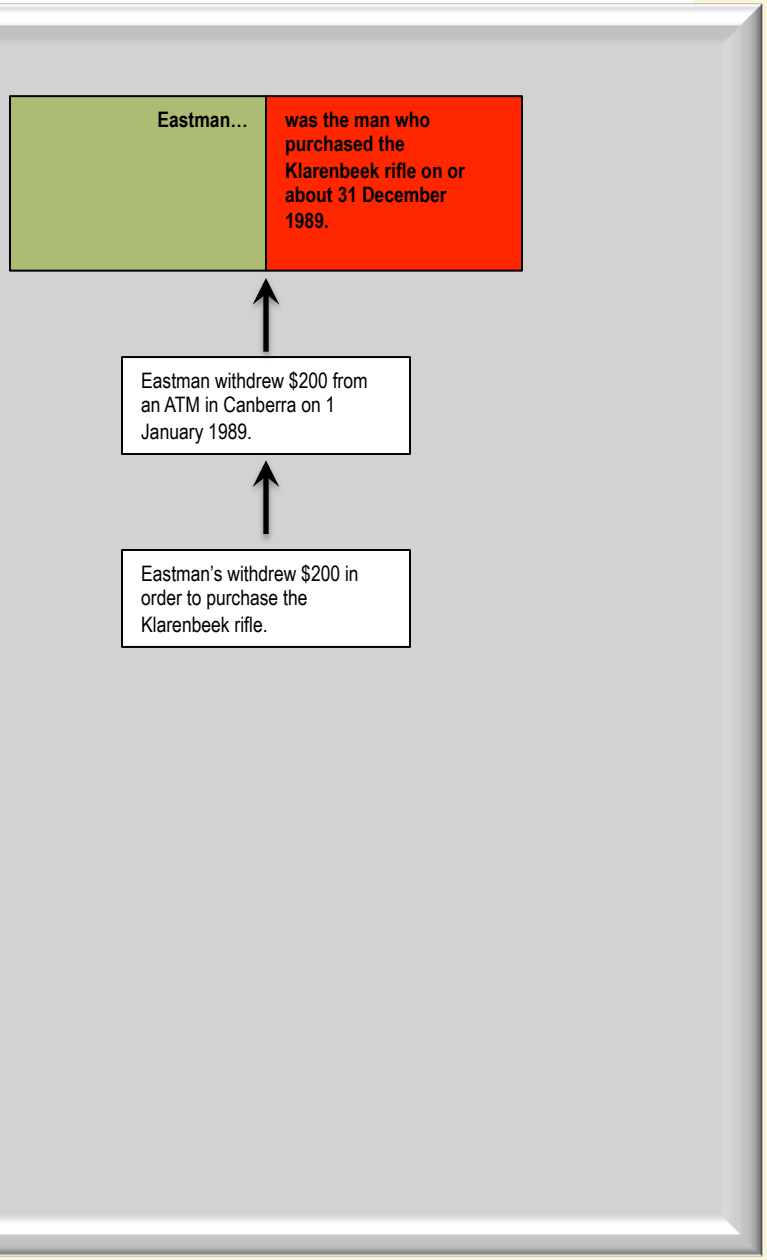
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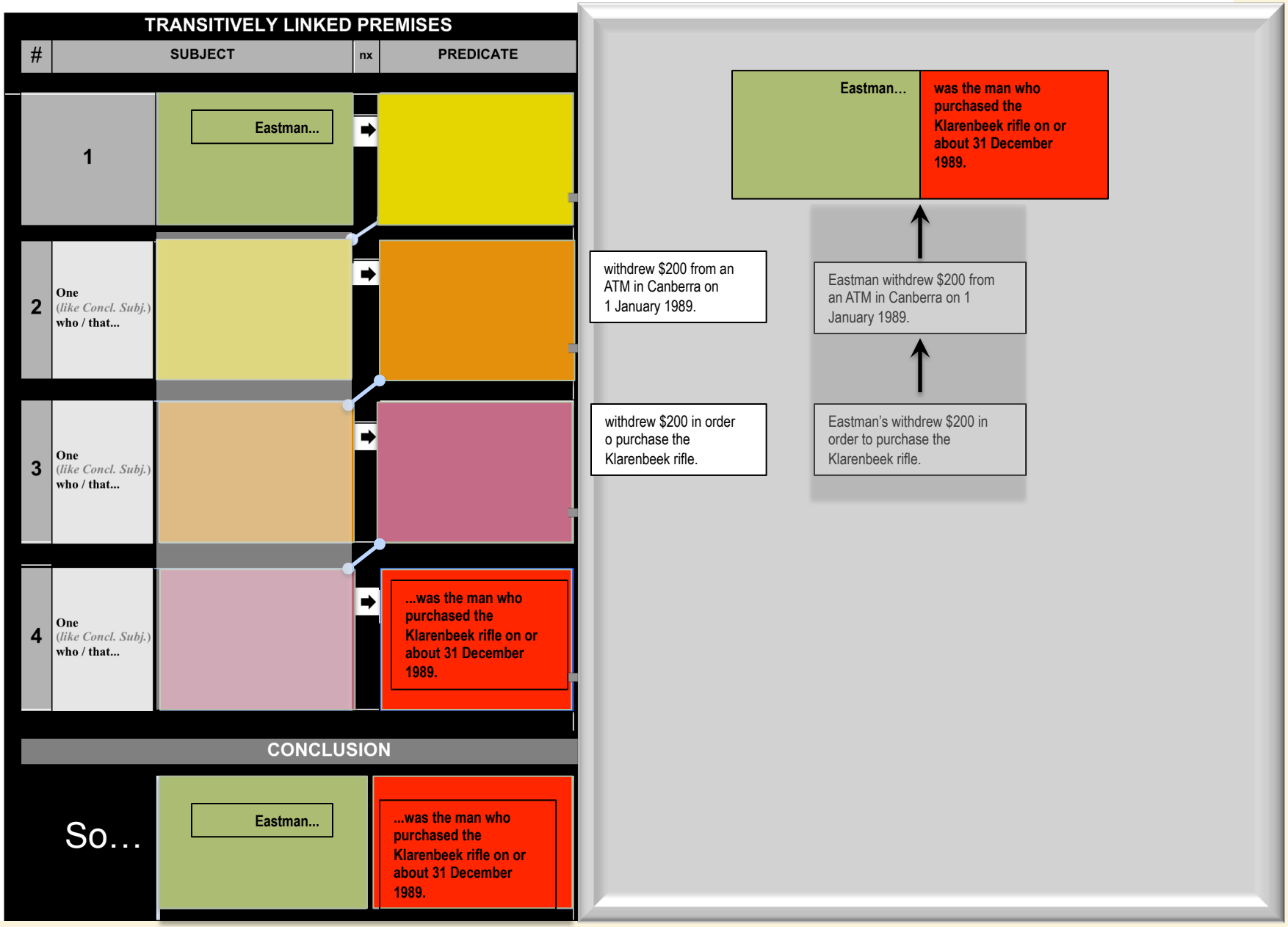
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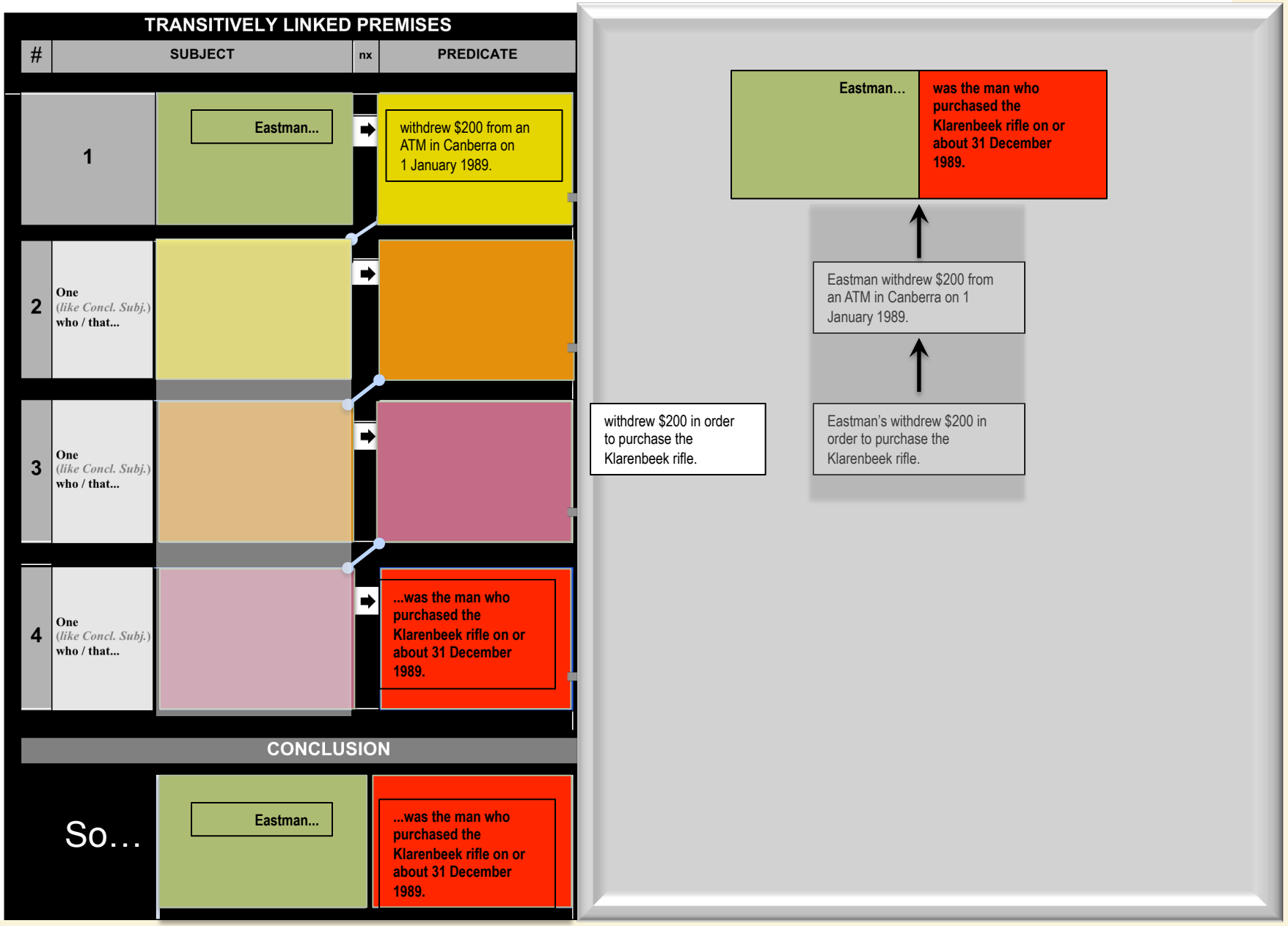
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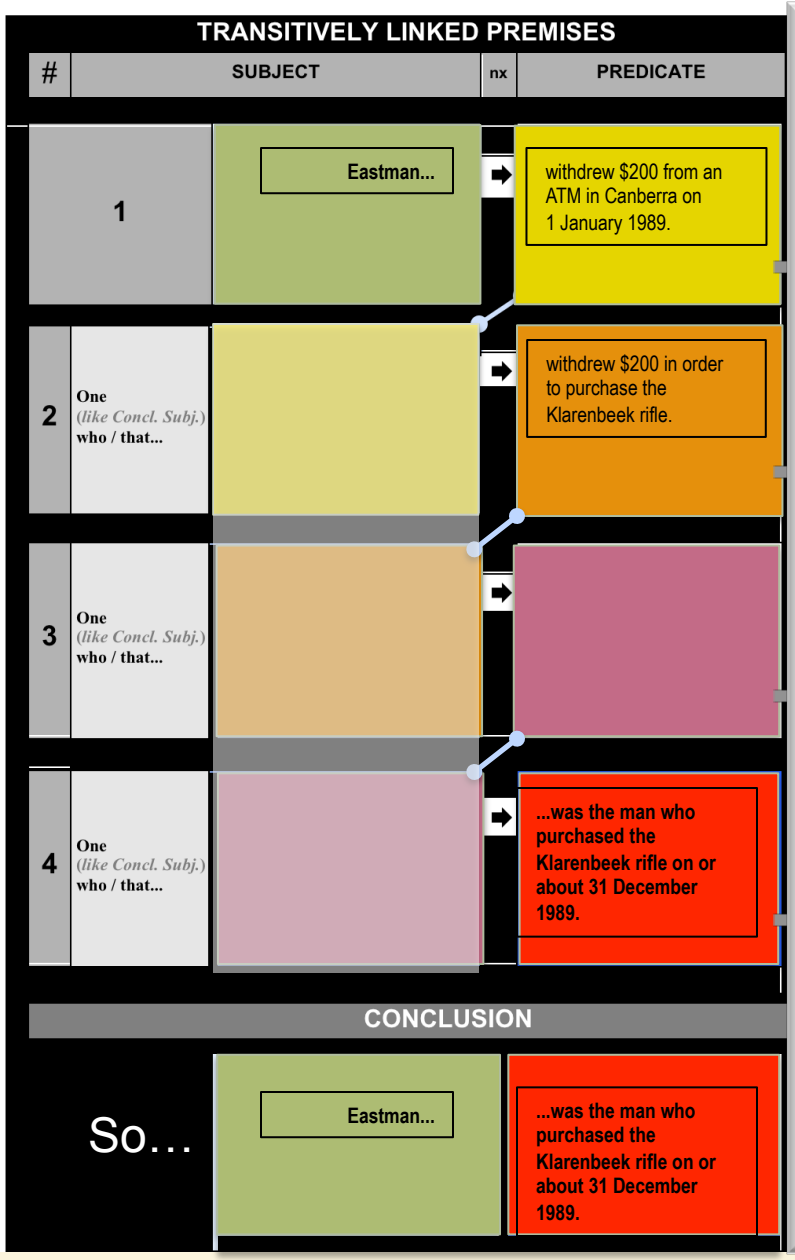
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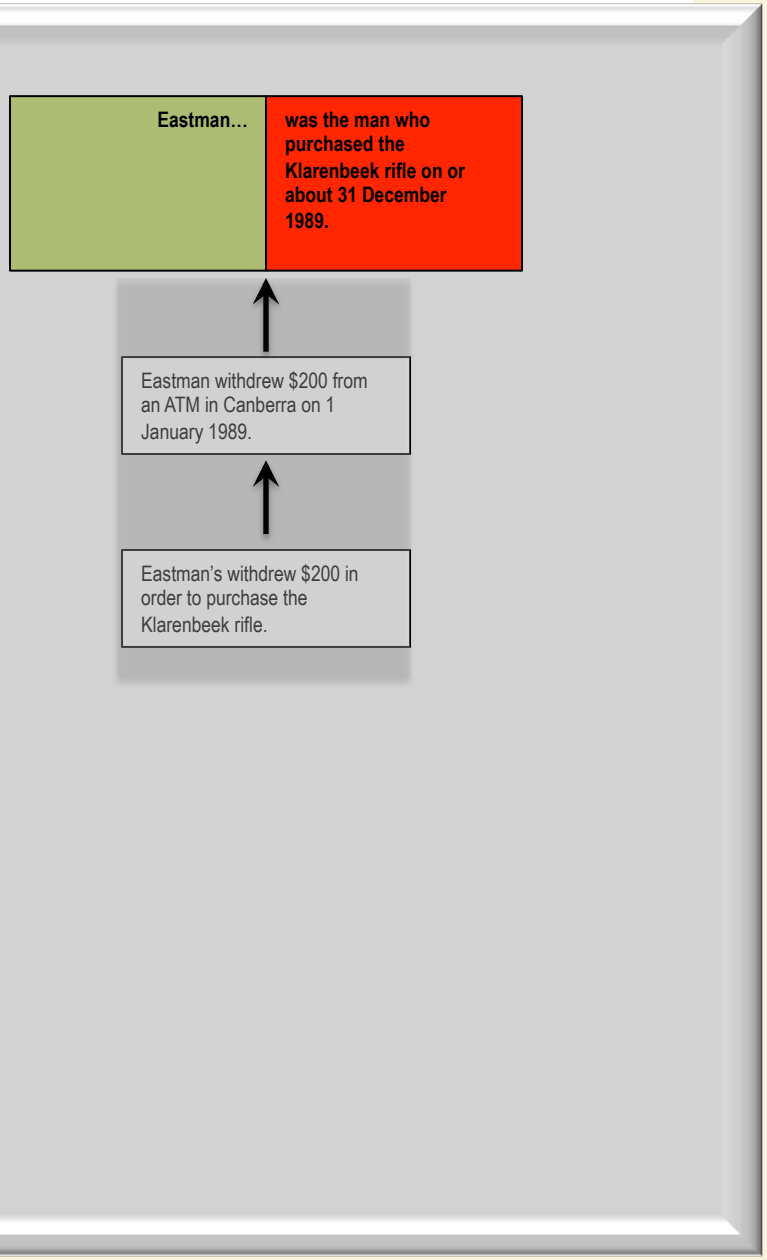
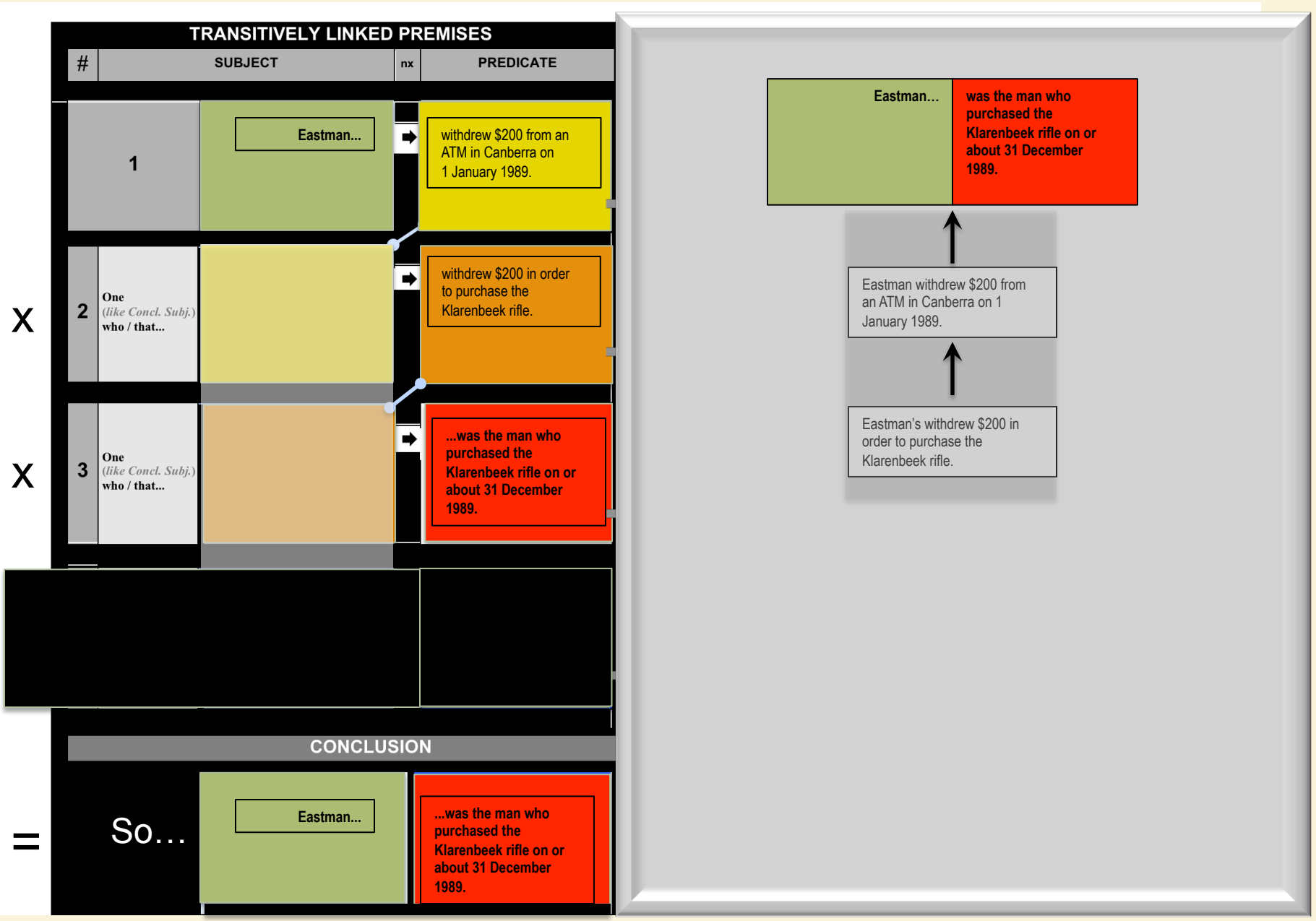
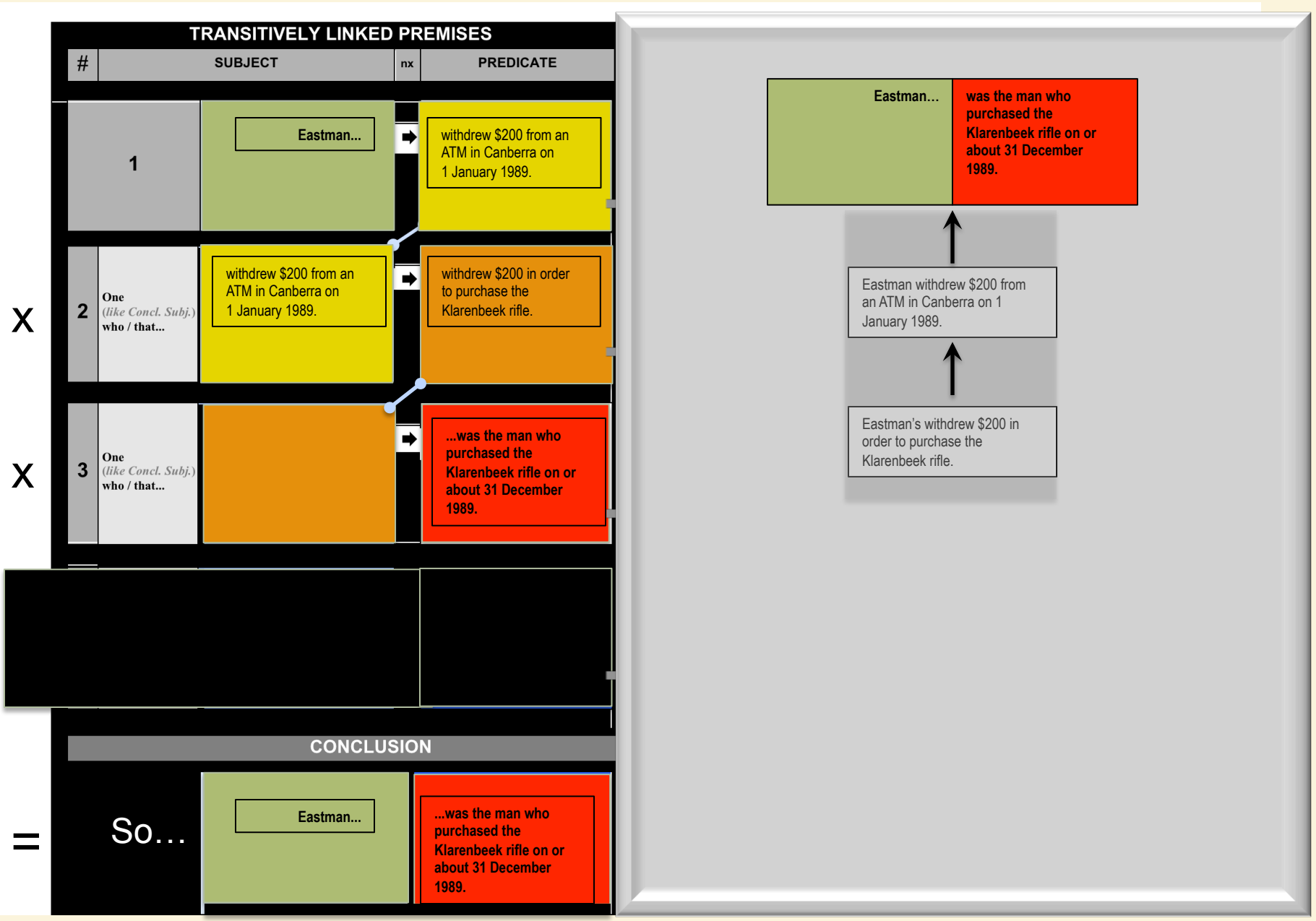
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.


Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman withdrew $200 from an ATM in Canberra on 1 January 1989.
Eastman's withdrew $200 in order to purchase the Klarenbeek rifle.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
withdrew $200 from an ATM in Canberra on 1 January 1989.
X
2
One (like Concl. Subj.) who / that...
withdrew $200 in order to purchase the Klarenbeek rifle.
X
3
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman withdrew $200 from an ATM in Canberra on 1 January 1989.
Eastman's withdrew $200 in order to purchase the Klarenbeek rifle.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
withdrew $200 from an ATM in Canberra on 1 January 1989.
X
2
One (like Concl. Subj.) who / that...
withdrew $200 from an ATM in Canberra on 1 January 1989.
withdrew $200 in order to purchase the Klarenbeek rifle.
X
3
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman...
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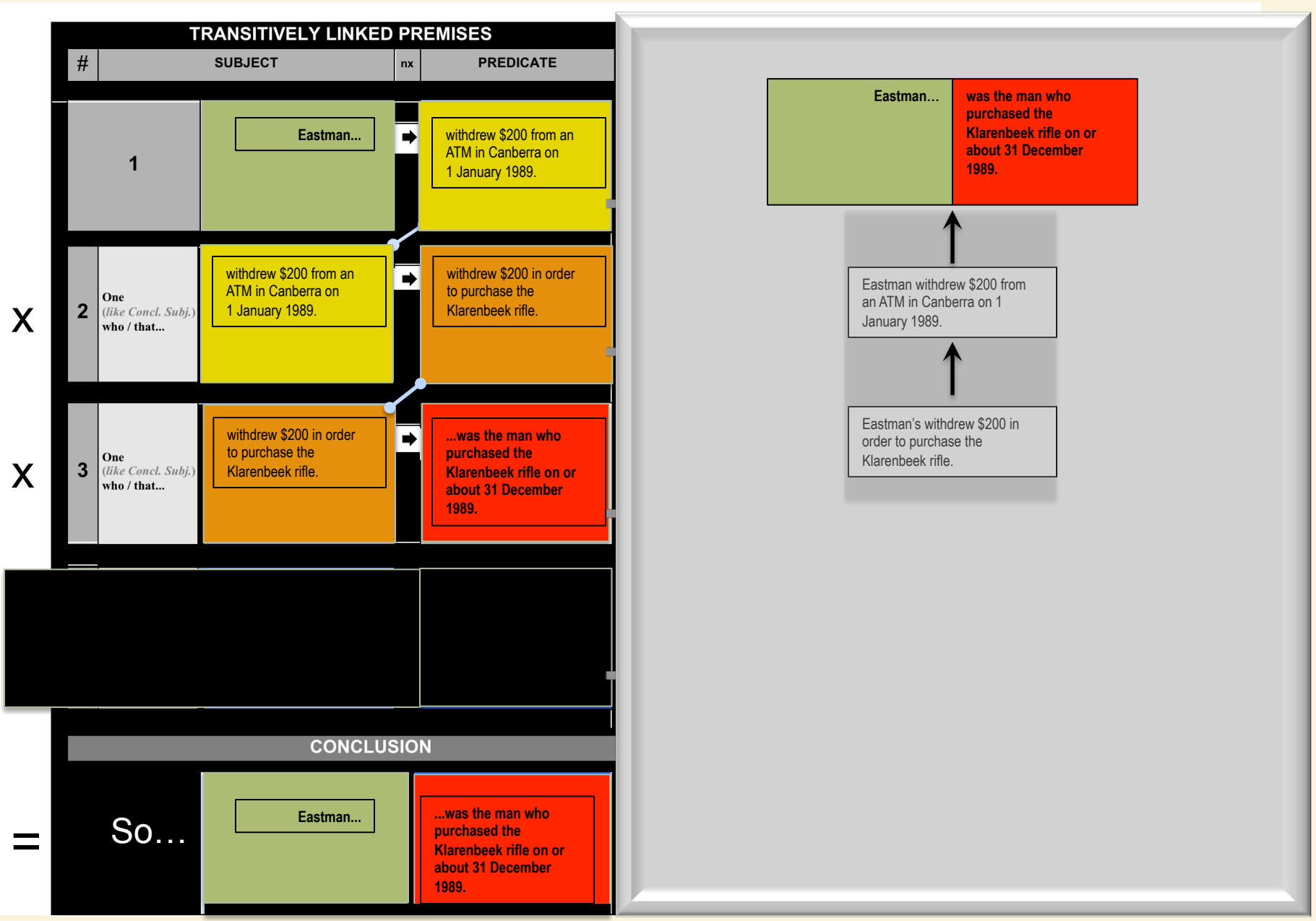
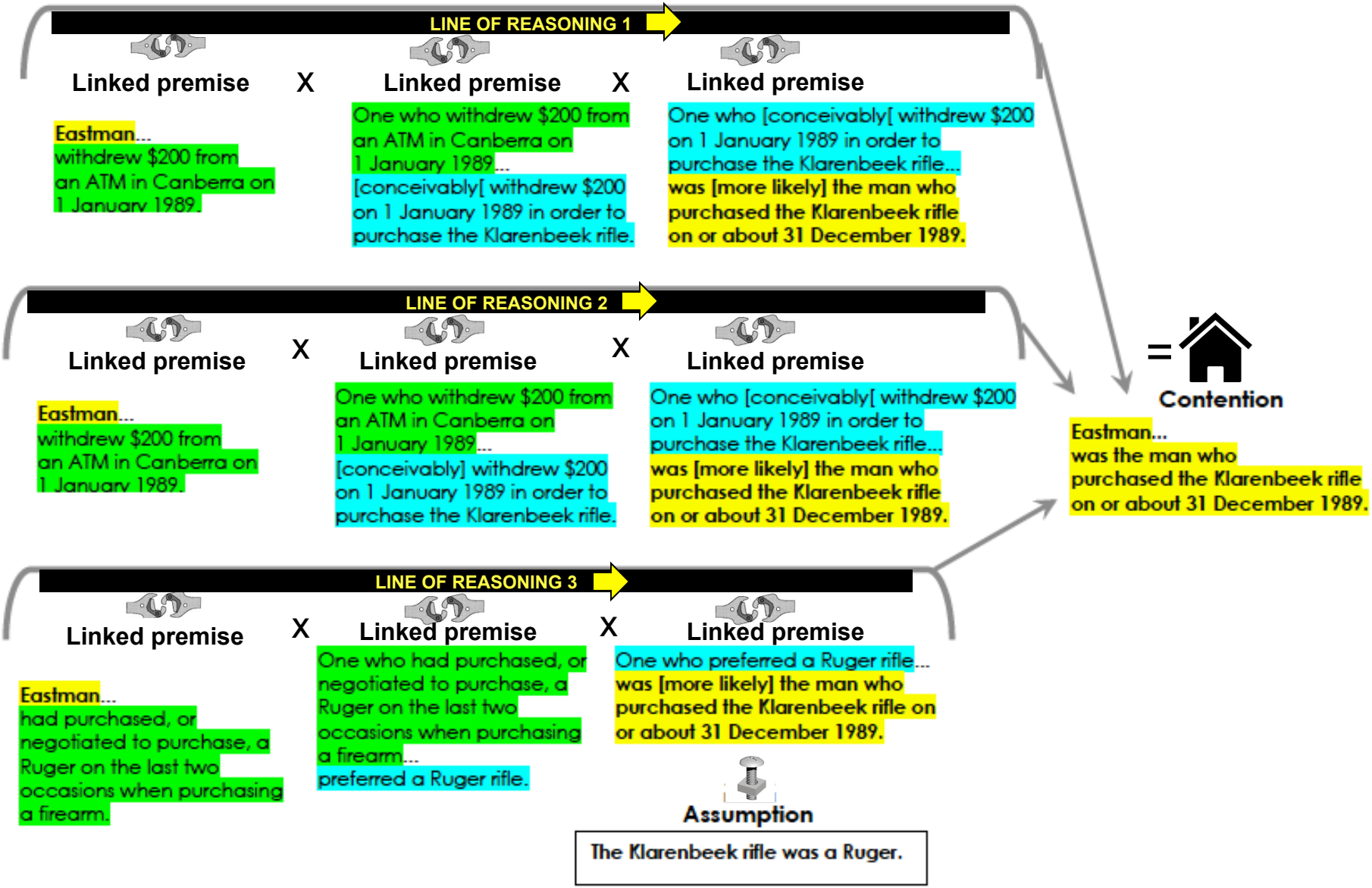
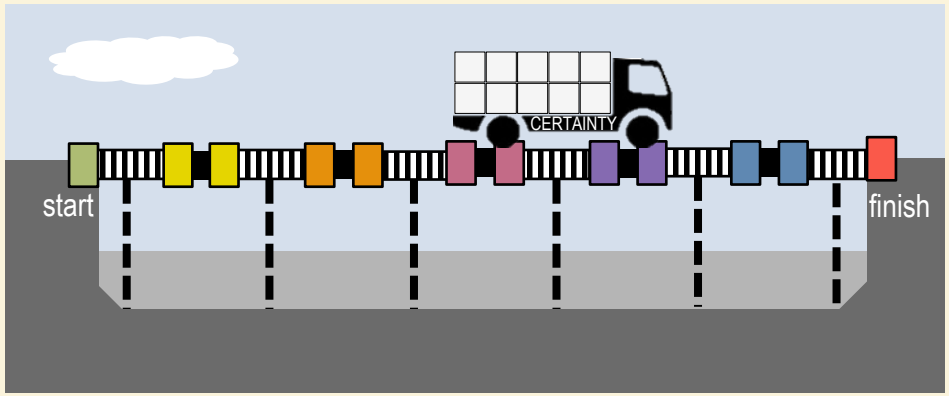
Eastman withdrew $200 from an ATM in Canberra on 1 January 1989.
Eastman's withdrew $200 in order to purchase the Klarenbeek rifle.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
withdrew $200 from an ATM in Canberra on 1 January 1989.
X
2
One (like Concl. Subj.) who / that...
withdrew $200 from an ATM in Canberra on 1 January 1989.
withdrew $200 in order to purchase the Klarenbeek rifle.
X
3
One (like Concl. Subj.) who / that...
withdrew $200 in order to purchase the Klarenbeek rifle.
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman...
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman withdrew $200 from an ATM in Canberra on 1 January 1989.
Eastman's withdrew $200 in order to purchase the Klarenbeek rifle.


LINE OF REASONING 1
Linked premise
X
Linked premise
X
Linked premise
Eastman... withdrew $200 from an ATM in Canberra on 1 January 1989.
One who withdrew $200 from an ATM in Canberra on 1 January 1989... [conceivably[withdrew $200 on 1 January 1989 in order to purchase the Klarenbeek rifle.
One who [conceivably[withdrew $200 on 1 January 1989 in order to purchase the Klarenbeek rifle... was [more likely] the man who purchased the Klarenbeek rifle on or about 31 December 1989.
LINE OF REASONING 2
Linked premise
X
Linked premise
X
Linked premise
Eastman... withdrew $200 from an ATM in Canberra on 1 January 1989.
One who withdrew $200 from an ATM in Canberra on 1 January 1989... [conceivably] withdrew $200 on 1 January 1989 in order to purchase the Klarenbeek rifle.
One who [conceivably[withdrew $200 on 1 January 1989 in order to purchase the Klarenbeek rifle... was [more likely] the man who purchased the Klarenbeek rifle on or about 31 December 1989.
LINE OF REASONING 3
Linked premise
X
Linked premise
X
Linked premise
Eastman... had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm.
One who had purchased, or negotiated to purchase, a Ruger on the last two occasions when purchasing a firearm... preferred a Ruger rifle.
One who preferred a Ruger rifle... was [more likely] the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Assumption
The Klarenbeek rifle was a Ruger.
=
Contention
Eastman... was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

Structural Errors 4



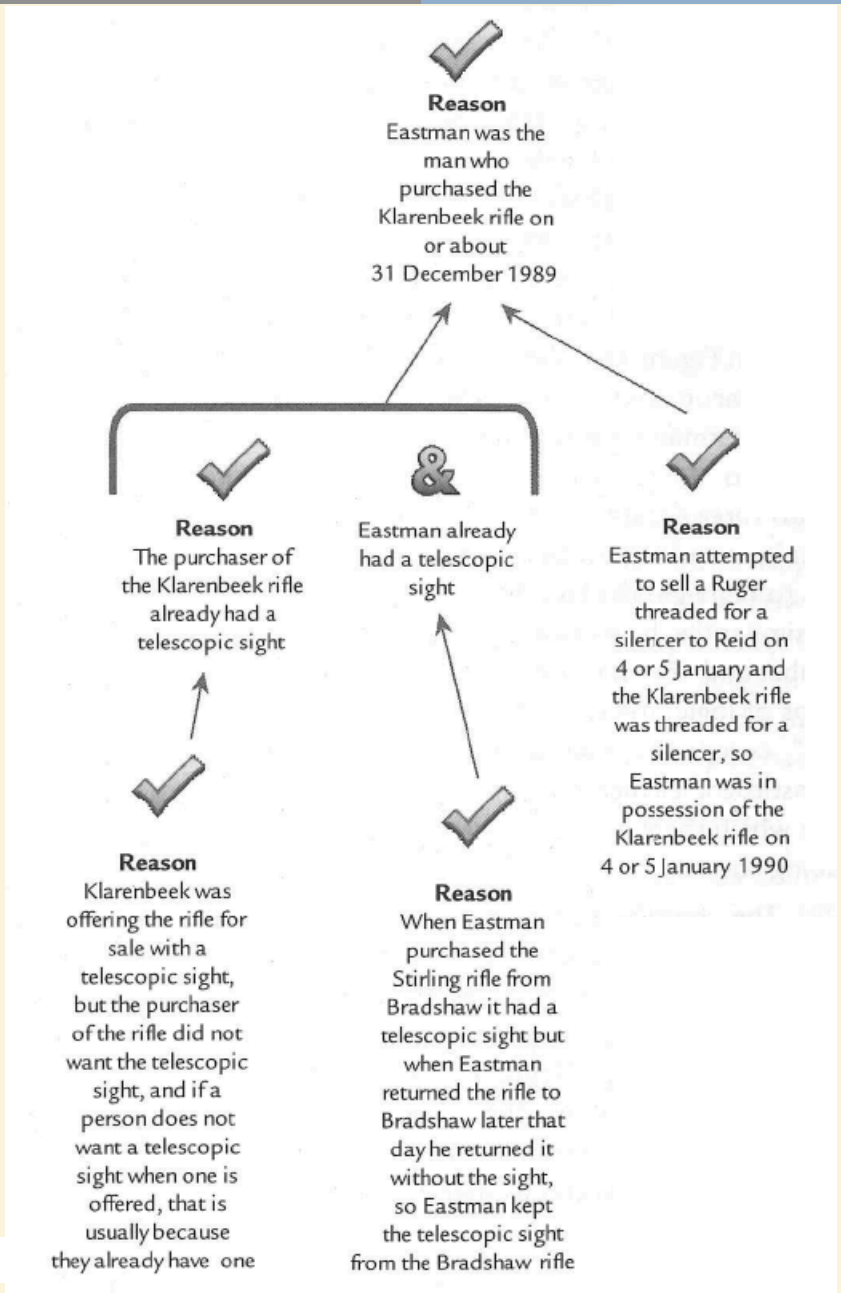
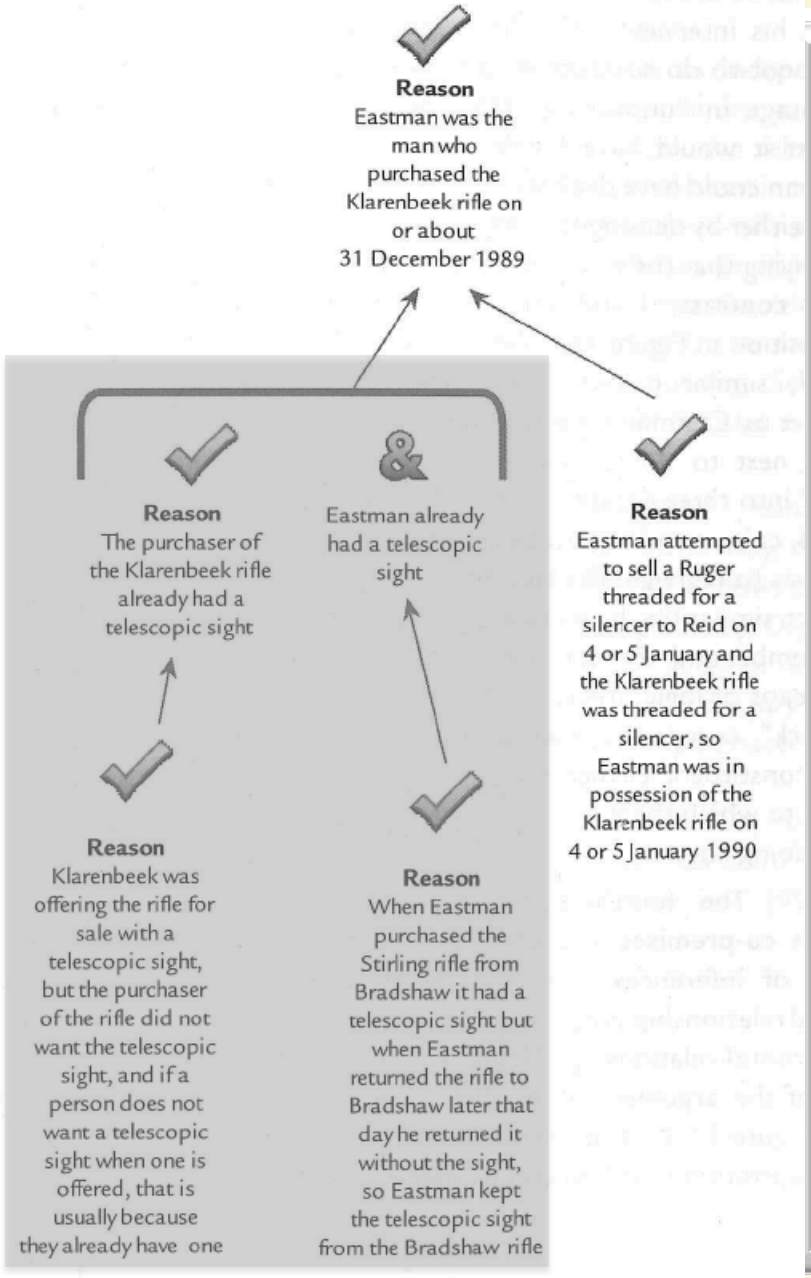
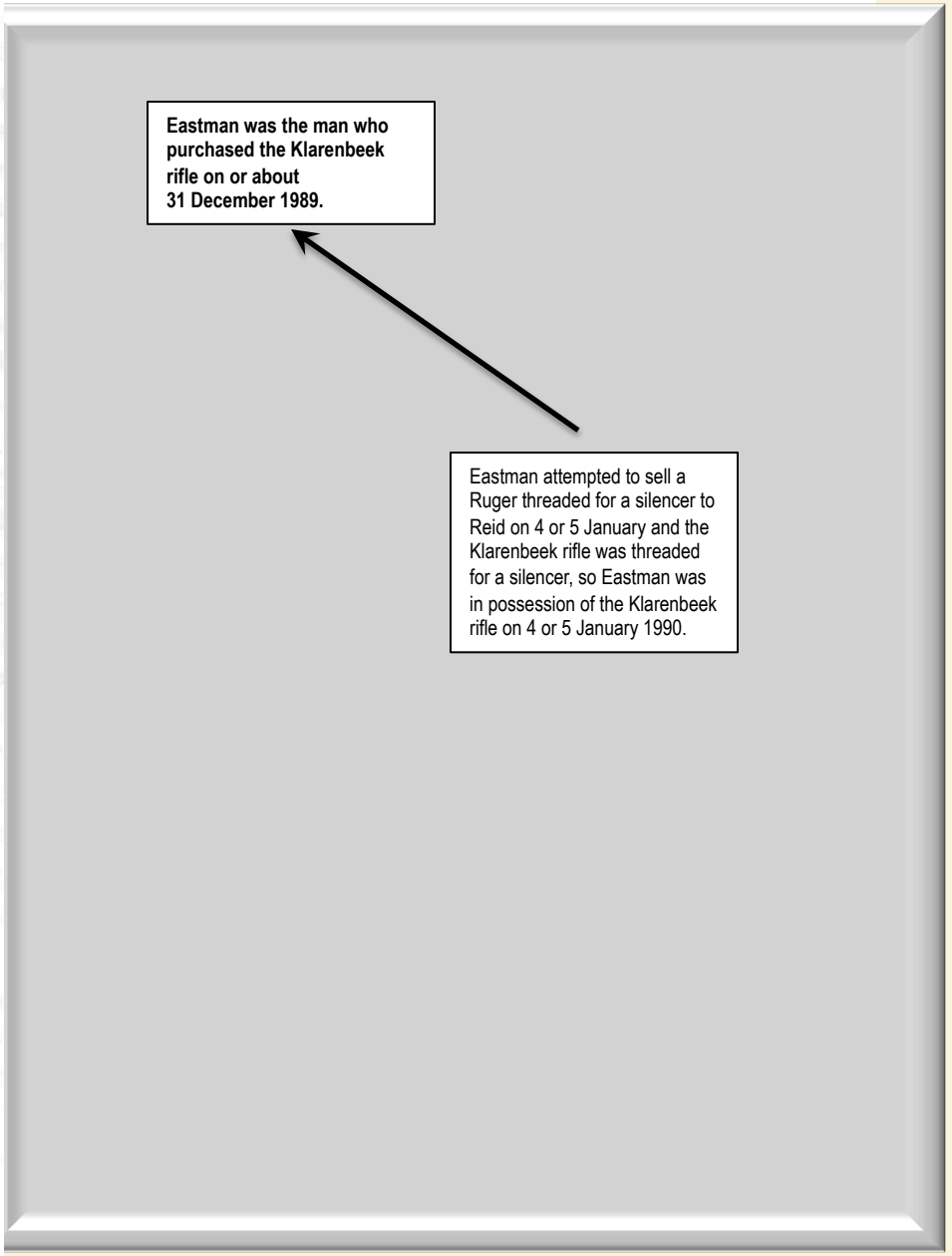
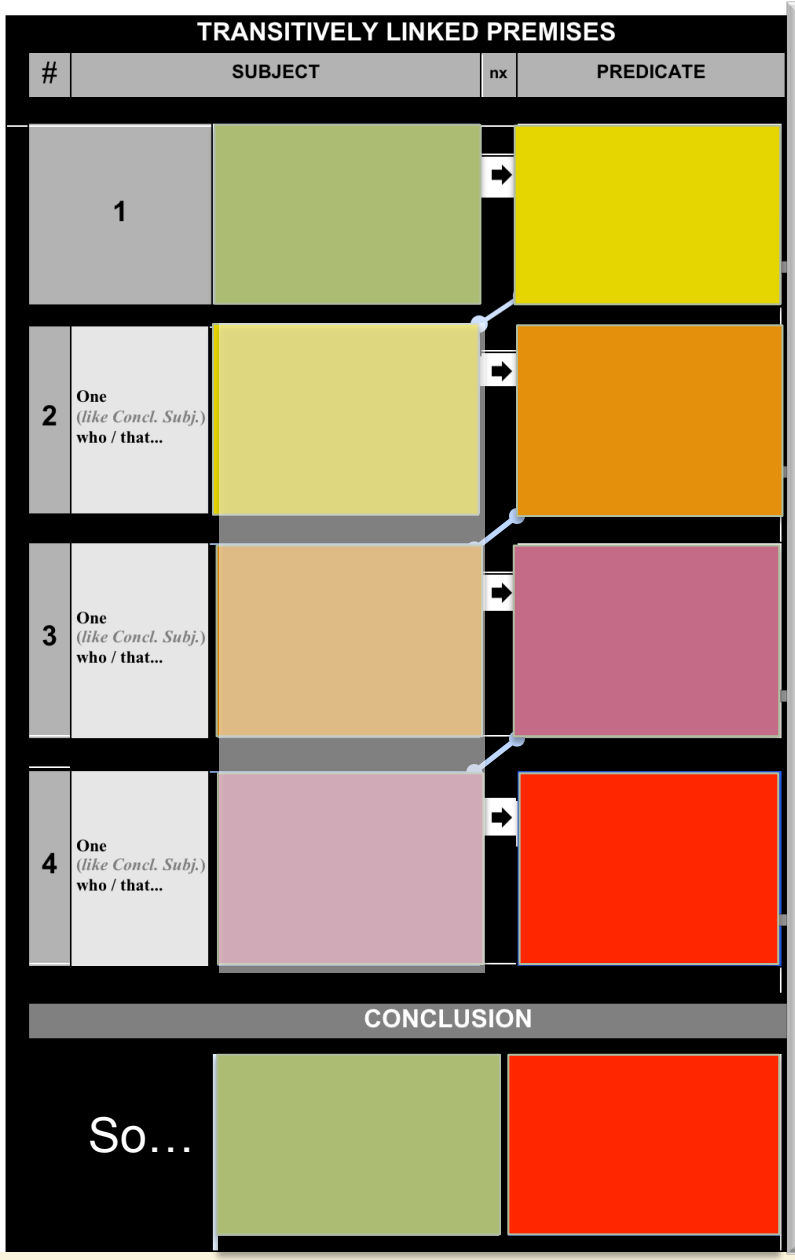


Figure 11.15: Reasoning in the box



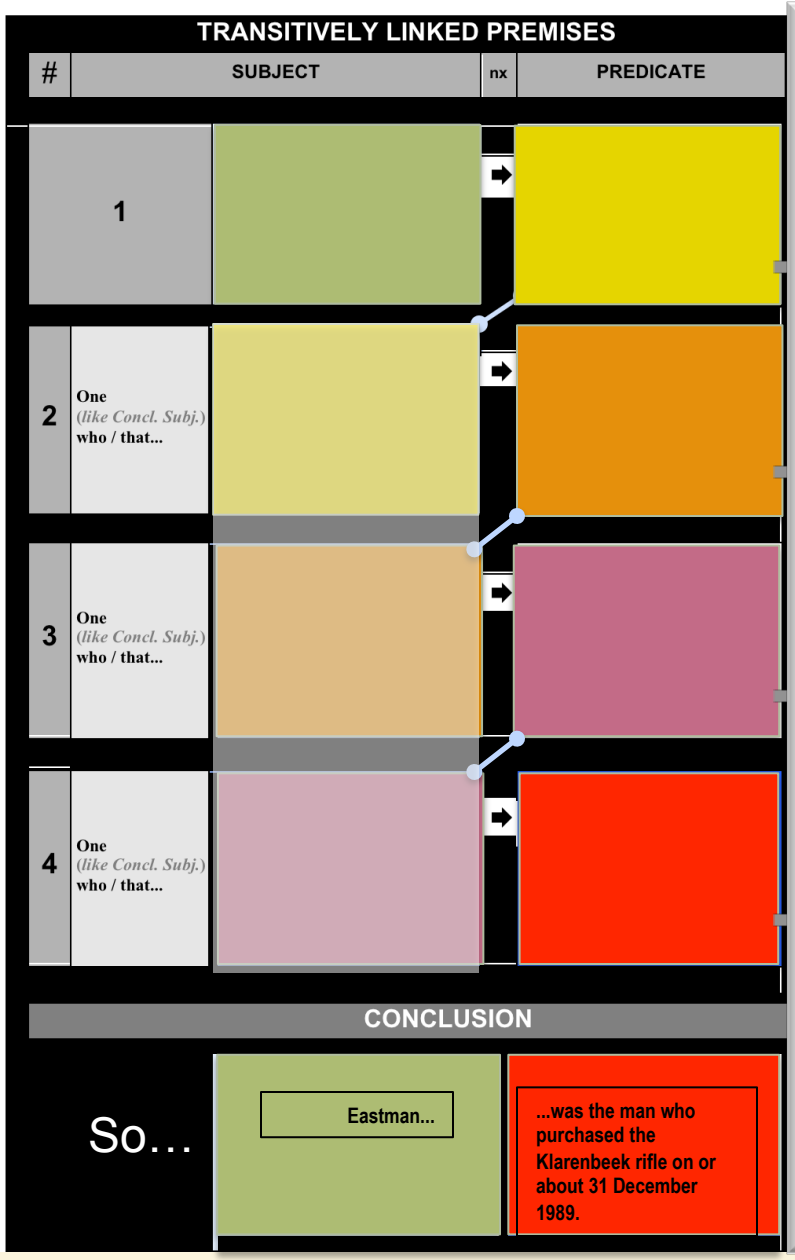


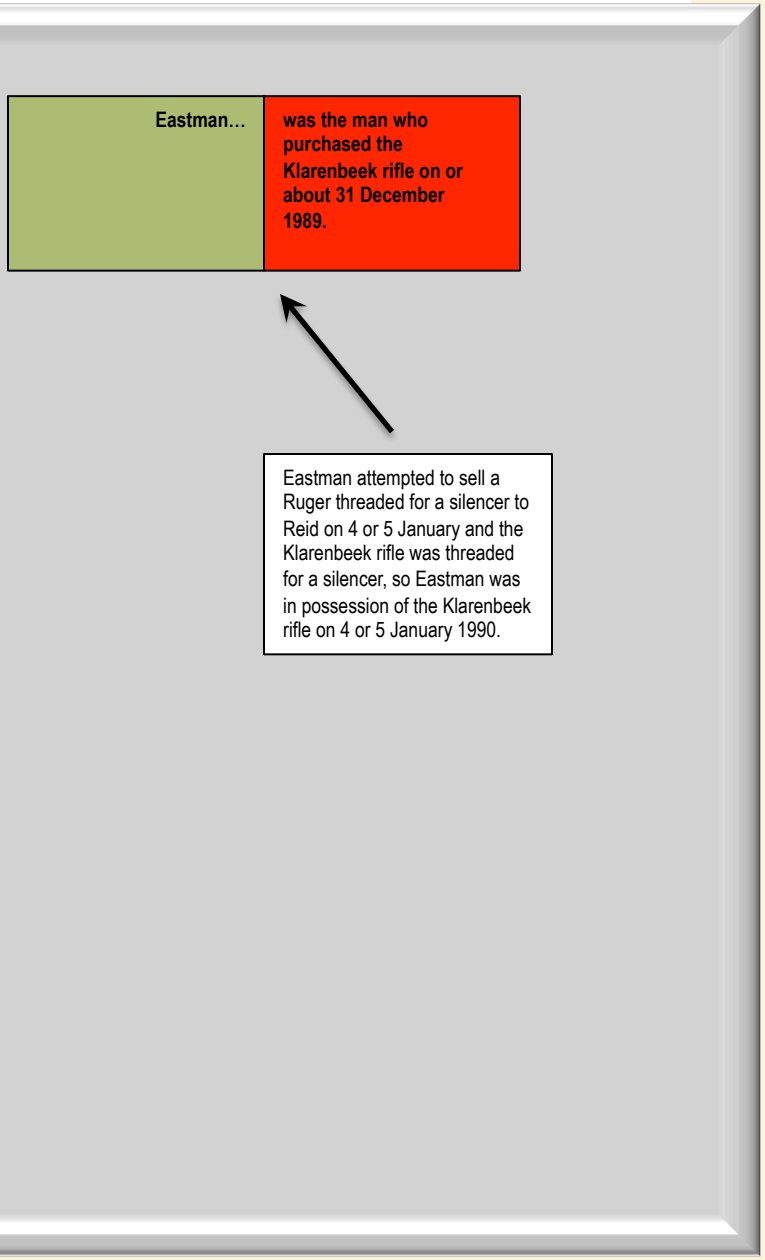
CORRECTING STRUCTURAL ERRORS

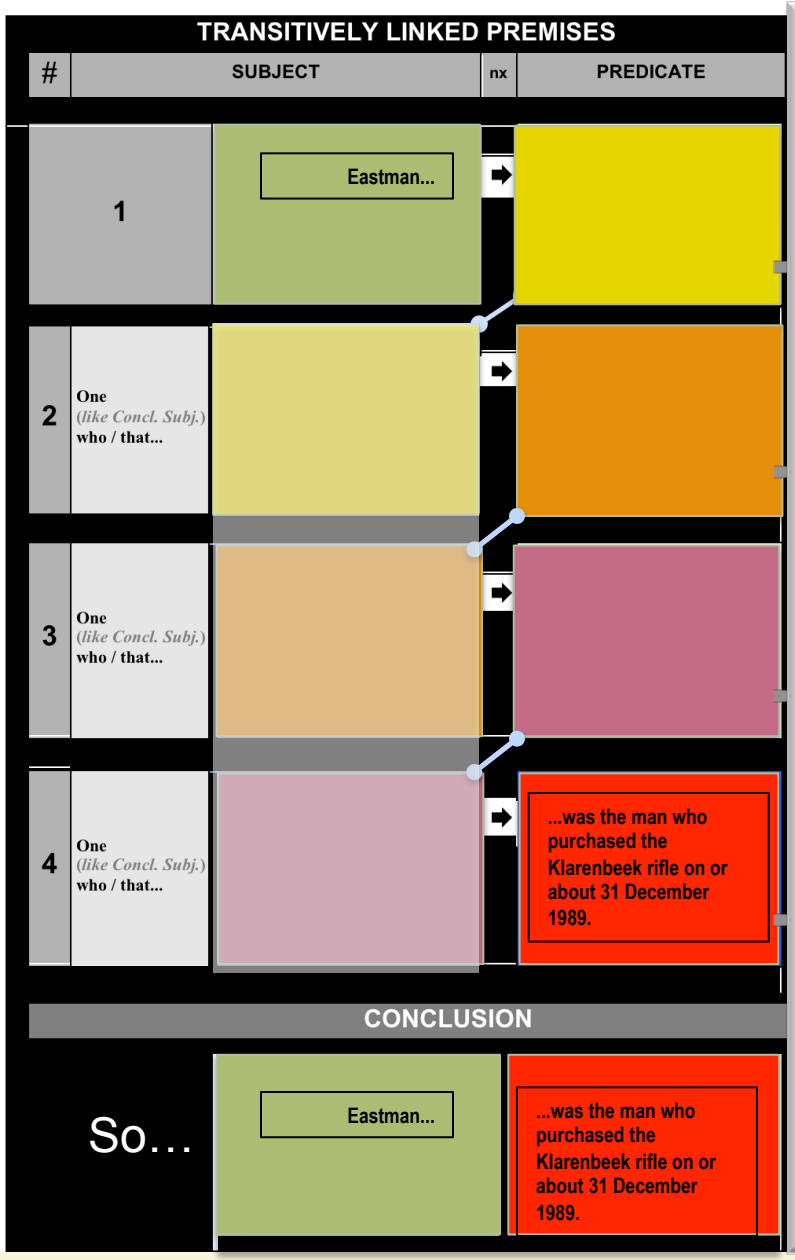


Eastman…	was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

Eastman attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January and the Klarenbeek rifle was threaded for a silencer, so Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
2
One
(like Concl. Subj.)
who / that...
3
One
(like Concl. Subj.)
who / that...
4
One
(like Concl. Subj.)
who / that...
X
X
X
=
CONCLUSION
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.


Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January and the Klarenbeek rifle was threaded for a silencer, so Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990.

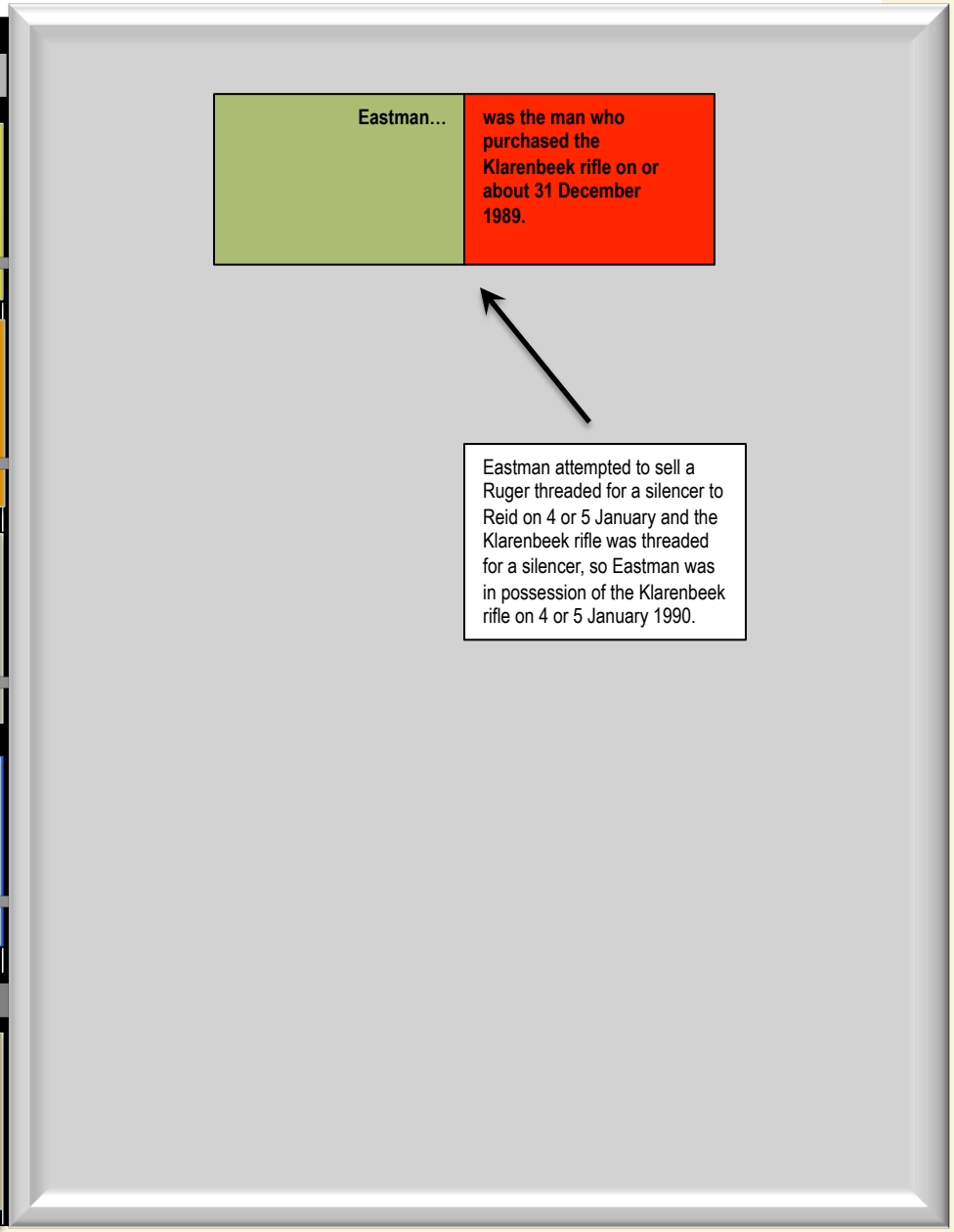

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
2
One
(like Concl. Subj.)
who / that...
3
One
(like Concl. Subj.)
who / that...
4
One
(like Concl. Subj.)
who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

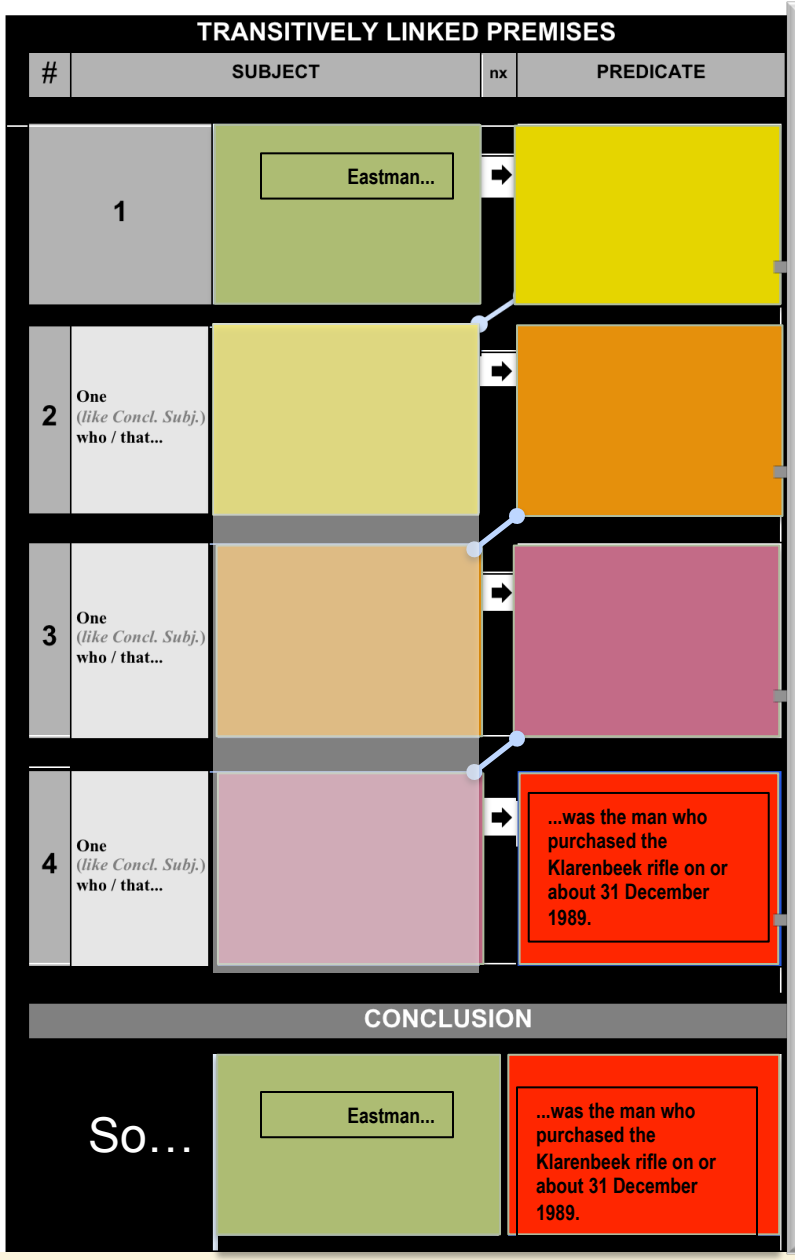
X

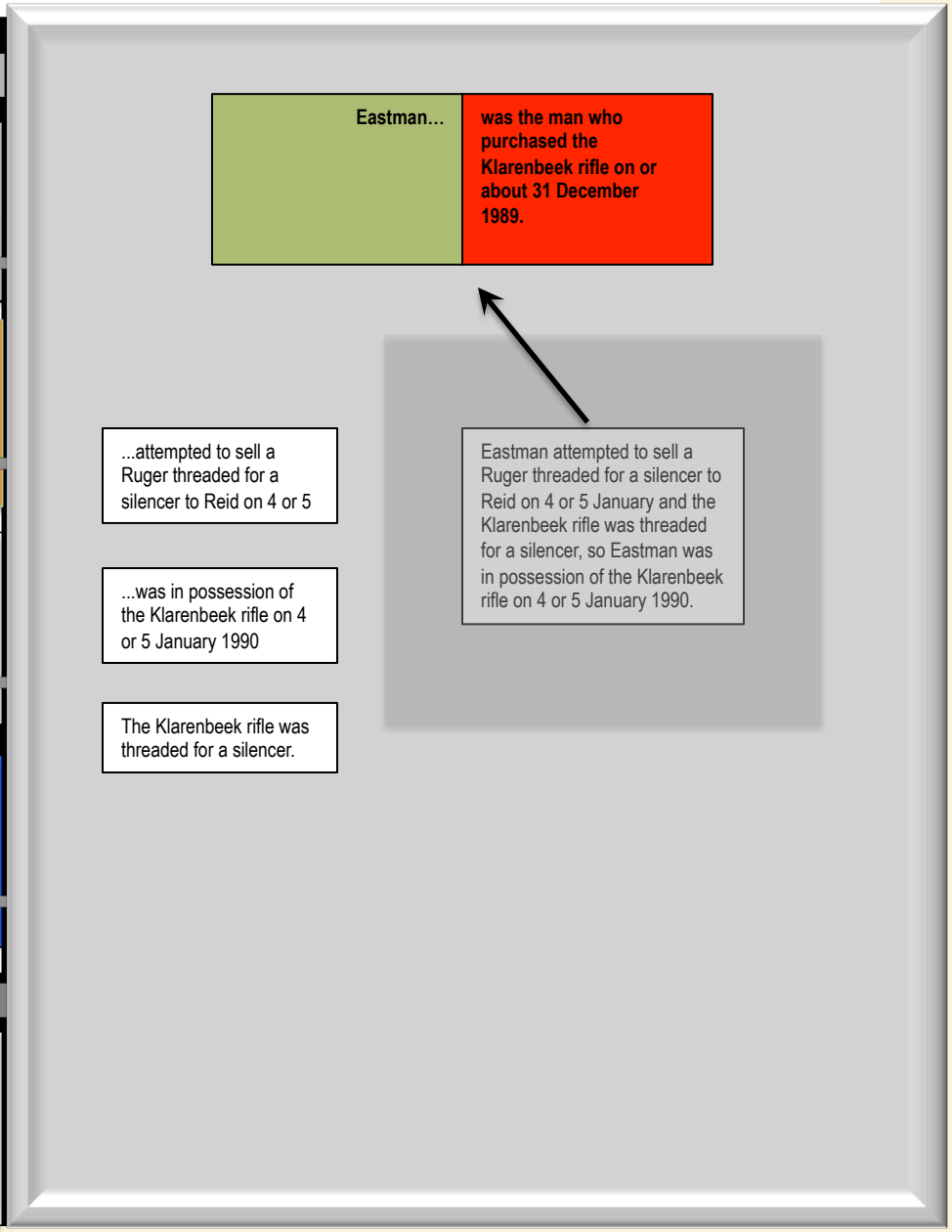
X

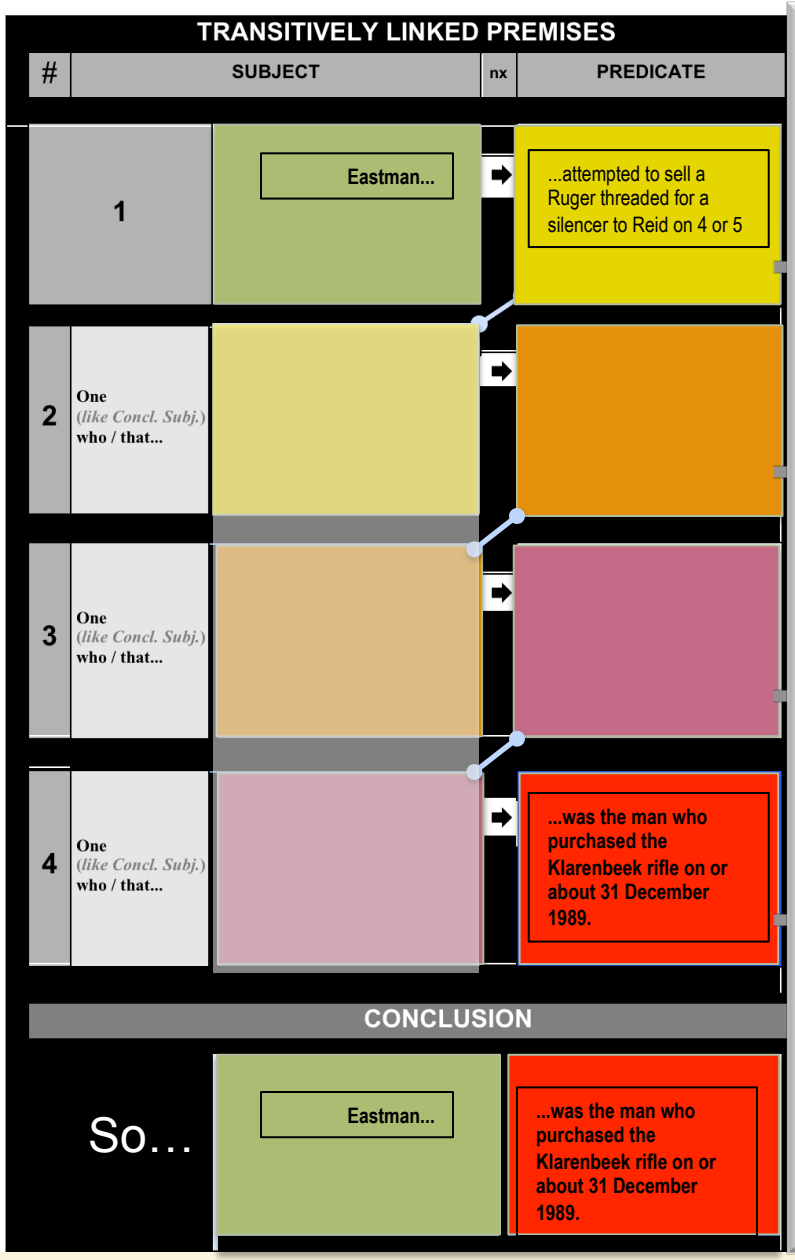
X

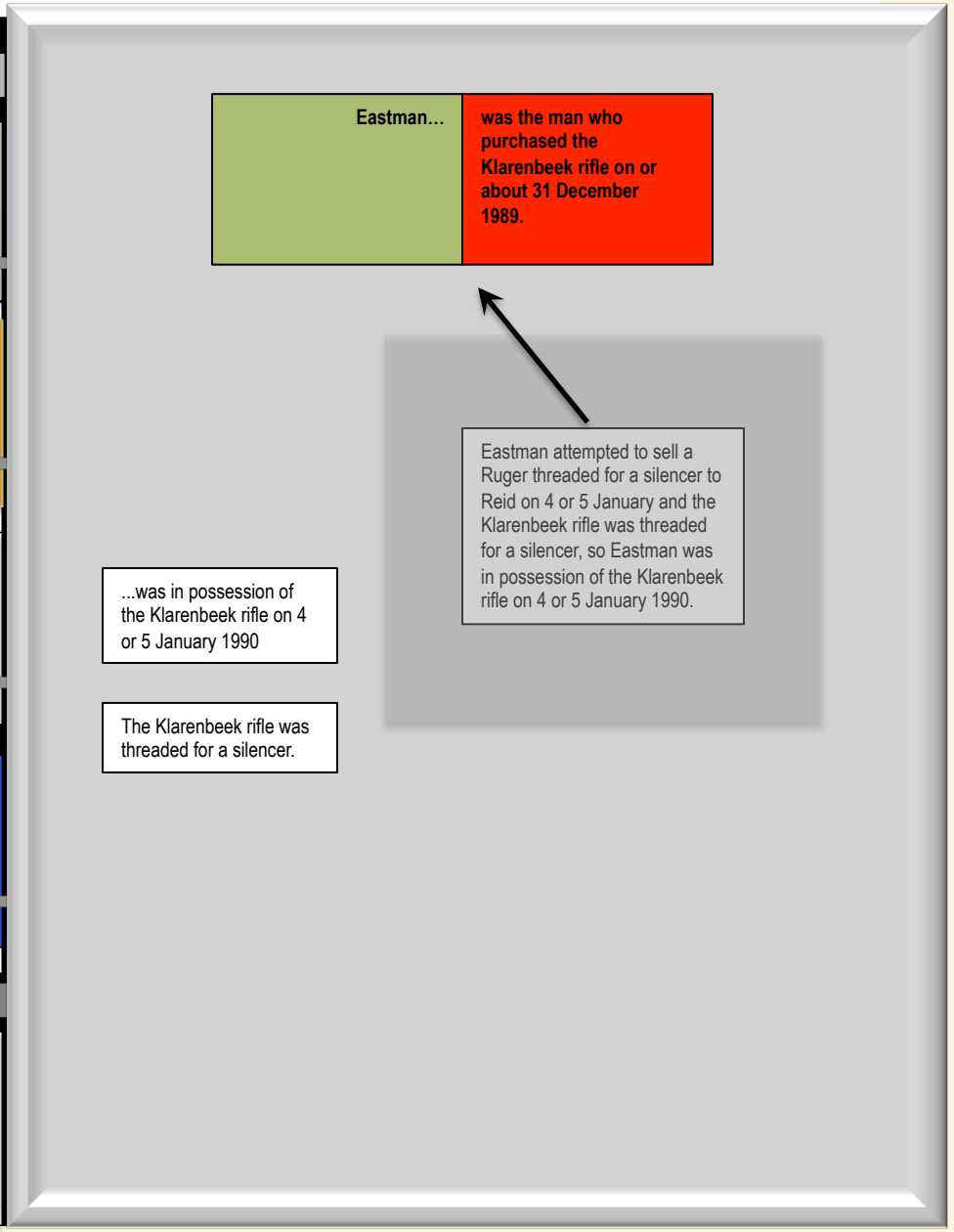
=

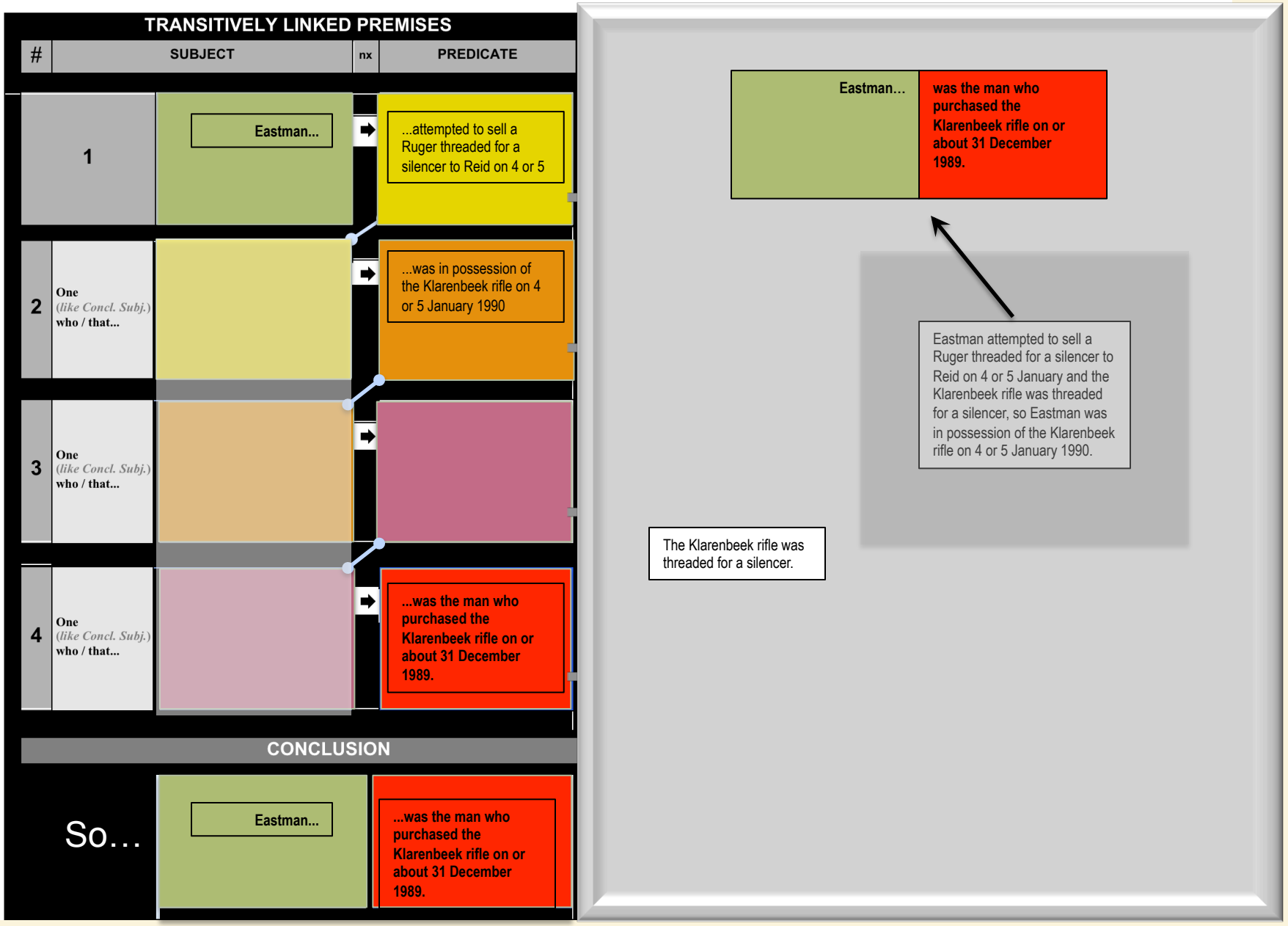

Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January and the Klarenbeek rifle was threaded for a silencer, so Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.


Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
The Klarenbeek rifle was threaded for a silencer.
Eastman attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January and the Klarenbeek rifle was threaded for a silencer, so Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
X
2
One (like Concl. Subj.) who / that...
X
3
One (like Concl. Subj.) who / that...
X
4
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.


Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January and the Klarenbeek rifle was threaded for a silencer, so Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990.
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
The Klarenbeek rifle was threaded for a silencer.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
X
2
One (like Concl. Subj.) who / that...
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
X
3
One (like Concl. Subj.) who / that...
The Klarenbeek rifle was threaded for a silencer.
X
4
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
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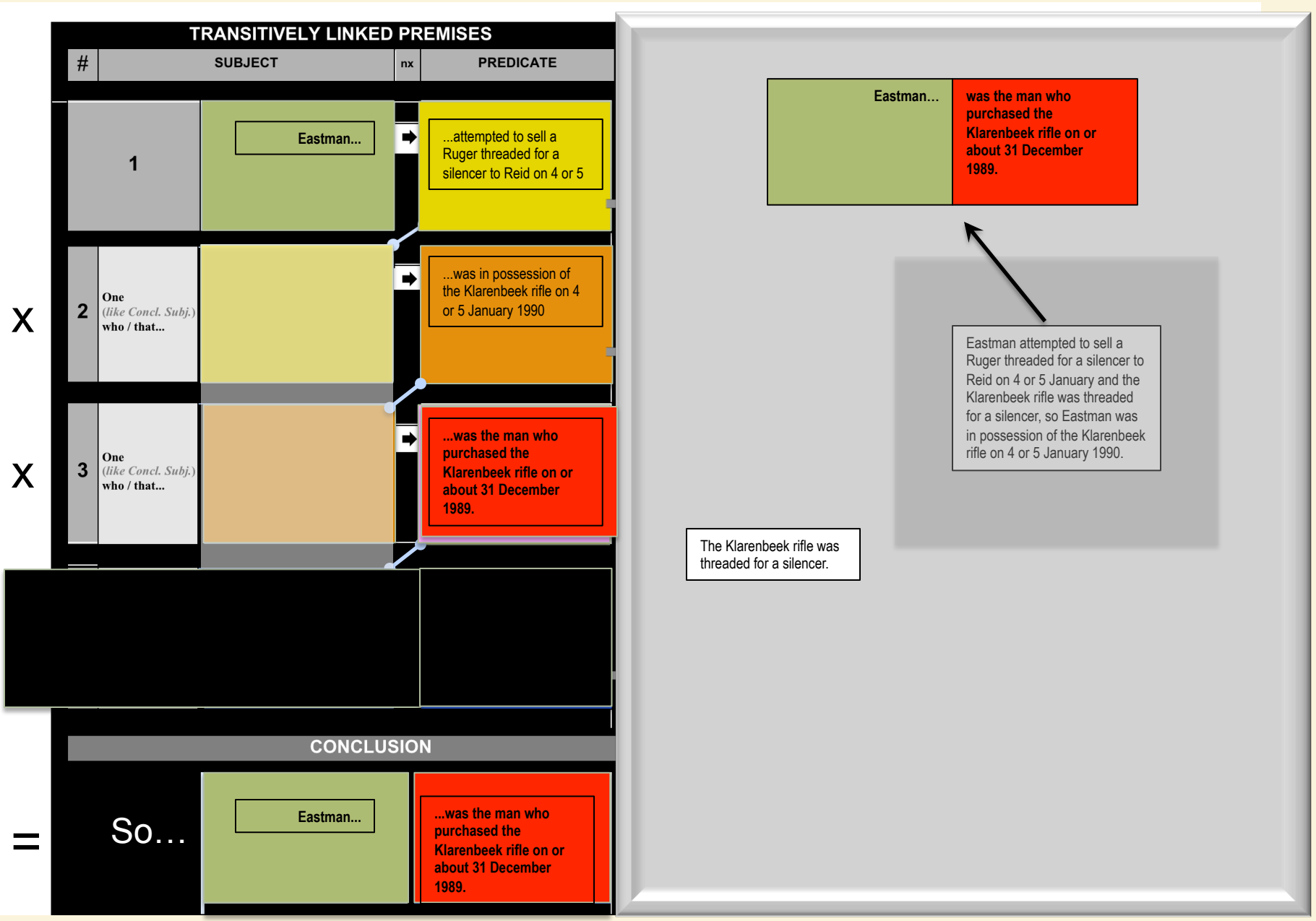
TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
X
2
One (like Concl. Subj.) who / that...
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
X
3
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
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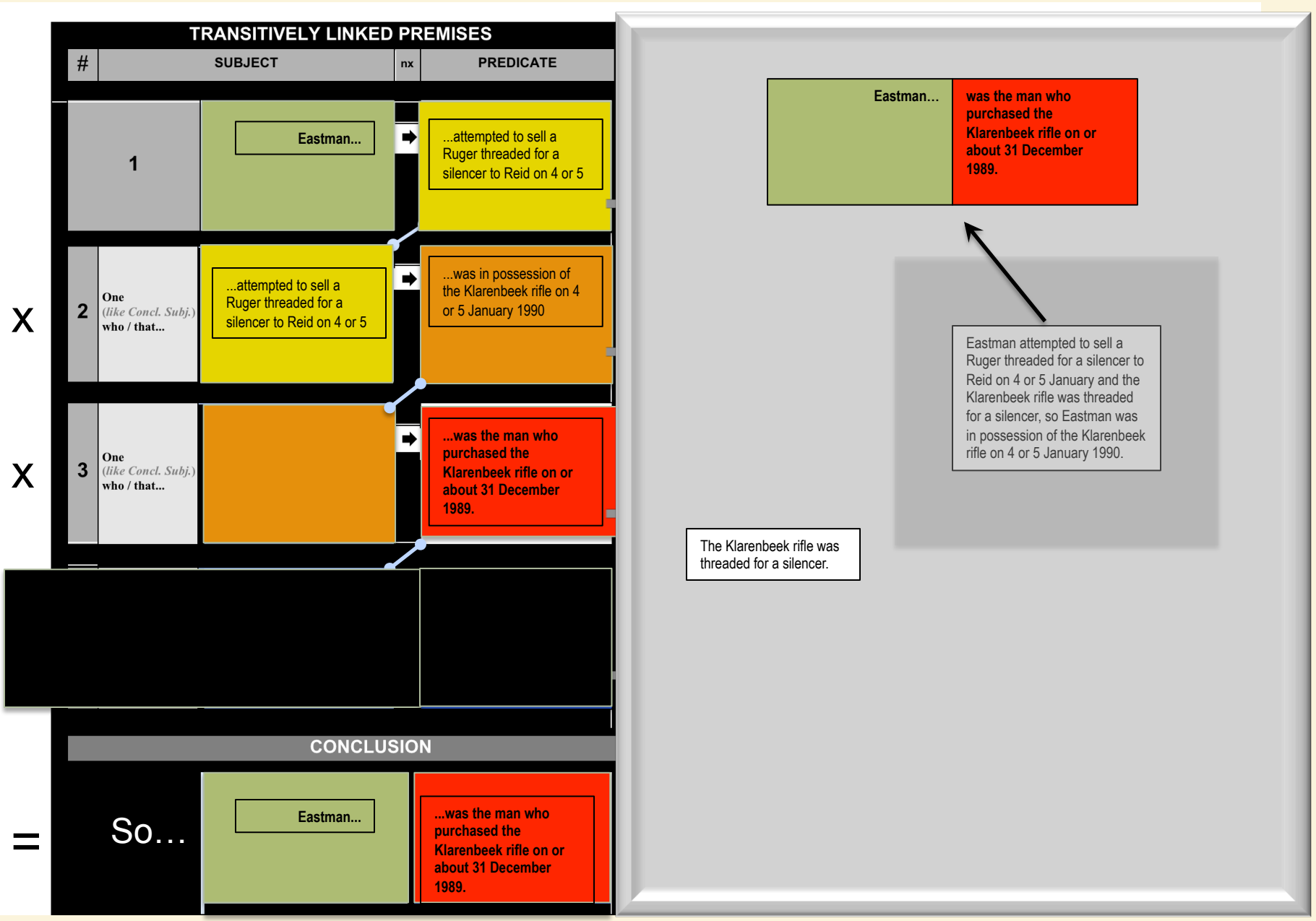
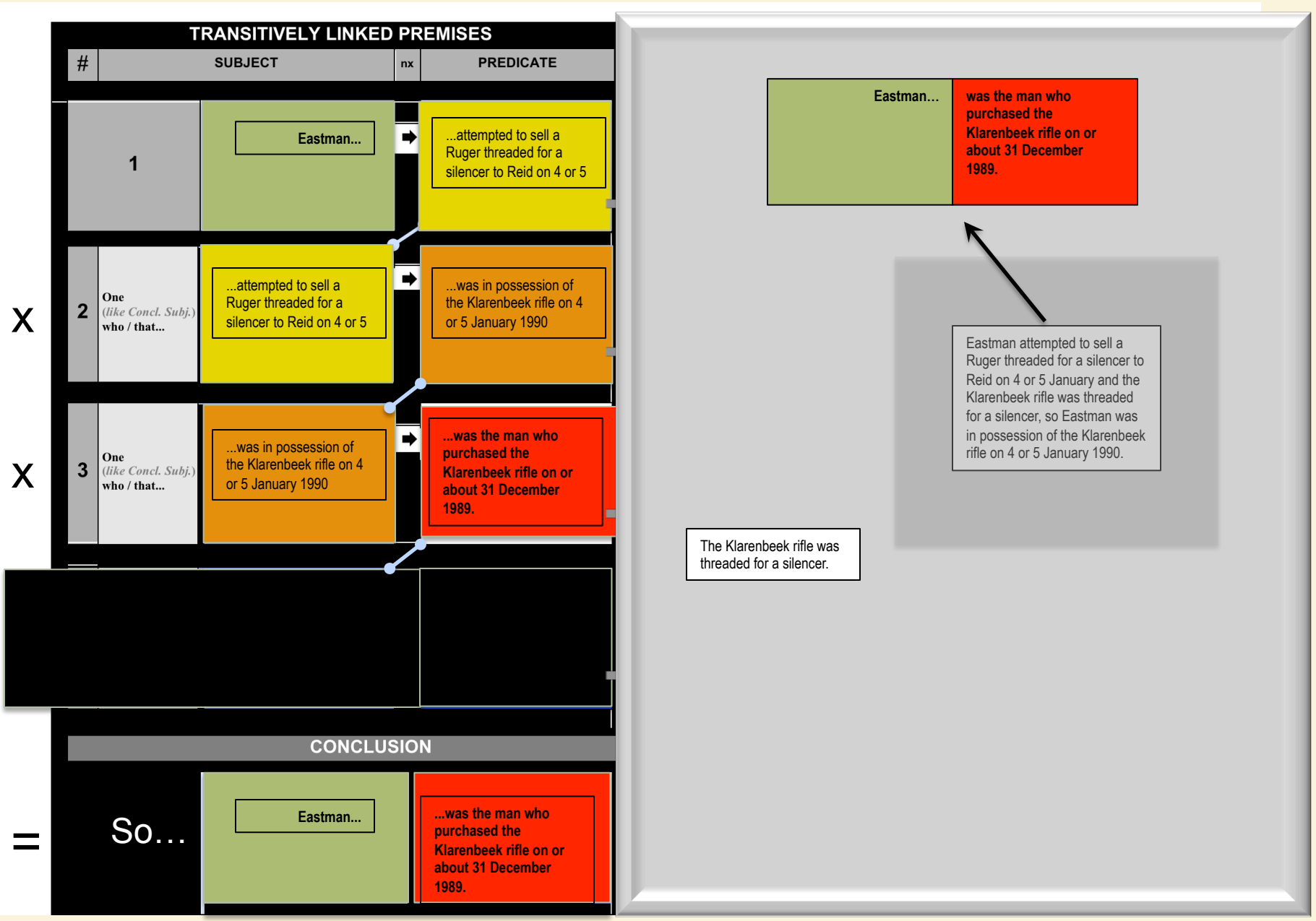
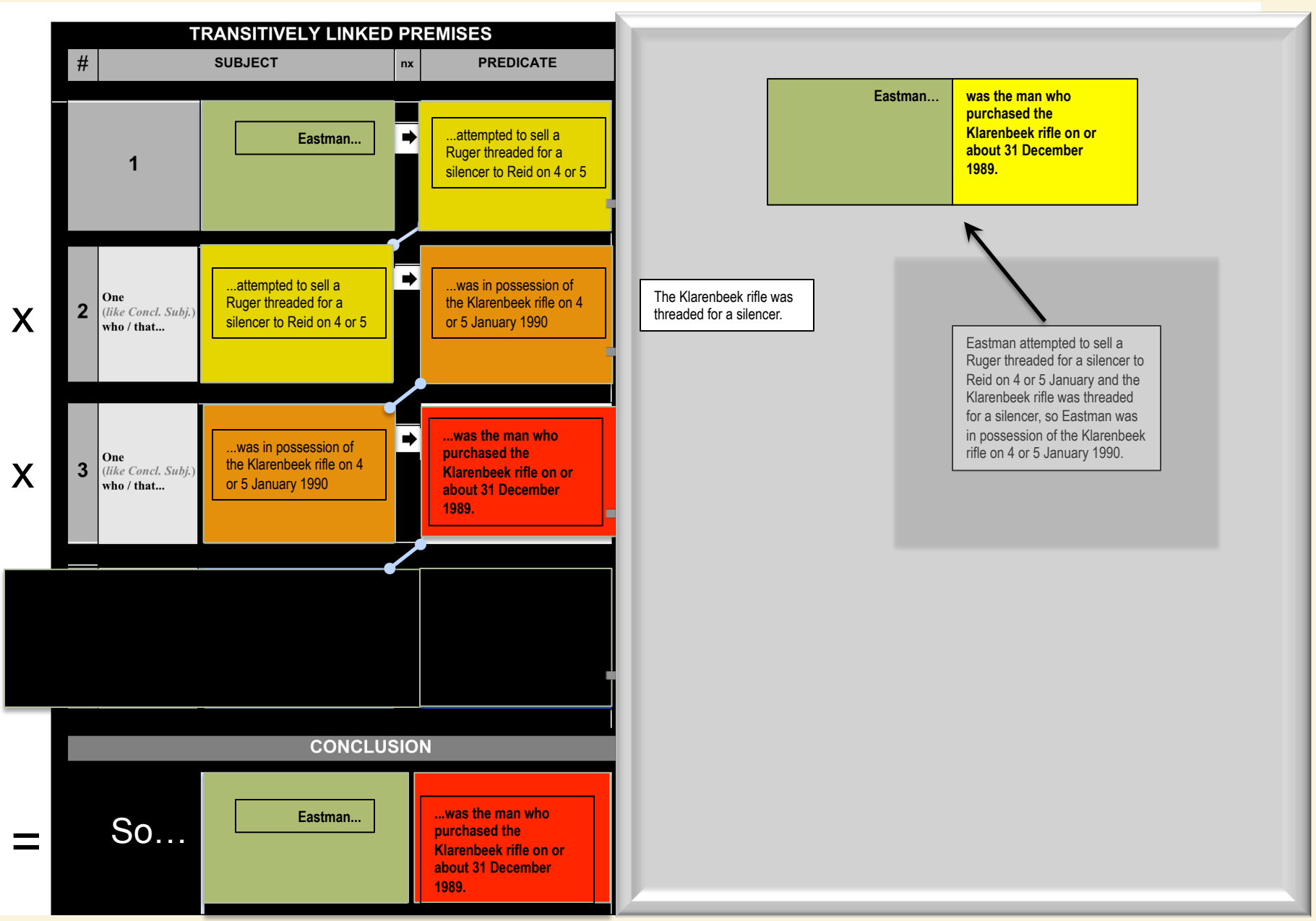
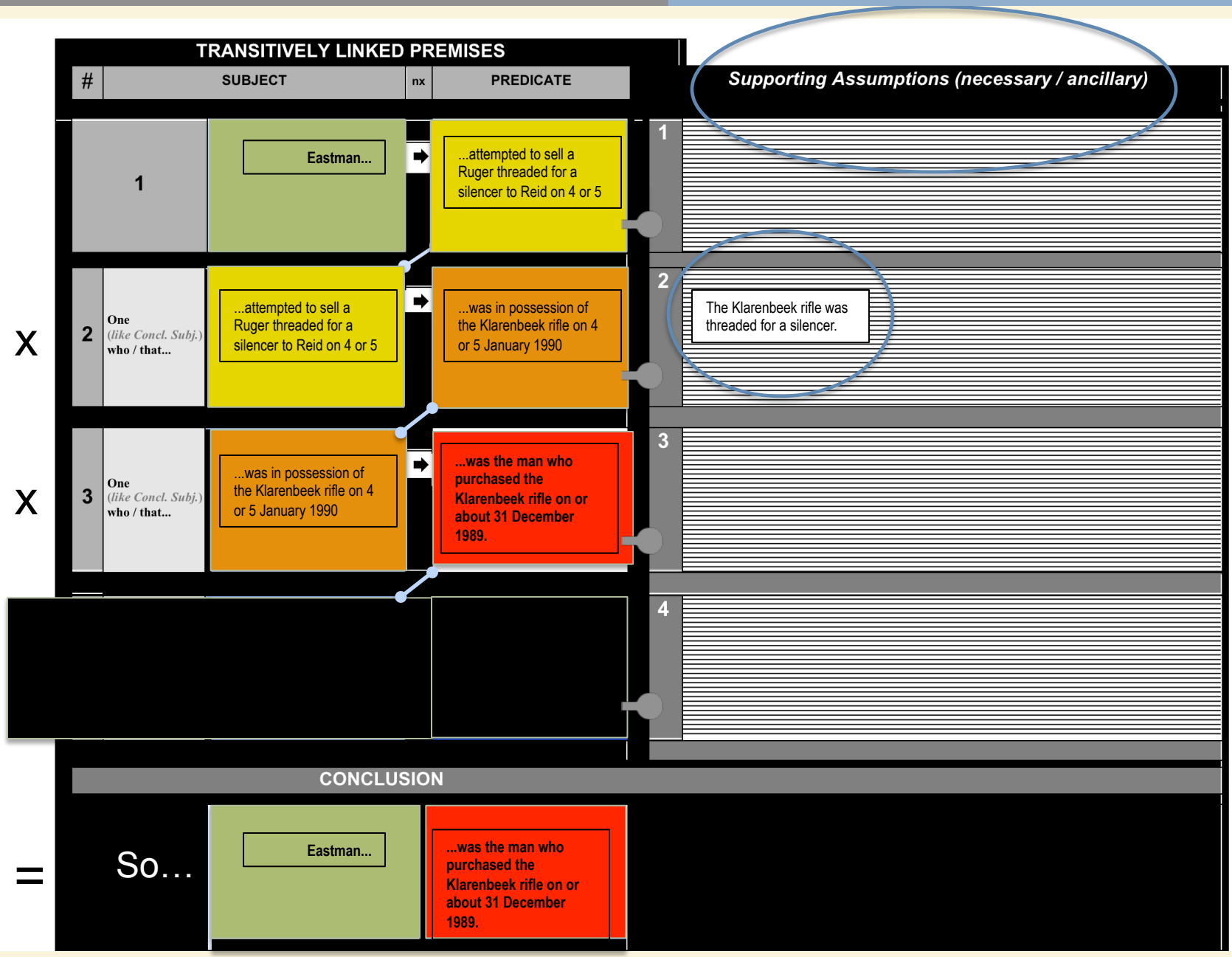
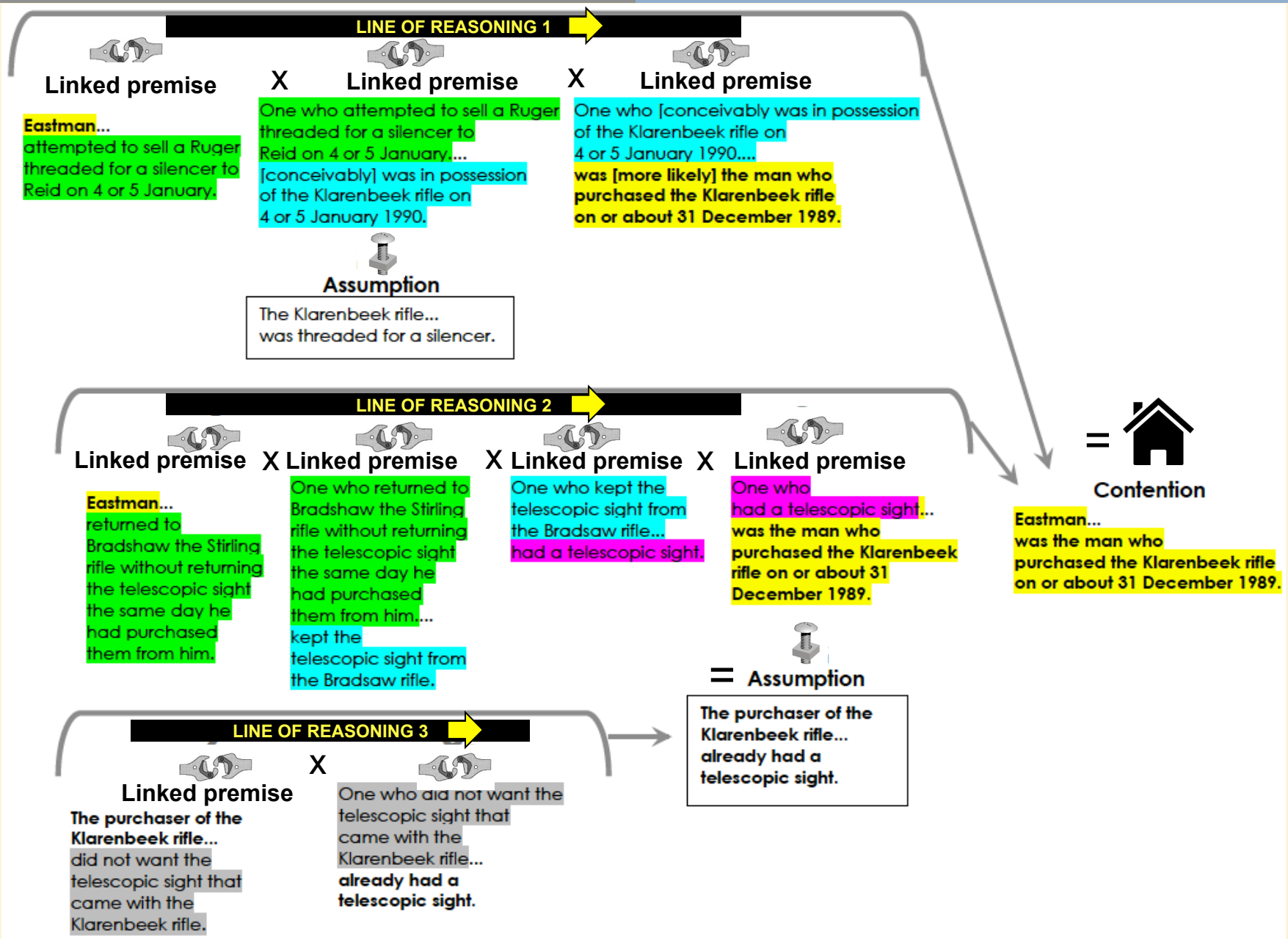
Eastman attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January and the Klarenbeek rifle was threaded for a silencer, so Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990.
The Klarenbeek rifle was threaded for a silencer.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
X
2
One (like Concl. Subj.) who / that...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
X
3
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January and the Klarenbeek rifle was threaded for a silencer, so Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990.
The Klarenbeek rifle was threaded for a silencer.

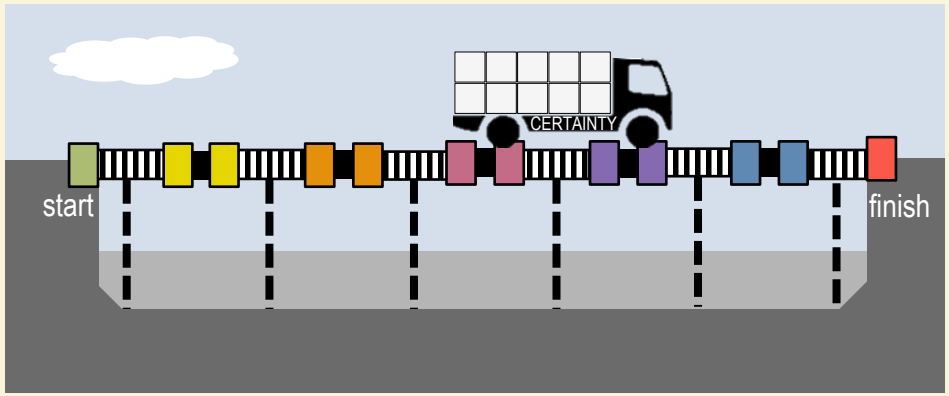

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
X
2
One (like Concl. Subj.) who / that...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
X
3
One (like Concl. Subj.) who / that...
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January and the Klarenbeek rifle was threaded for a silencer, so Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990.
The Klarenbeek rifle was threaded for a silencer.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
X
2
One (like Concl. Subj.) who / that...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
X
3
One (like Concl. Subj.) who / that...
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The Klarenbeek rifle was threaded for a silencer.
Eastman attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January and the Klarenbeek rifle was threaded for a silencer, so Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
Supporting Assumptions (necessary / ancillary)
1
Eastman...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
X
2
One (like Concl. Subj.) who / that...
...attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
The Klarenbeek rifle was threaded for a silencer.
X
3
One (like Concl. Subj.) who / that...
...was in possession of the Klarenbeek rifle on 4 or 5 January 1990
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
4
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.


LINE OF REASONING 1
Linked premise
X
Linked premise
X
Linked premise
Eastman... attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January.
One who attempted to sell a Ruger threaded for a silencer to Reid on 4 or 5 January.... [conceivably] was in possession of the Klarenbeek rifle on 4 or 5 January 1990.
One who [conceivably was in possession of the Klarenbeek rifle on 4 or 5 January 1990.... was [more likely] the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Assumption
The Klarenbeek rifle... was threaded for a silencer.
LINE OF REASONING 2
Linked premise
X
Linked premise
X
Linked premise
X
Linked premise
Eastman... returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him.
One who returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him.... kept the telescopic sight from the Bradsaw rifle.
One who kept the telescopic sight from the Bradsaw rifle... had a telescopic sight.
One who had a telescopic sight... was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
=
Contention
Eastman... was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
= Assumption
The purchaser of the Klarenbeek rifle... already had a telescopic sight.
LINE OF REASONING 3
Linked premise
X
The purchaser of the Klarenbeek rifle... did not want the telescopic sight that came with the Klarenbeek rifle.
One who did not want the telescopic sight that came with the Klarenbeek rifle... already had a telescopic sight.

Structural Errors 5



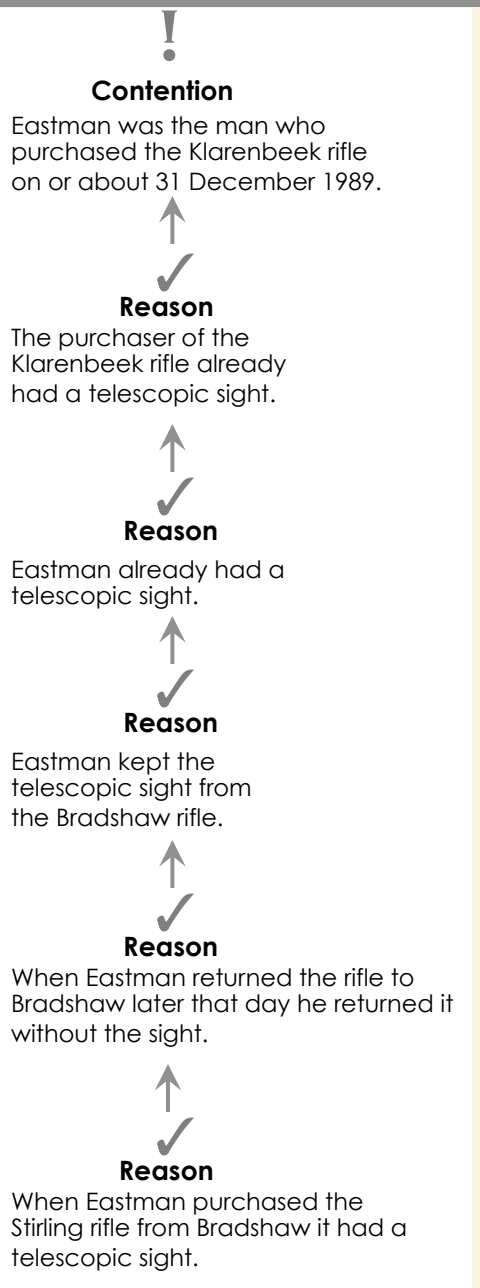
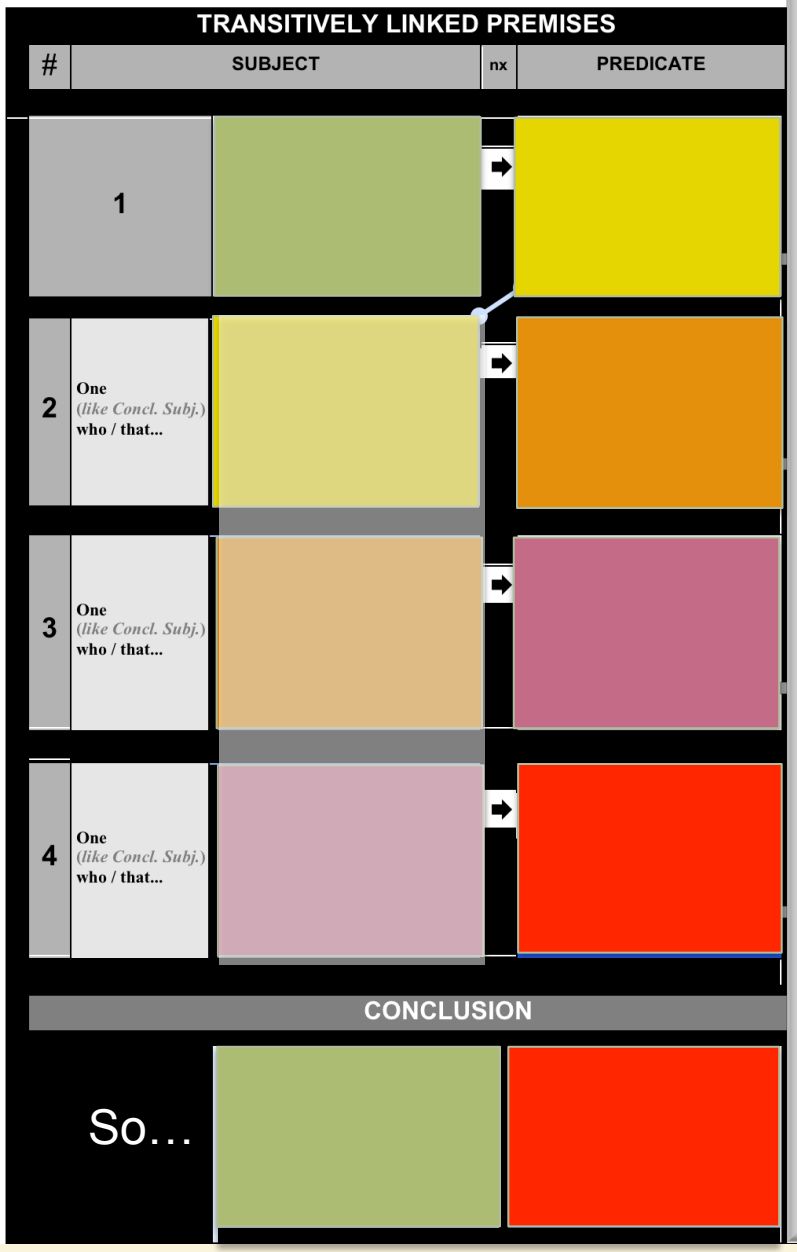


Figure 11.16 Co-premises as a series of inferences



!

Contention

Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

Reason

The purchaser of the Klarenbeek rifle already had a telescopic sight.

Reason

Eastman already had a telescopic sight.

Reason

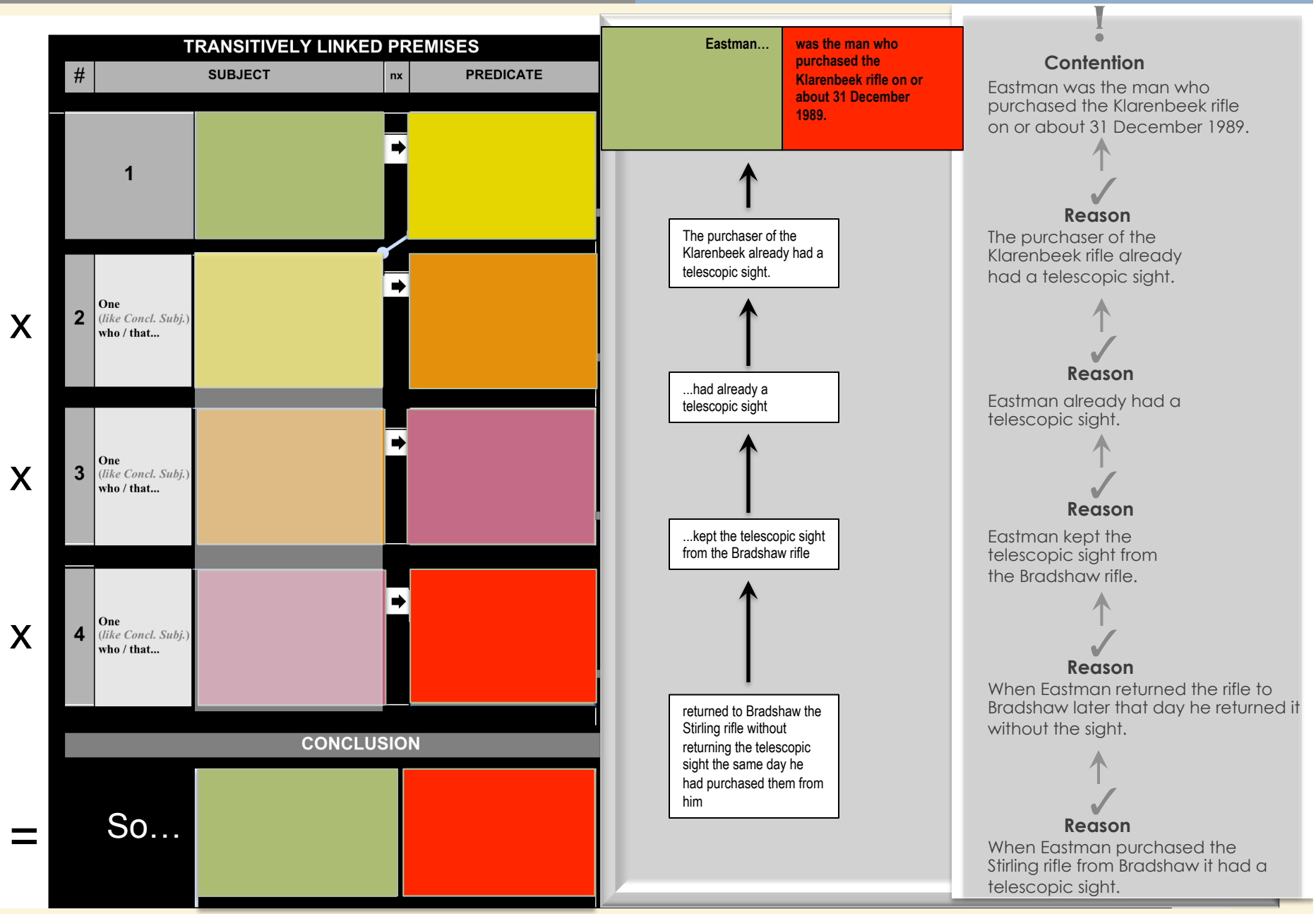
Eastman kept the telescopic sight from the Bradshaw rifle.

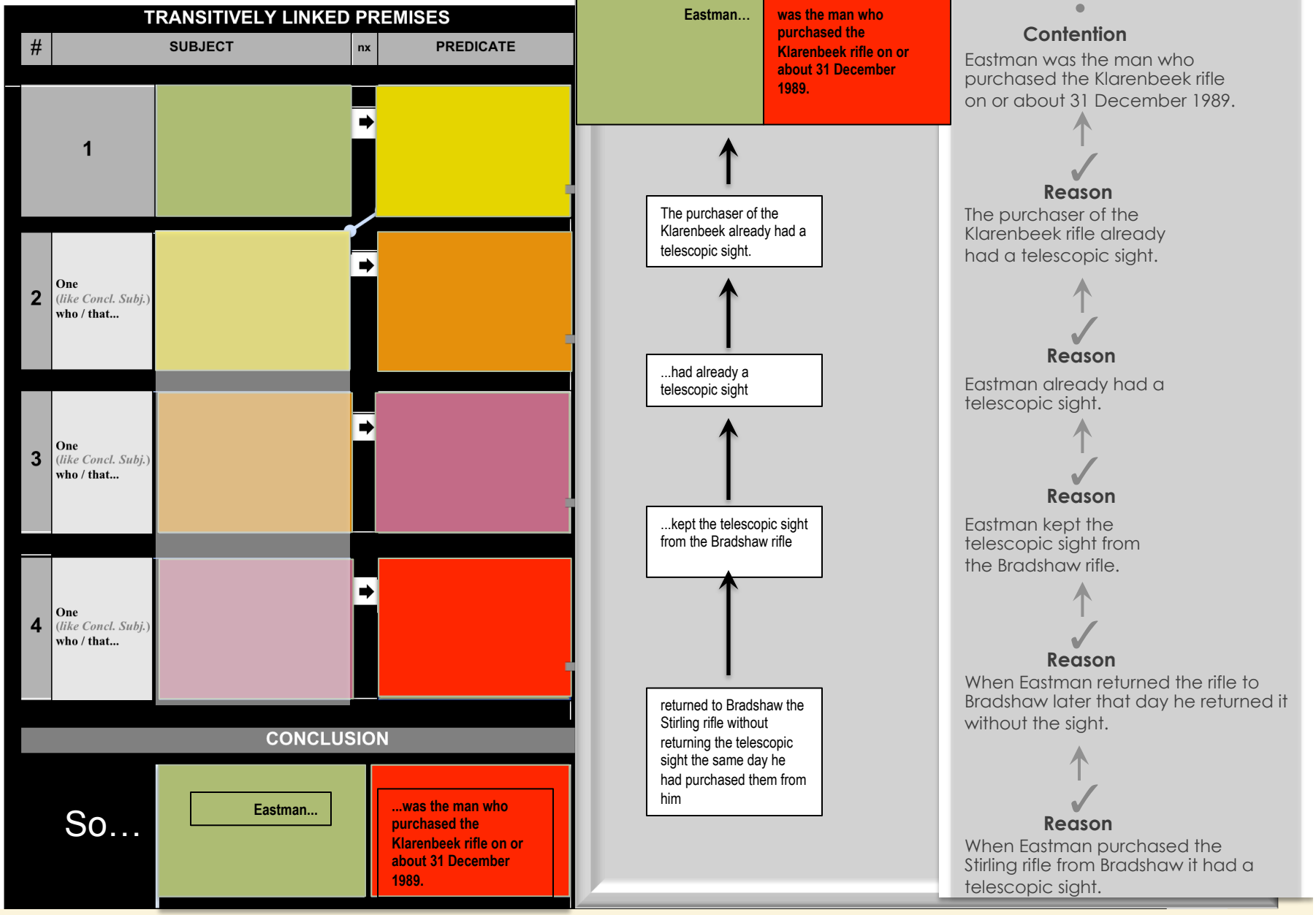
Reason

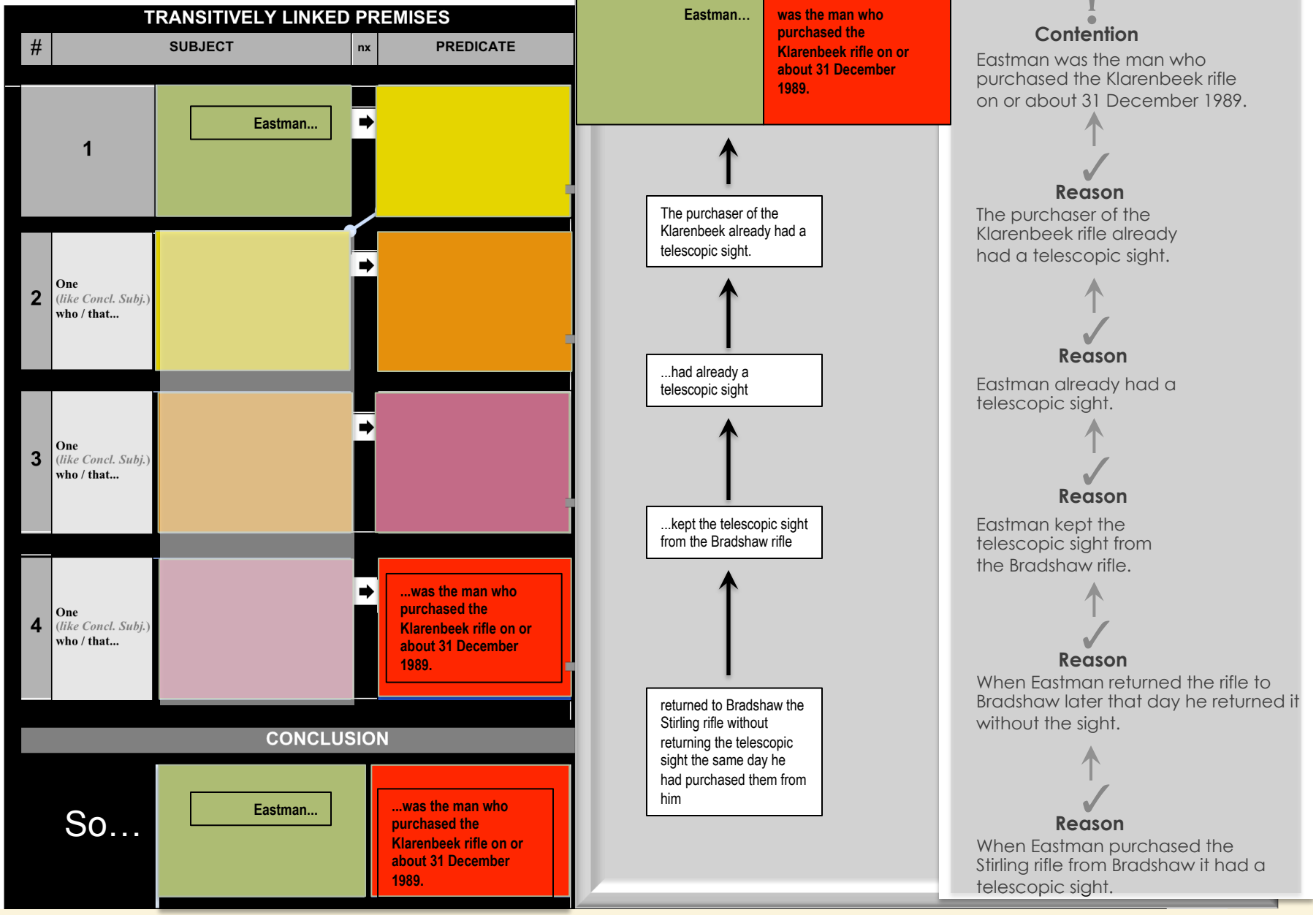
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.

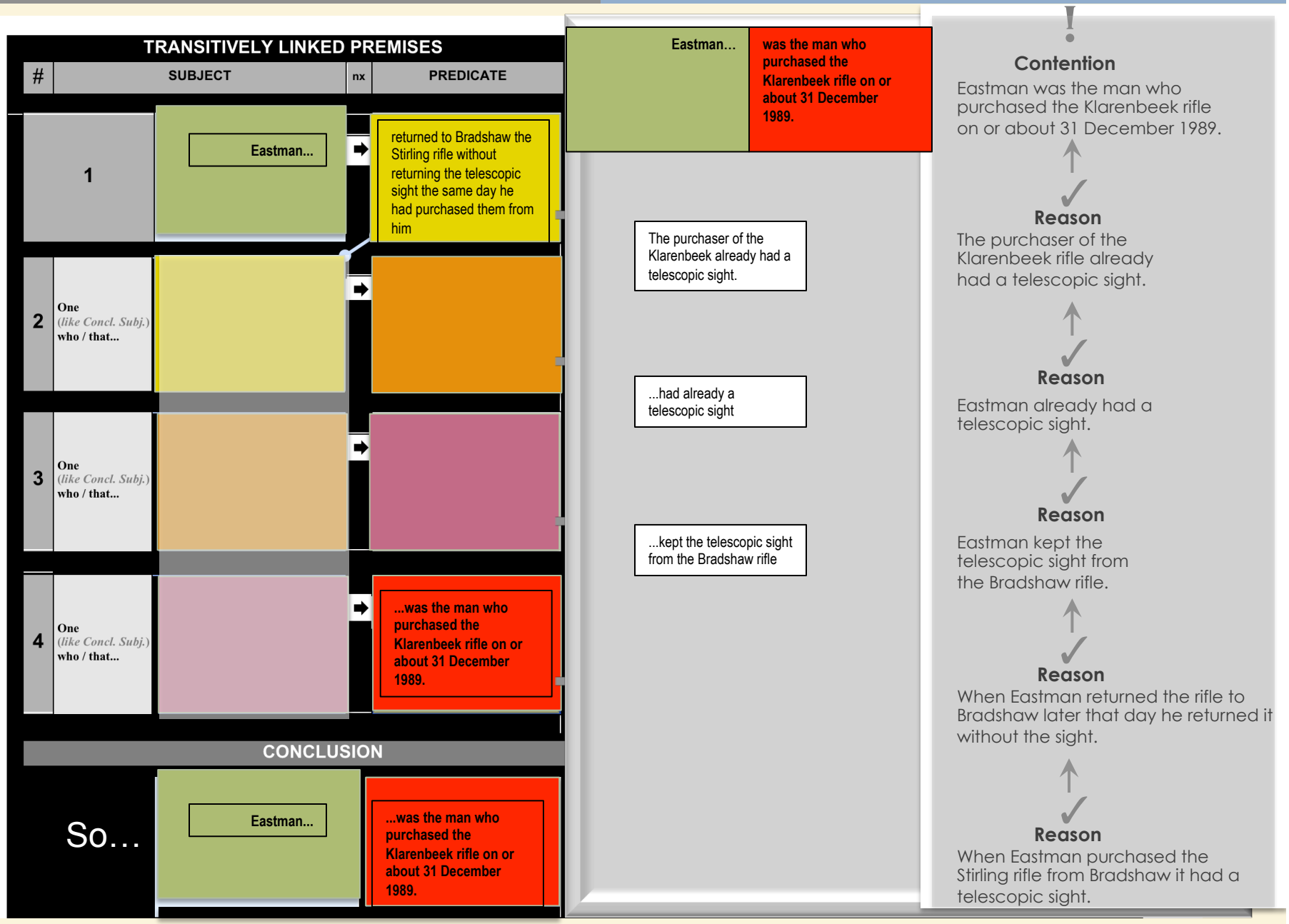
Reason

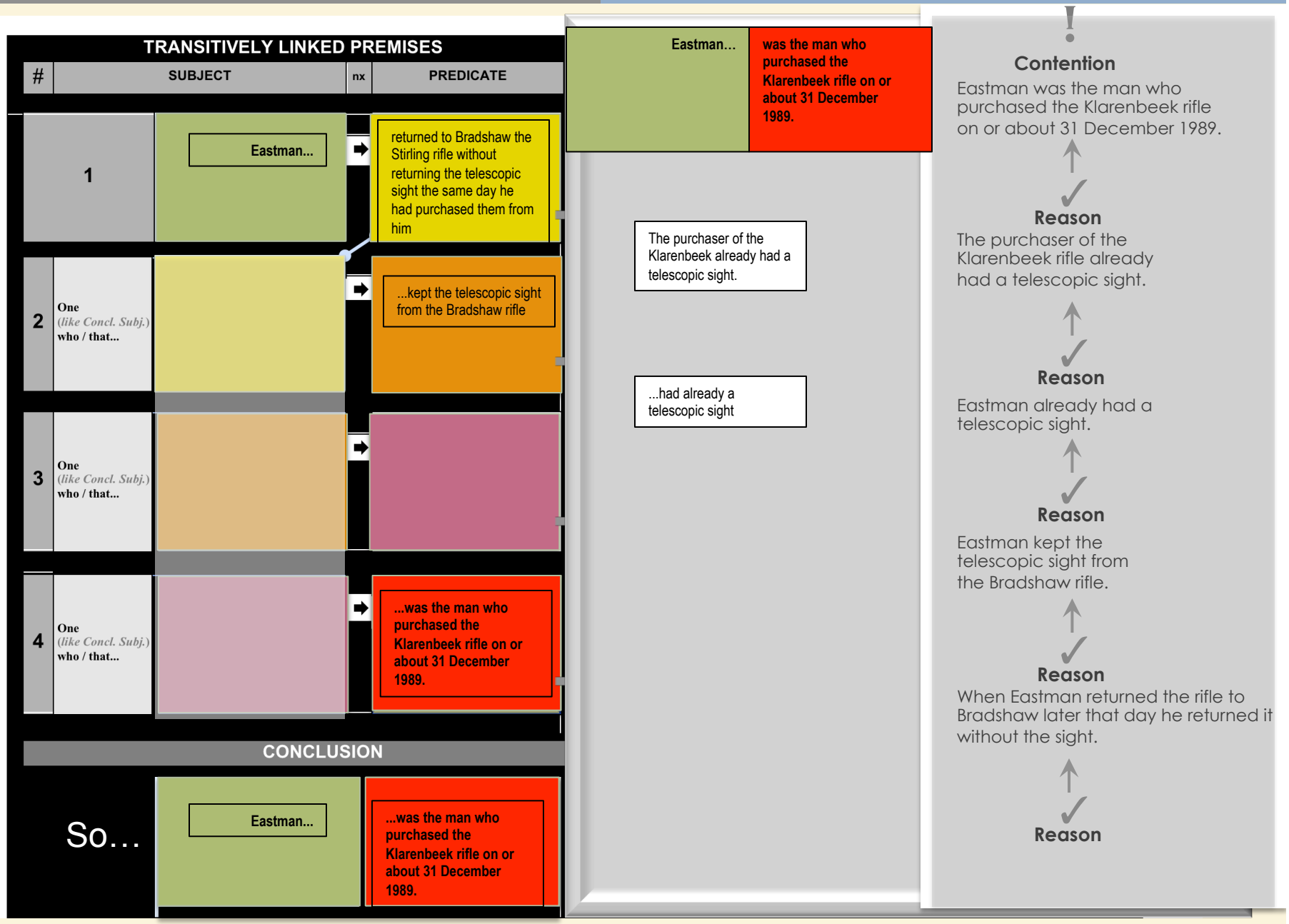
When Eastman purchased the Stirling rifle from Bradshaw it had a telescopic sight.

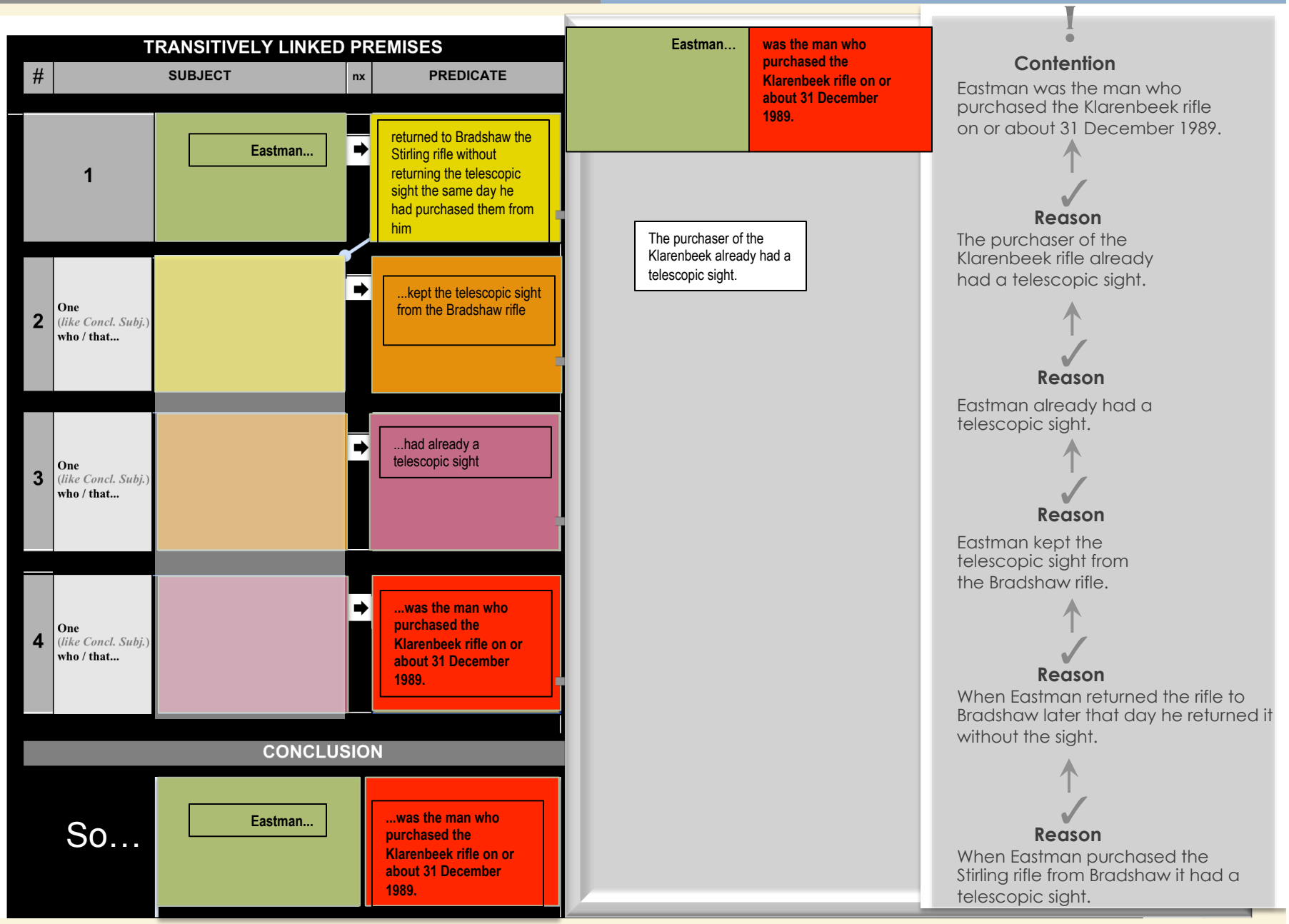

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
2
One
(like Concl. Subj.)
who / that...
3
One
(like Concl. Subj.)
who / that...
4
One
(like Concl. Subj.)
who / that...
X
X
X
=
CONCLUSION
So…
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
...had already a telescopic sight
...kept the telescopic sight from the Bradshaw rifle
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
!
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
Reason
When Eastman purchased the Stirling rifle from Bradshaw it had a telescopic sight.

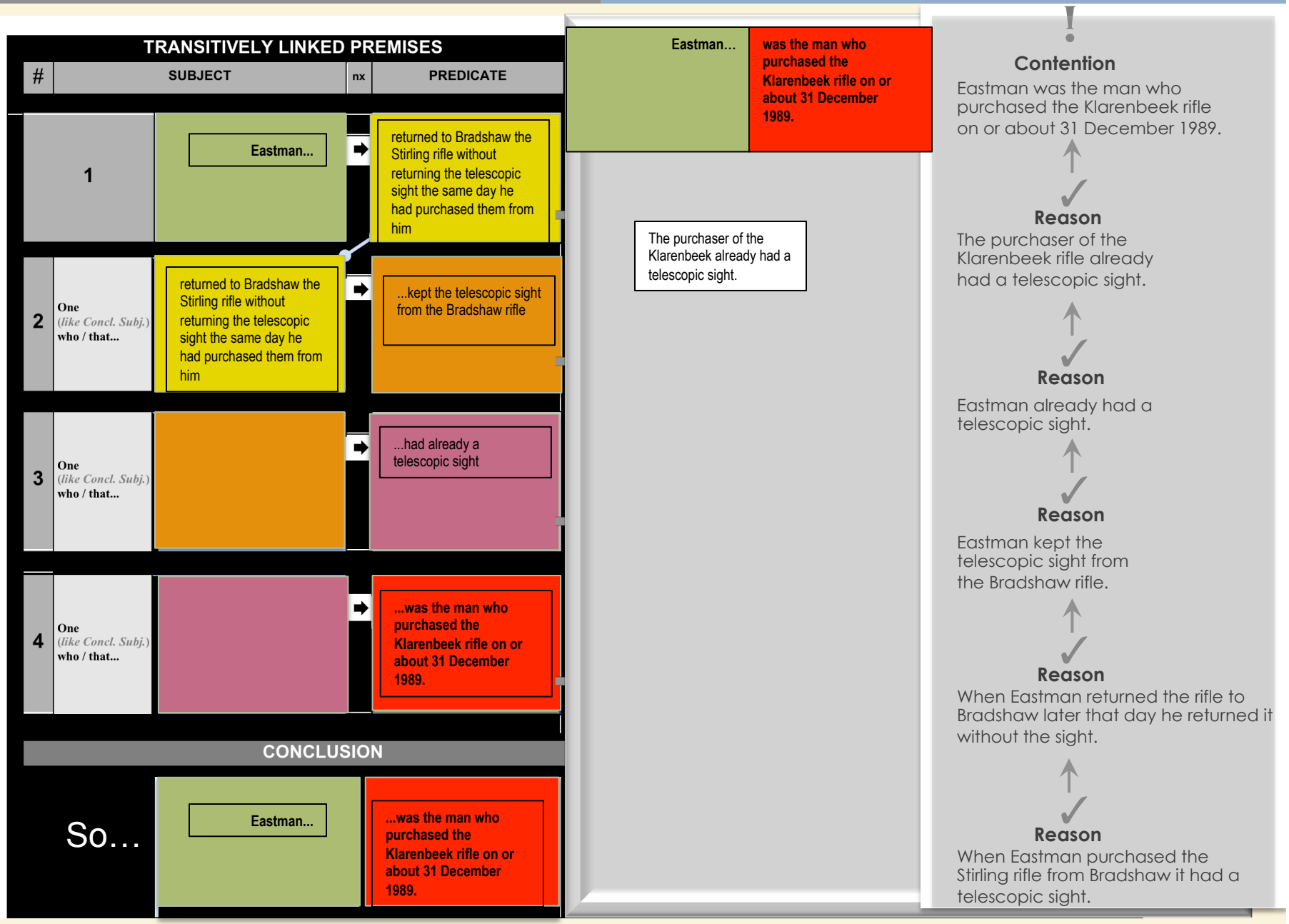

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
...kept the telescopic sight from the Bradshaw rifle
...had already a telescopic sight
The purchaser of the Klarenbeek already had a telescopic sight.
!
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
Reason
When Eastman purchased the Stirling rifle from Bradshaw it had a telescopic sight.

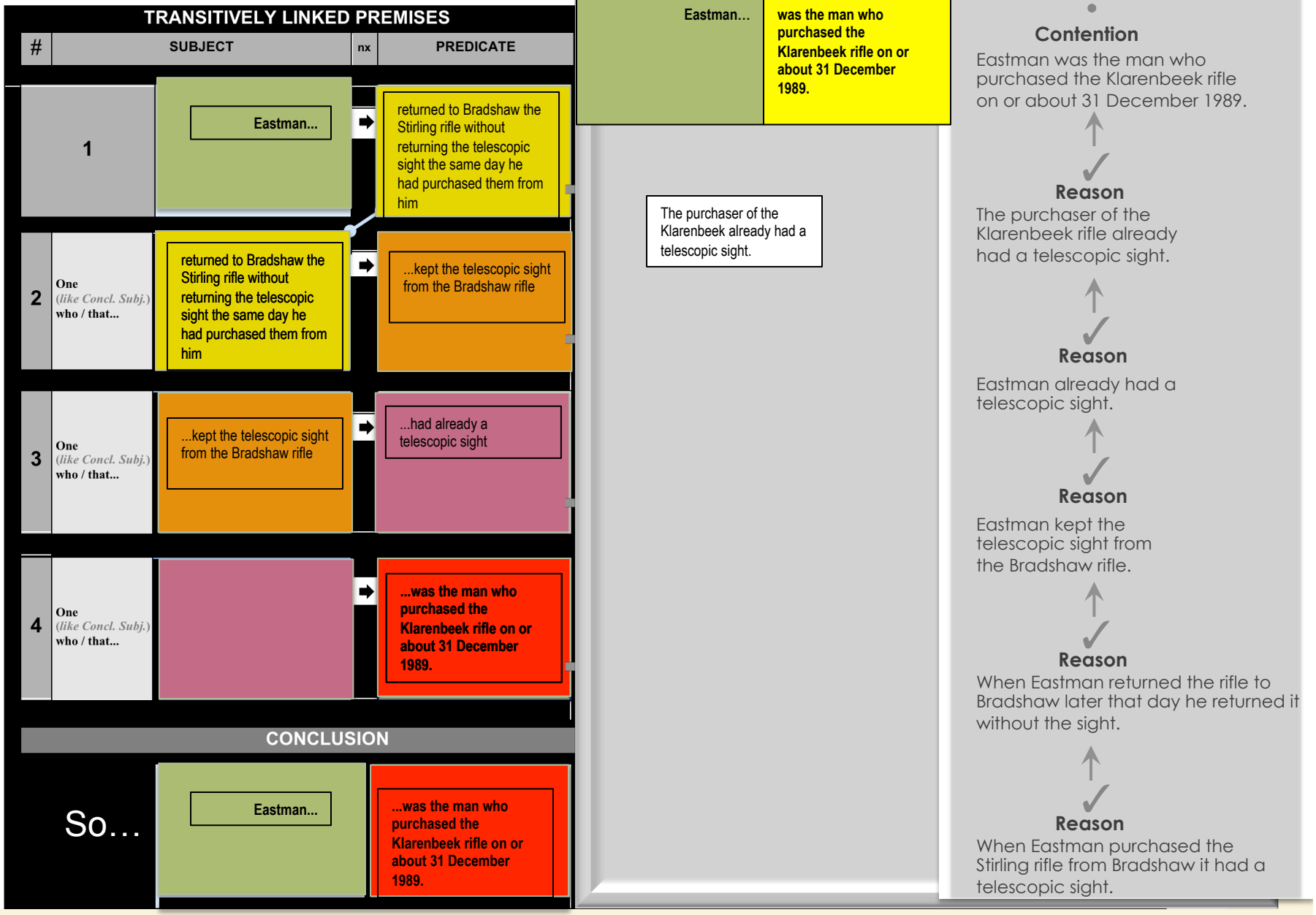

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
...had already a telescopic sight
...kept the telescopic sight from the Bradshaw rifle
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
Reason
When Eastman purchased the Stirling rifle from Bradshaw it had a telescopic sight.

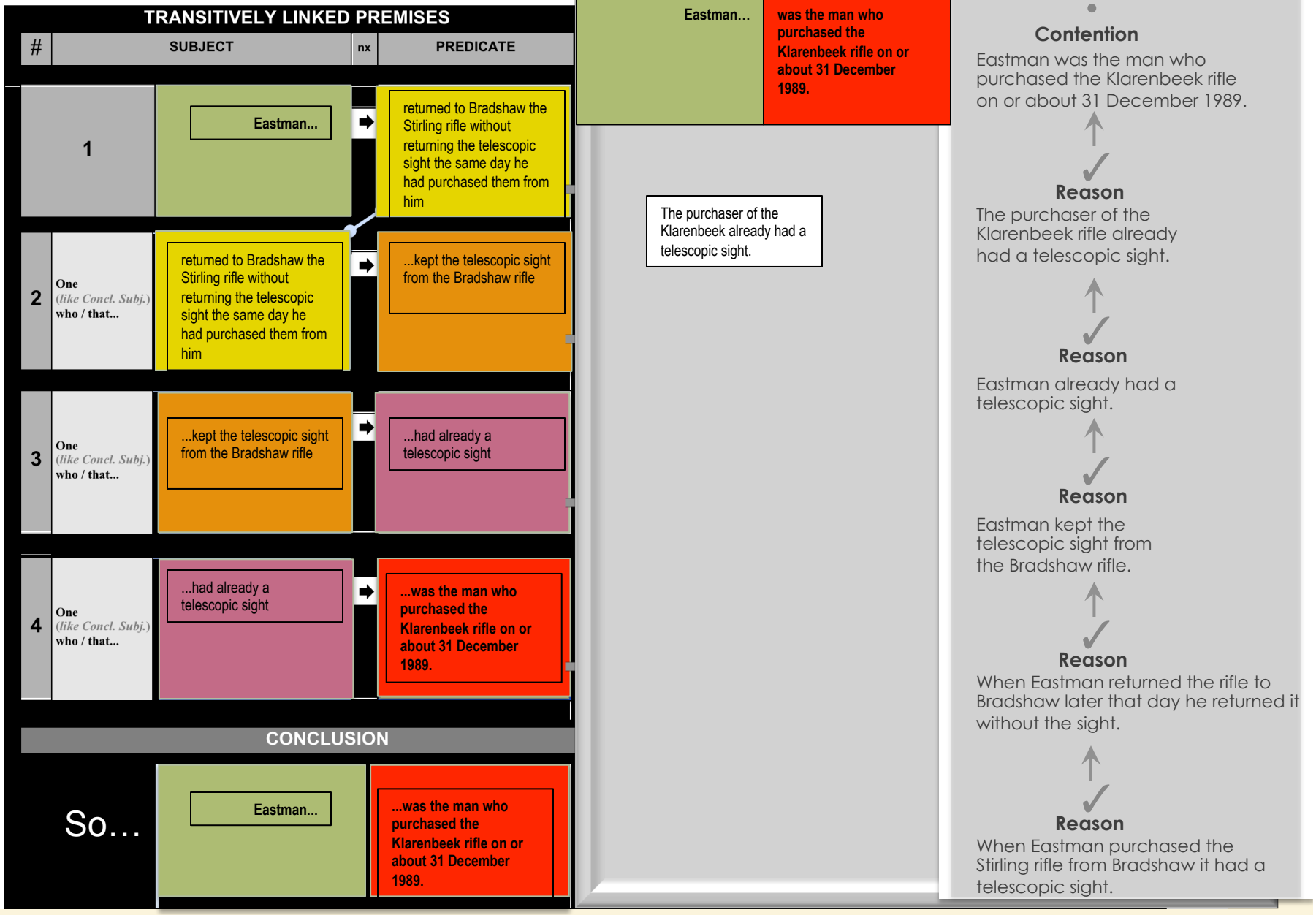

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
X
2
One (like Concl. Subj.) who / that...
X
3
One (like Concl. Subj.) who / that...
X
4
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
...had already a telescopic sight
...kept the telescopic sight from the Bradshaw rifle
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
Reason
When Eastman purchased the Stirling rifle from Bradshaw it had a telescopic sight.

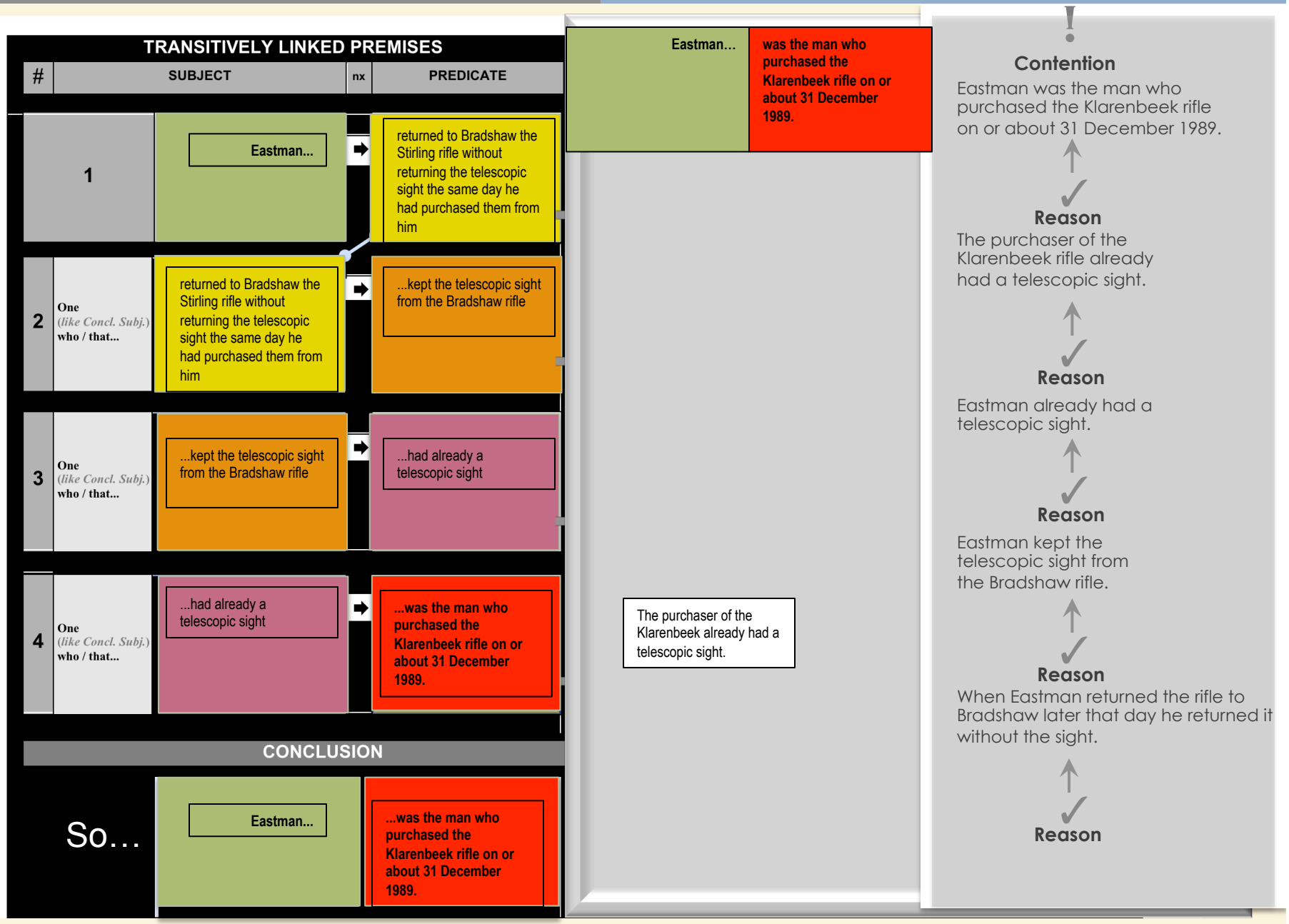

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
X
2
One (like Concl. Subj.) who / that...
...kept the telescopic sight from the Bradshaw rifle
X
3
One (like Concl. Subj.) who / that...
X
4
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
...had already a telescopic sight
!
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
Reason

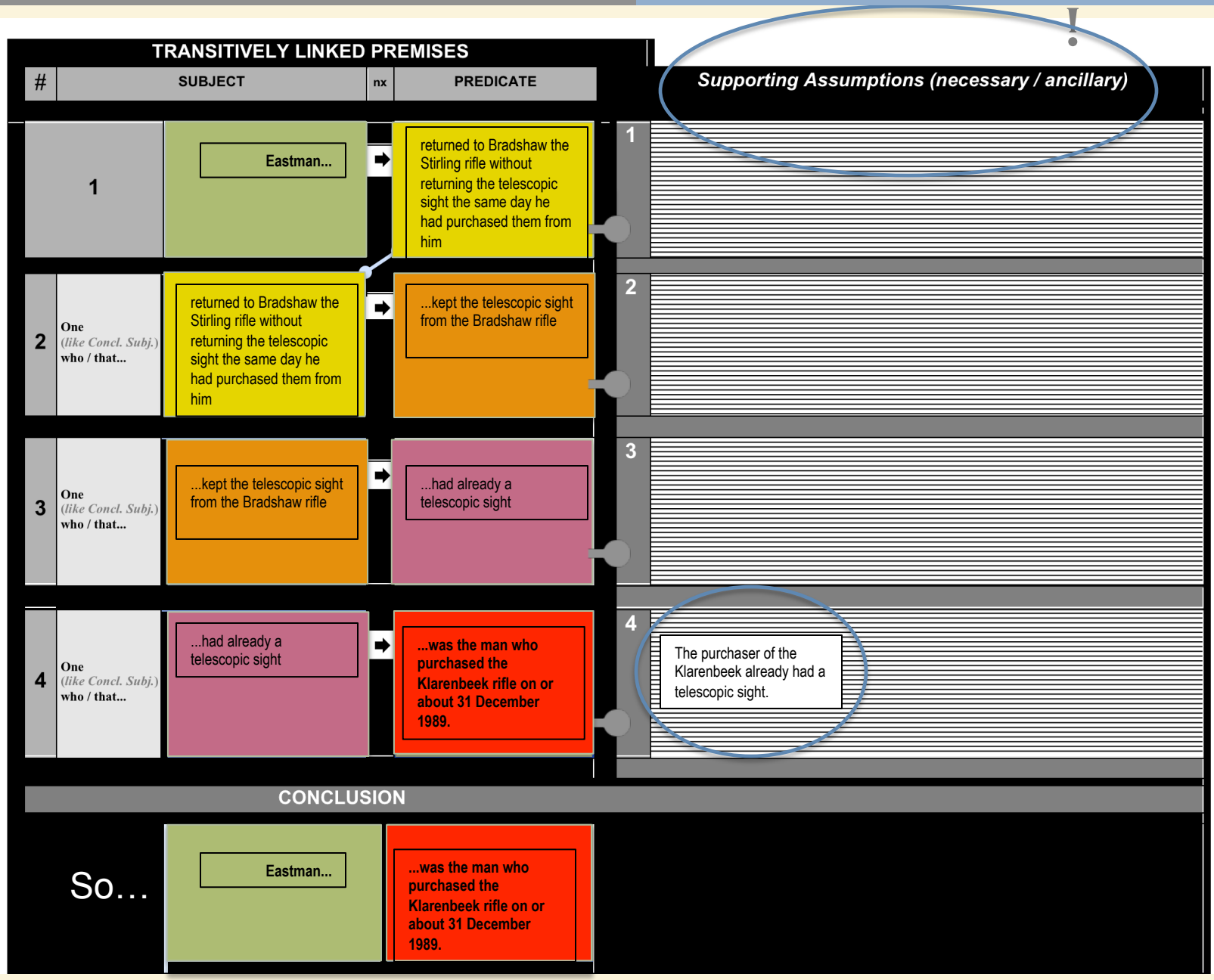

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
X
2
One (like Concl. Subj.) who / that...
...kept the telescopic sight from the Bradshaw rifle
X
3
One (like Concl. Subj.) who / that...
...had already a telescopic sight
X
4
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
Reason
When Eastman purchased the Stirling rifle from Bradshaw it had a telescopic sight.

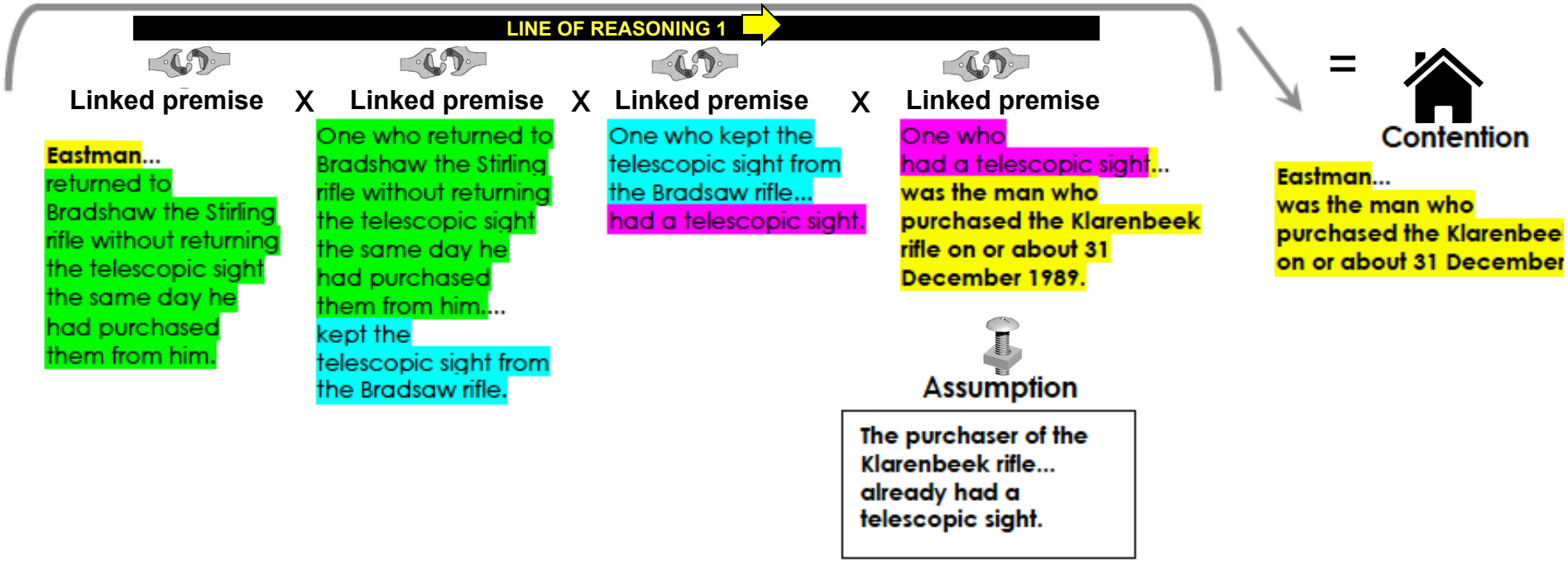

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
X
2
One (like Concl. Subj.) who / that...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
...kept the telescopic sight from the Bradshaw rifle
X
3
One (like Concl. Subj.) who / that...
...had already a telescopic sight
X
4
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
!
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
✓
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
✓
Reason
Eastman already had a telescopic sight.
✓
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
✓
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
✓
Reason
When Eastman purchased the Stirling rifle from Bradshaw it had a telescopic sight.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
X
2
One (like Concl. Subj.) who / that...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
...kept the telescopic sight from the Bradshaw rifle
X
3
One (like Concl. Subj.) who / that...
...kept the telescopic sight from the Bradshaw rifle
...had already a telescopic sight
X
4
One (like Concl. Subj.) who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
!
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
Reason
When Eastman purchased the Stirling rifle from Bradshaw it had a telescopic sight.

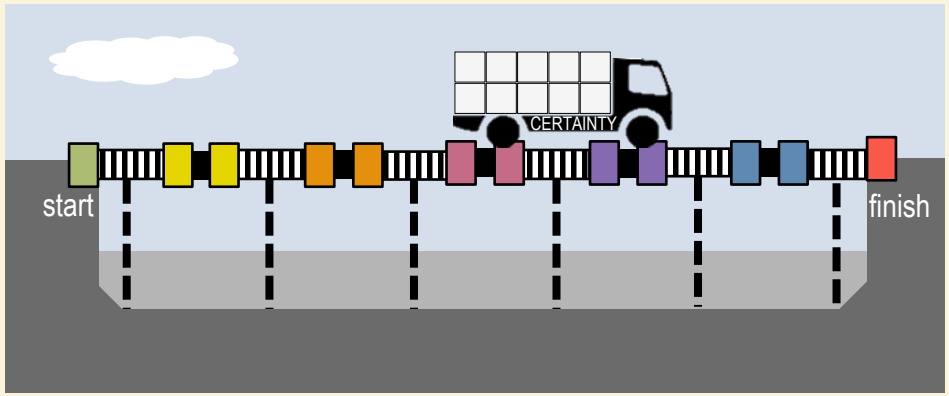

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
X
2
One (like Concl. Subj.) who / that...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
...kept the telescopic sight from the Bradshaw rifle
X
3
One (like Concl. Subj.) who / that...
...kept the telescopic sight from the Bradshaw rifle
...had already a telescopic sight
X
4
One (like Concl. Subj.) who / that...
...had already a telescopic sight
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
!
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
✓
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
✓
Reason
Eastman already had a telescopic sight.
✓
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
✓
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
✓
Reason
When Eastman purchased the Stirling rifle from Bradshaw it had a telescopic sight.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
X
2
One (like Concl. Subj.) who / that...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
...kept the telescopic sight from the Bradshaw rifle
X
3
One (like Concl. Subj.) who / that...
...kept the telescopic sight from the Bradshaw rifle
...had already a telescopic sight
X
4
One (like Concl. Subj.) who / that...
...had already a telescopic sight
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
!
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
Eastman kept the telescopic sight from the Bradshaw rifle.
Reason
When Eastman returned the rifle to Bradshaw later that day he returned it without the sight.
Reason

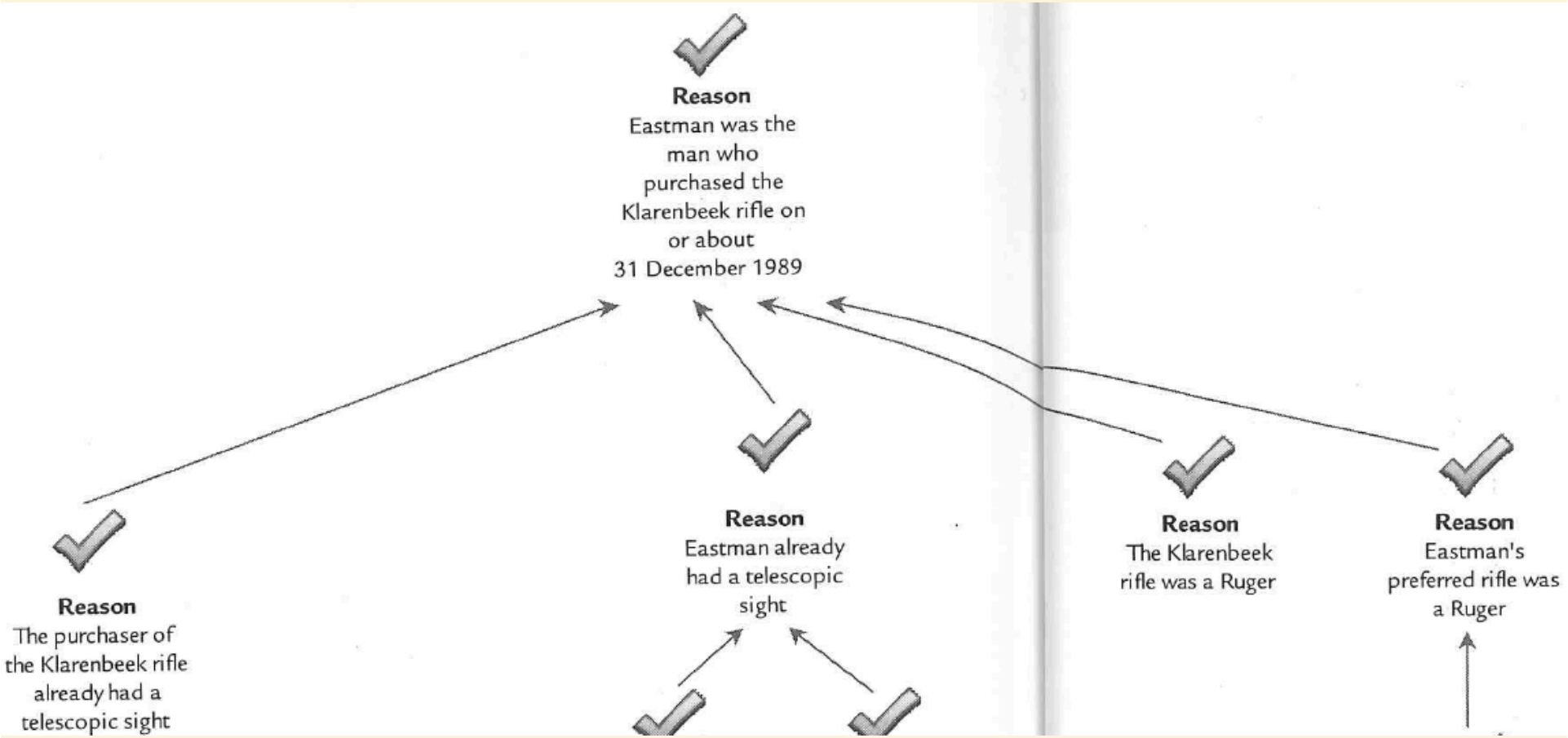

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
Supporting Assumptions (necessary / ancillary)
!
1
Eastman...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
X
2
One (like Concl. Subj.) who / that...
returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him
...kept the telescopic sight from the Bradshaw rifle
X
3
One (like Concl. Subj.) who / that...
...kept the telescopic sight from the Bradshaw rifle
...had already a telescopic sight
X
4
One (like Concl. Subj.) who / that...
...had already a telescopic sight
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek already had a telescopic sight.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.

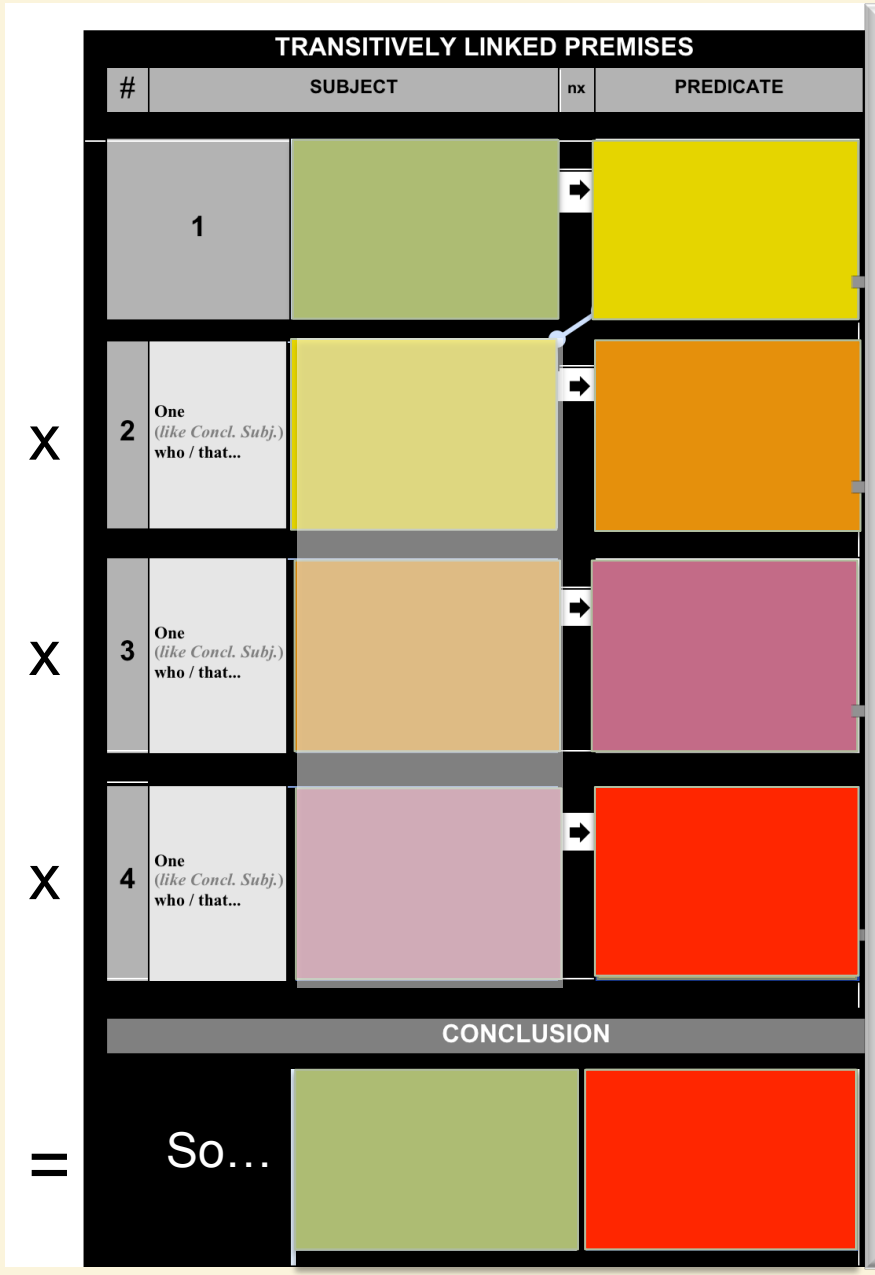

LINE OF REASONING 1
Linked premise
X
Linked premise
X
Linked premise
X
Linked premise
Eastman... returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him.
One who returned to Bradshaw the Stirling rifle without returning the telescopic sight the same day he had purchased them from him.... kept the telescopic sight from the Bradsaw rifle.
One who kept the telescopic sight from the Bradsaw rifle... had a telescopic sight.
One who had a telescopic sight... was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Assumption
The purchaser of the Klarenbeek rifle... already had a telescopic sight.
=
Contention
Eastman... was the man who purchased the Klarenbee on or about 31 December

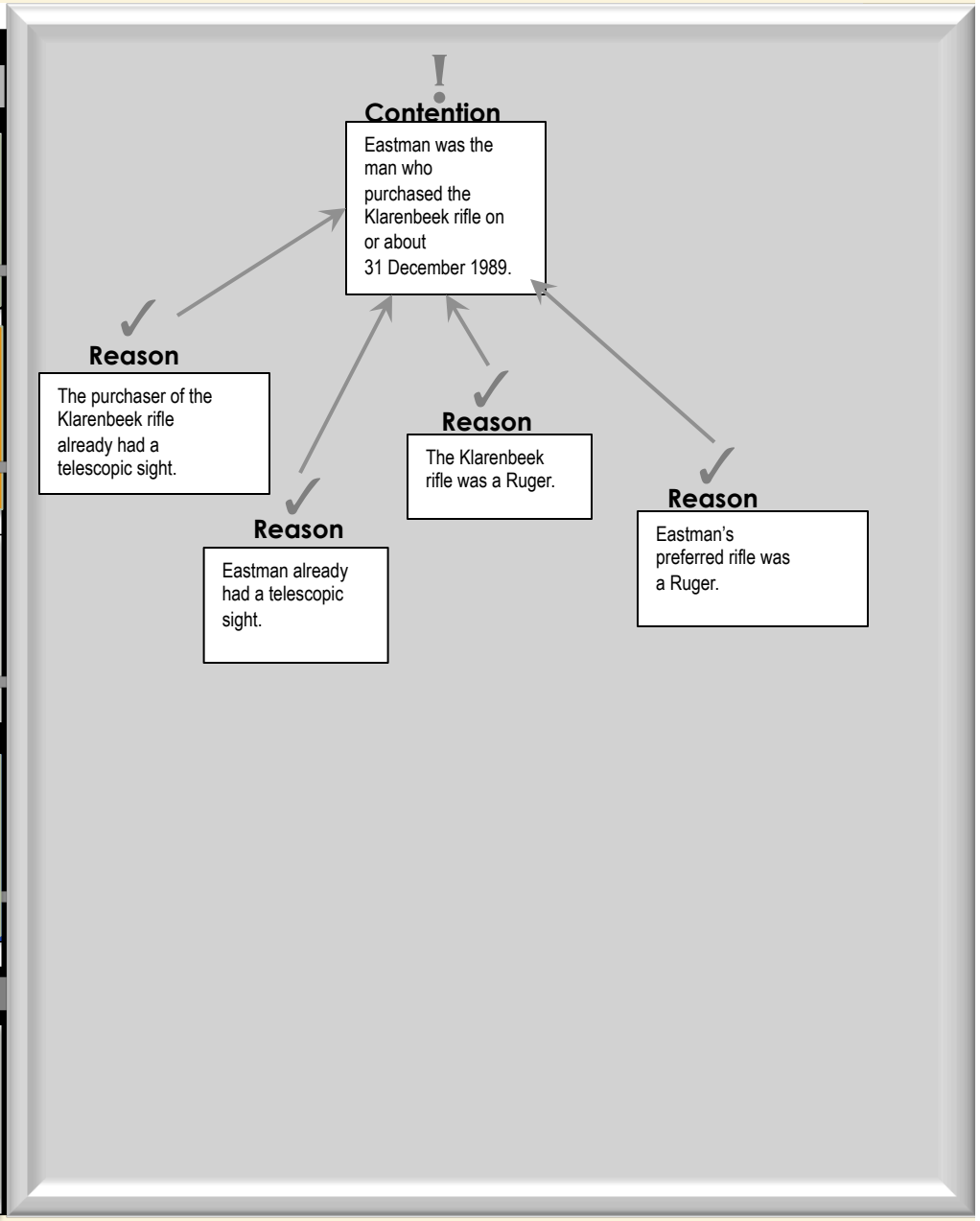
Structural Errors 6

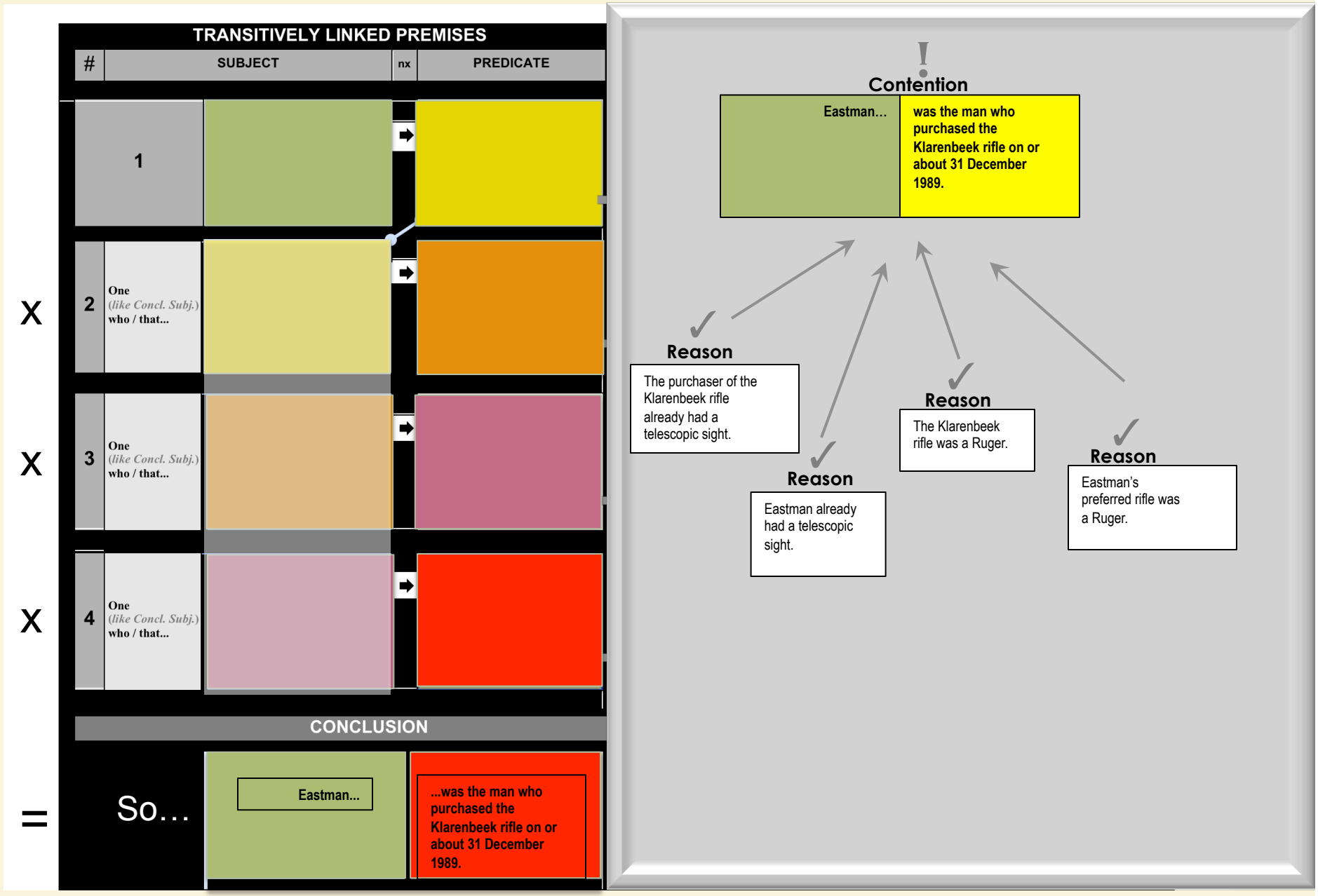


*Andrew Palmer, *Proof: How to Analyse Evidence in Preparation for Trial* (Law Book Company, 2nd ed 2010)




TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
CONCLUSION
=
So…


!
Contention
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
The Klarenbeek rifle was a Ruger.
Reason
Eastman's preferred rifle was a Ruger.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
2
One
(like Concl. Subj.)
who / that...
3
One
(like Concl. Subj.)
who / that...
4
One
(like Concl. Subj.)
who / that...
X
X
X
=
CONCLUSION
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
!
Contention
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
The Klarenbeek rifle was a Ruger.
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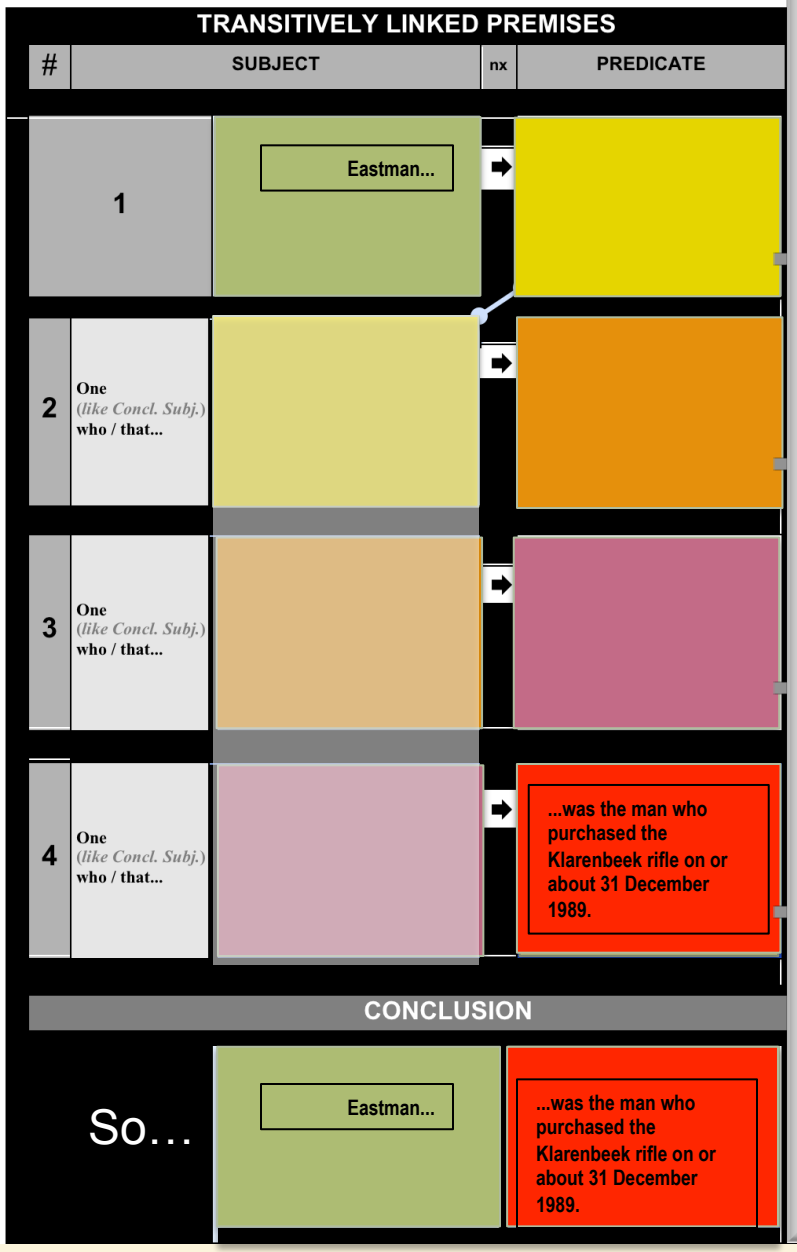
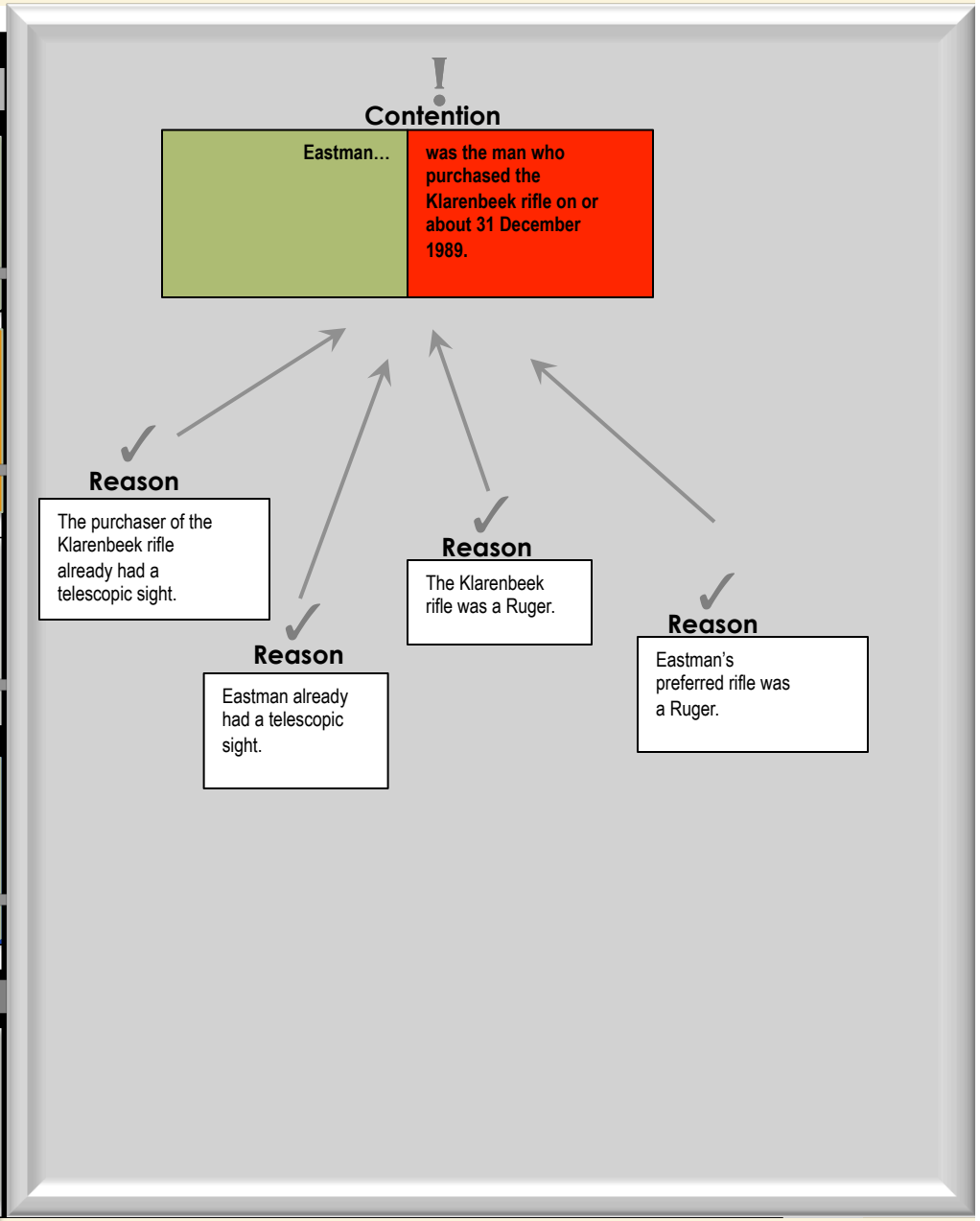
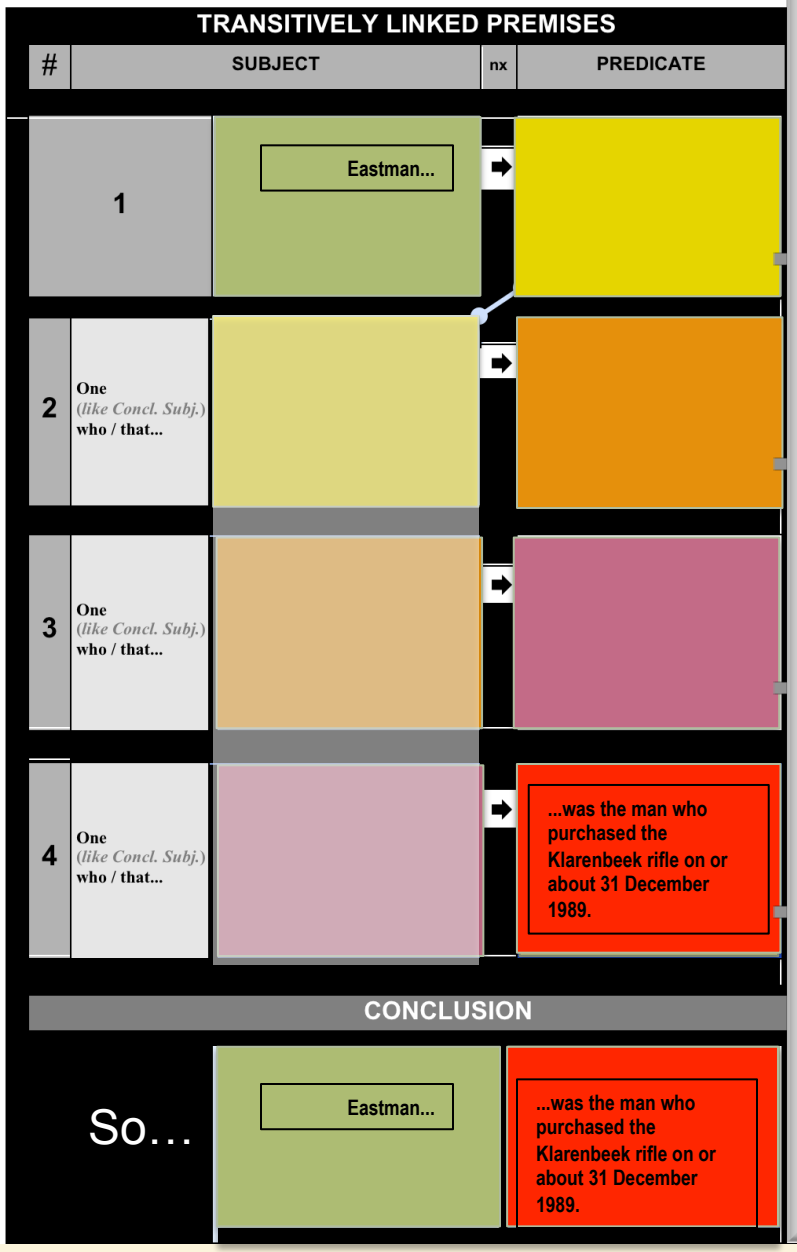
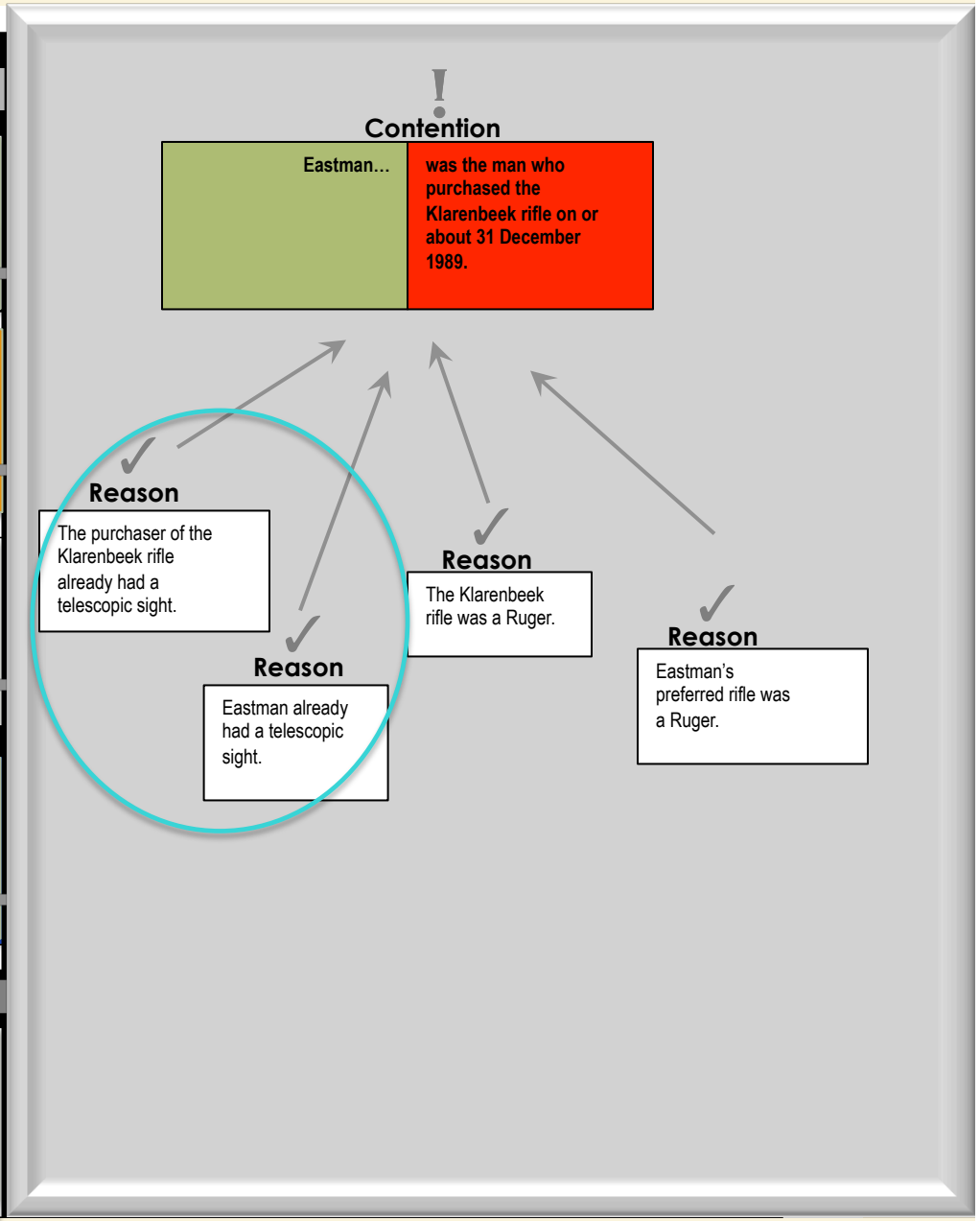

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.


!
Contention
Eastman…
was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
The Klarenbeek rifle was a Ruger.
Reason
Eastman's preferred rifle was a Ruger.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
X
2
One
(like Concl. Subj.)
who / that...
X
3
One
(like Concl. Subj.)
who / that...
X
4
One
(like Concl. Subj.)
who / that...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.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Reason
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Reason
Eastman already had a telescopic sight.
Reason
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Reason
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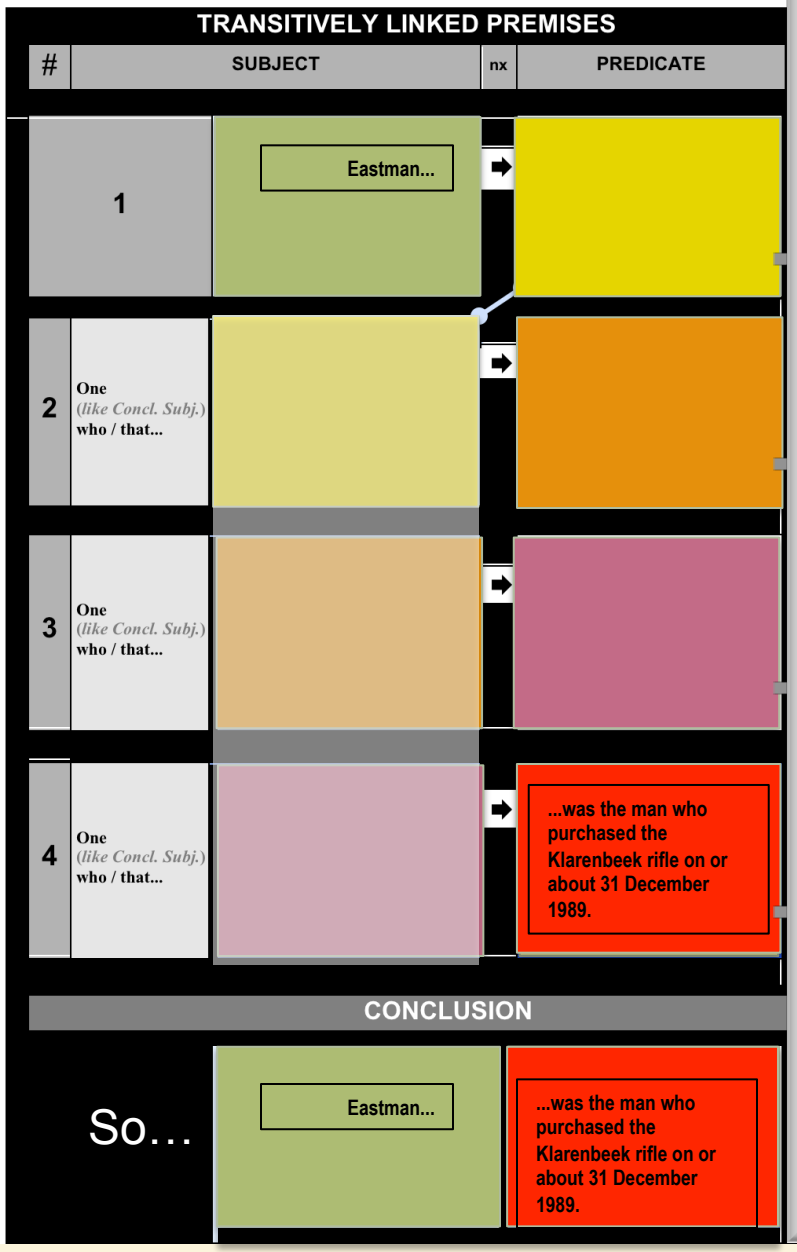
TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
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who / that...
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CONCLUSION
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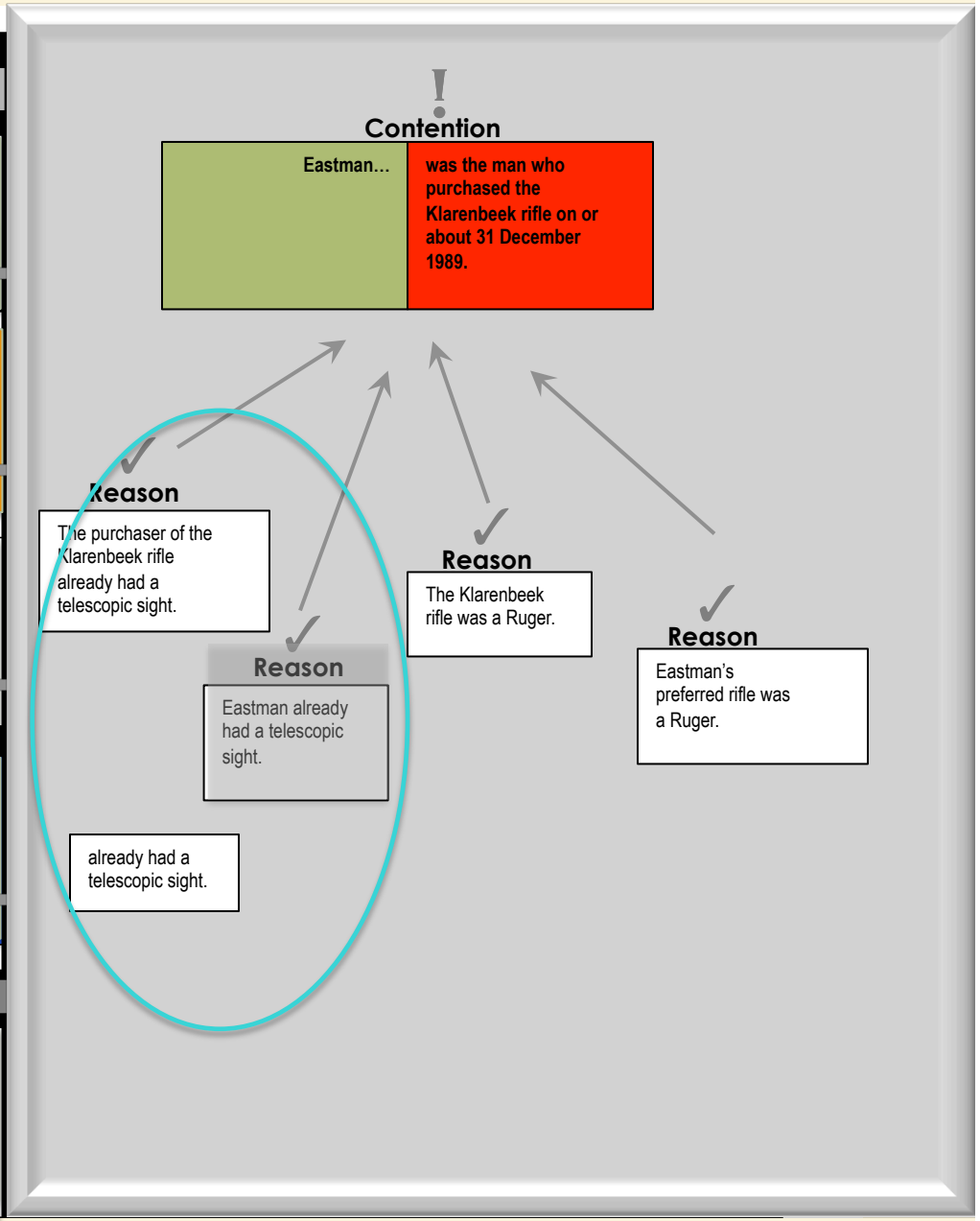
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Reason
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Reason
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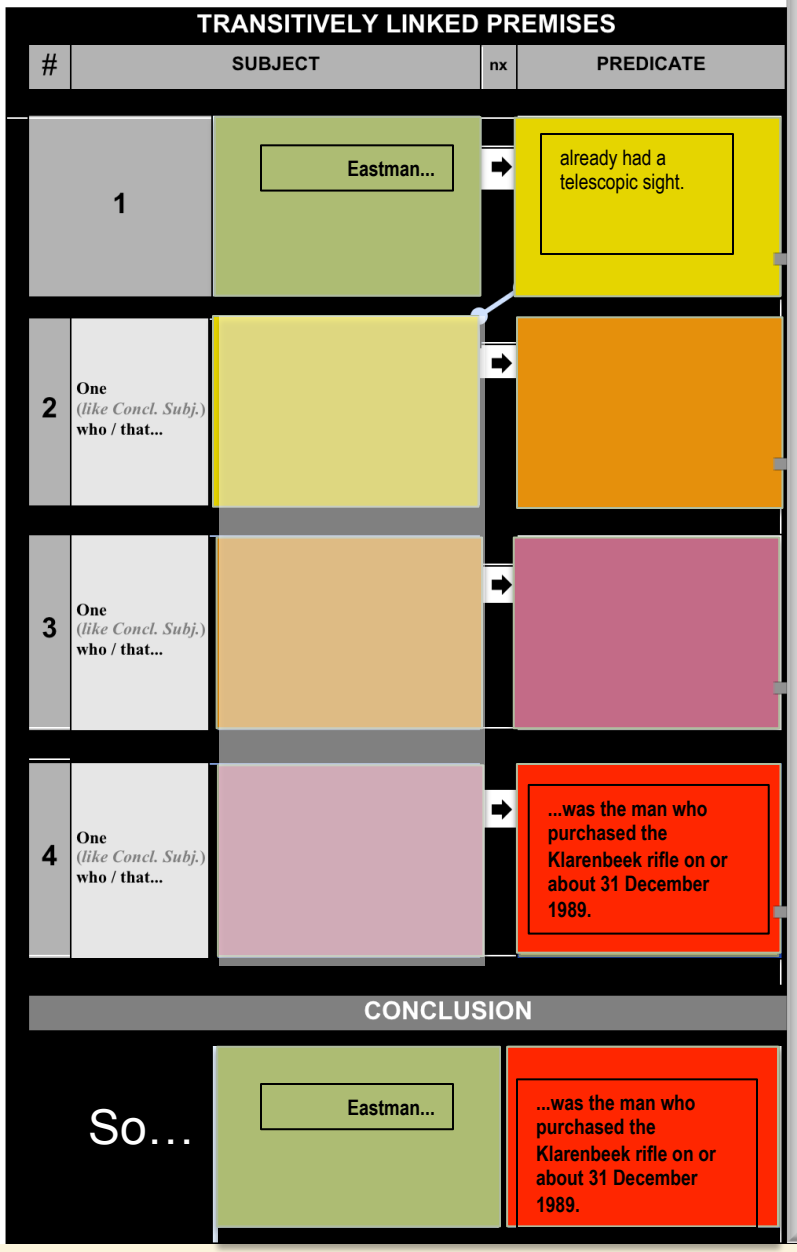
TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
already had a telescopic sight.
X
2
One (like Concl. Subj.) who / that...
X
3
One (like Concl. Subj.) who / that...
X
4
One (like Concl. Subj.) who / that...
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CONCLUSION
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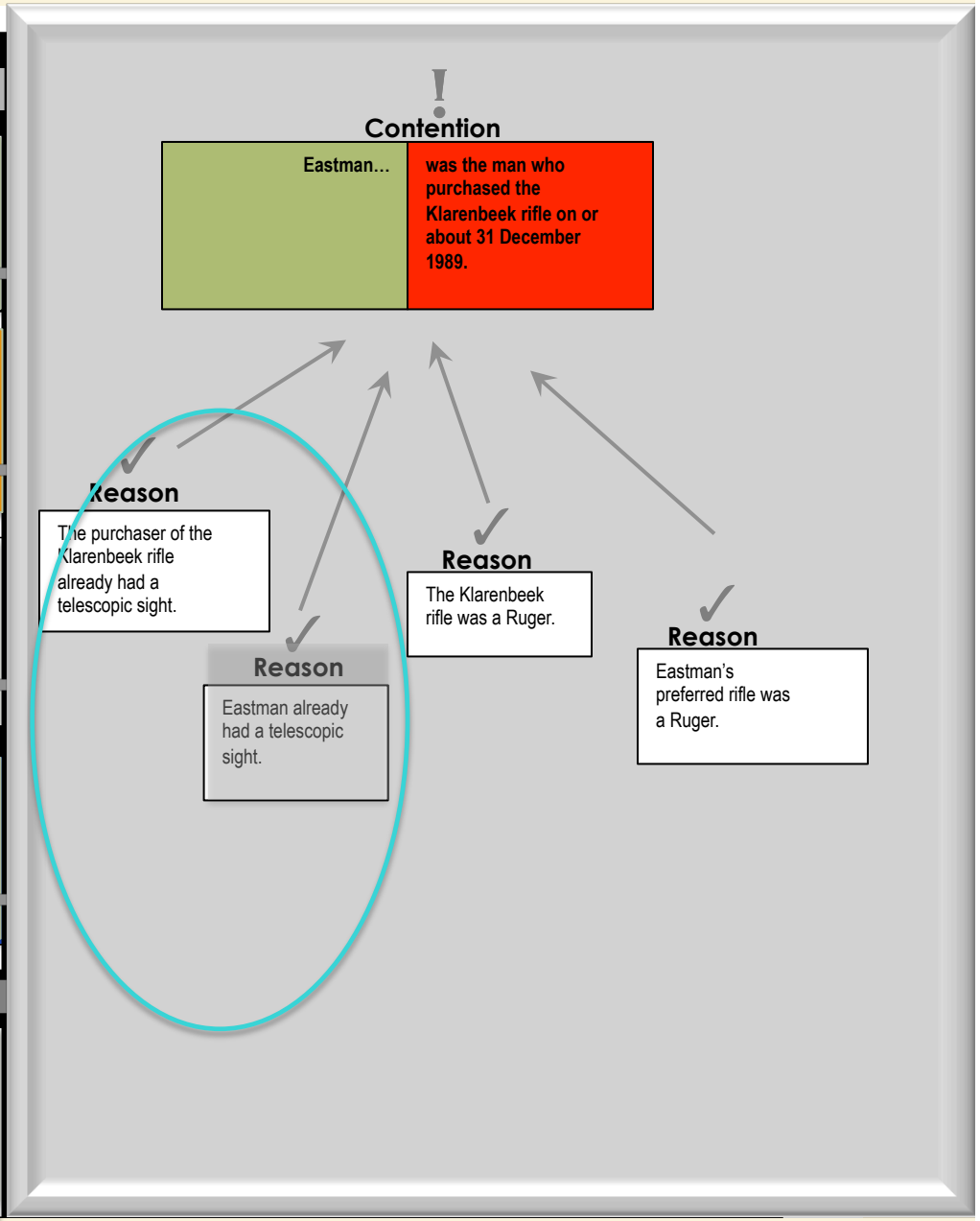
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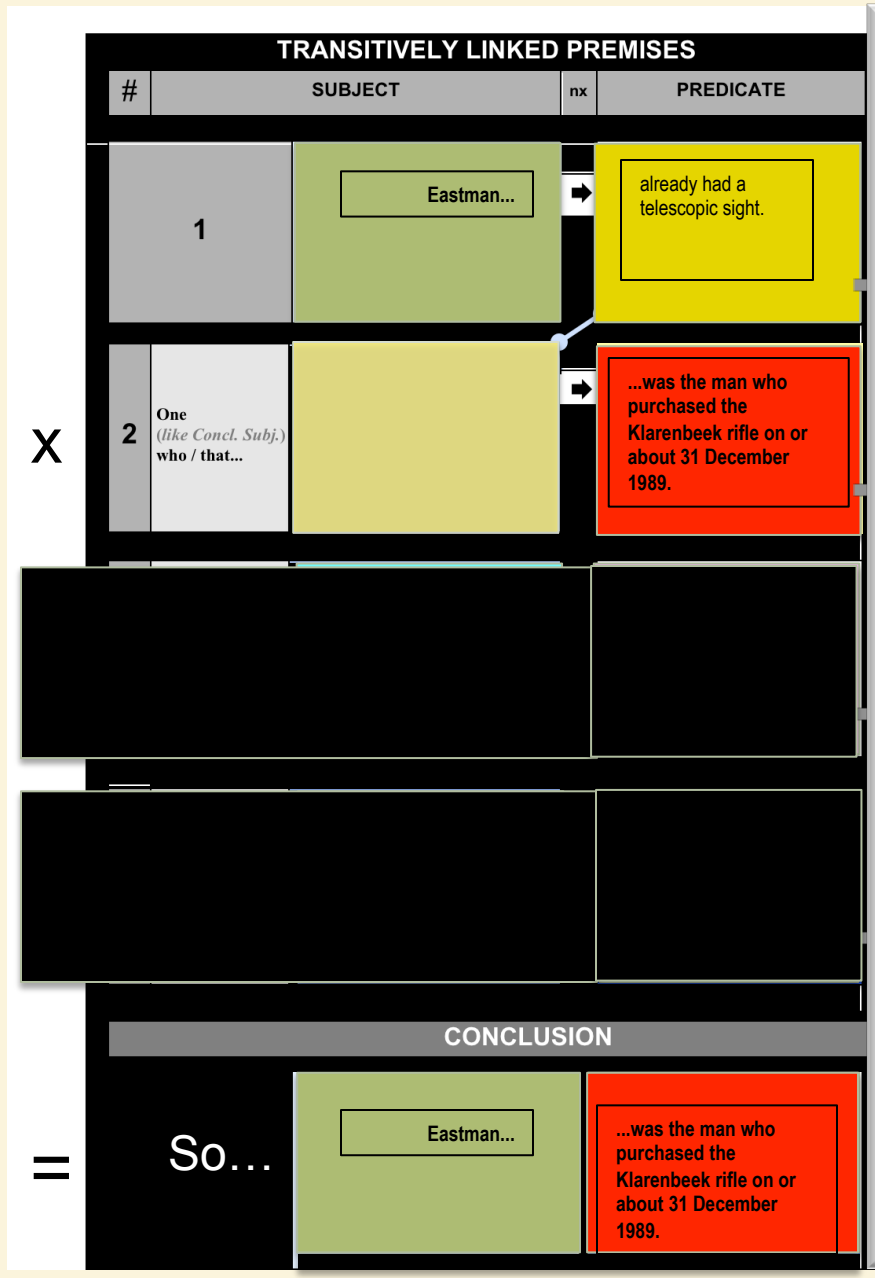
TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
already had a telescopic sight.
2
One
(like Concl. Subj.)
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CONCLUSION
So…
Eastman...
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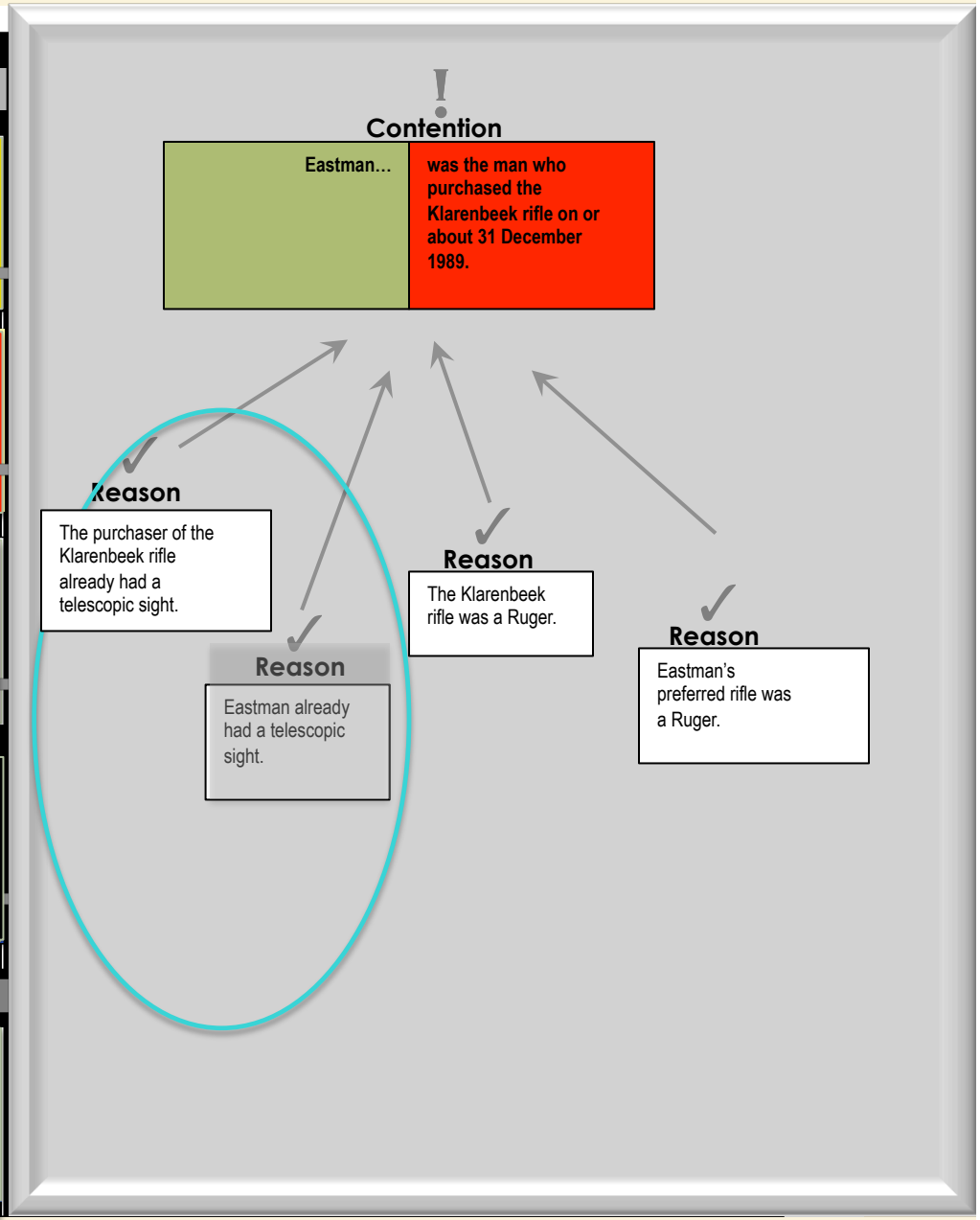
X

=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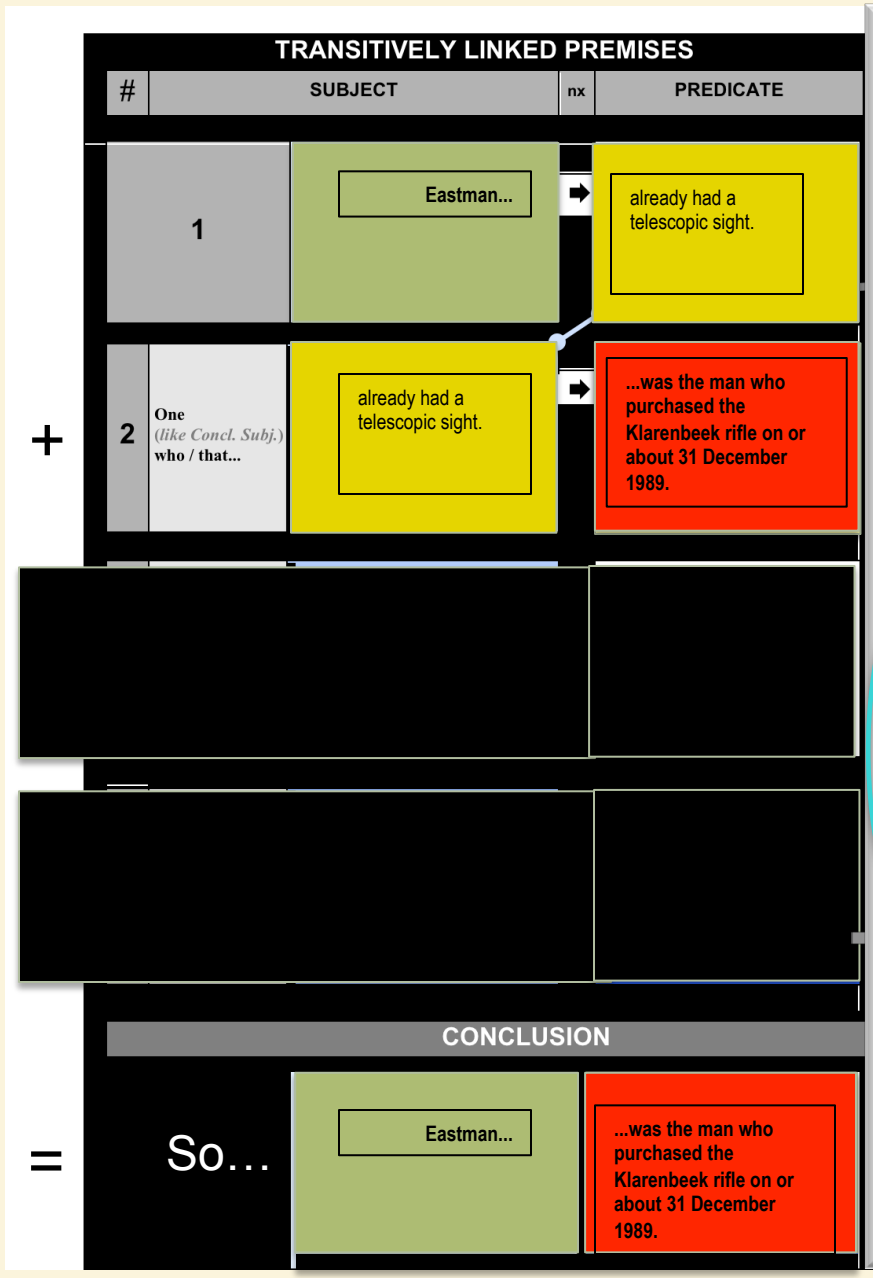
TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
already had a telescopic sight.
+
2
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(like Concl. Subj.)
who / that...
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CONCLUSION
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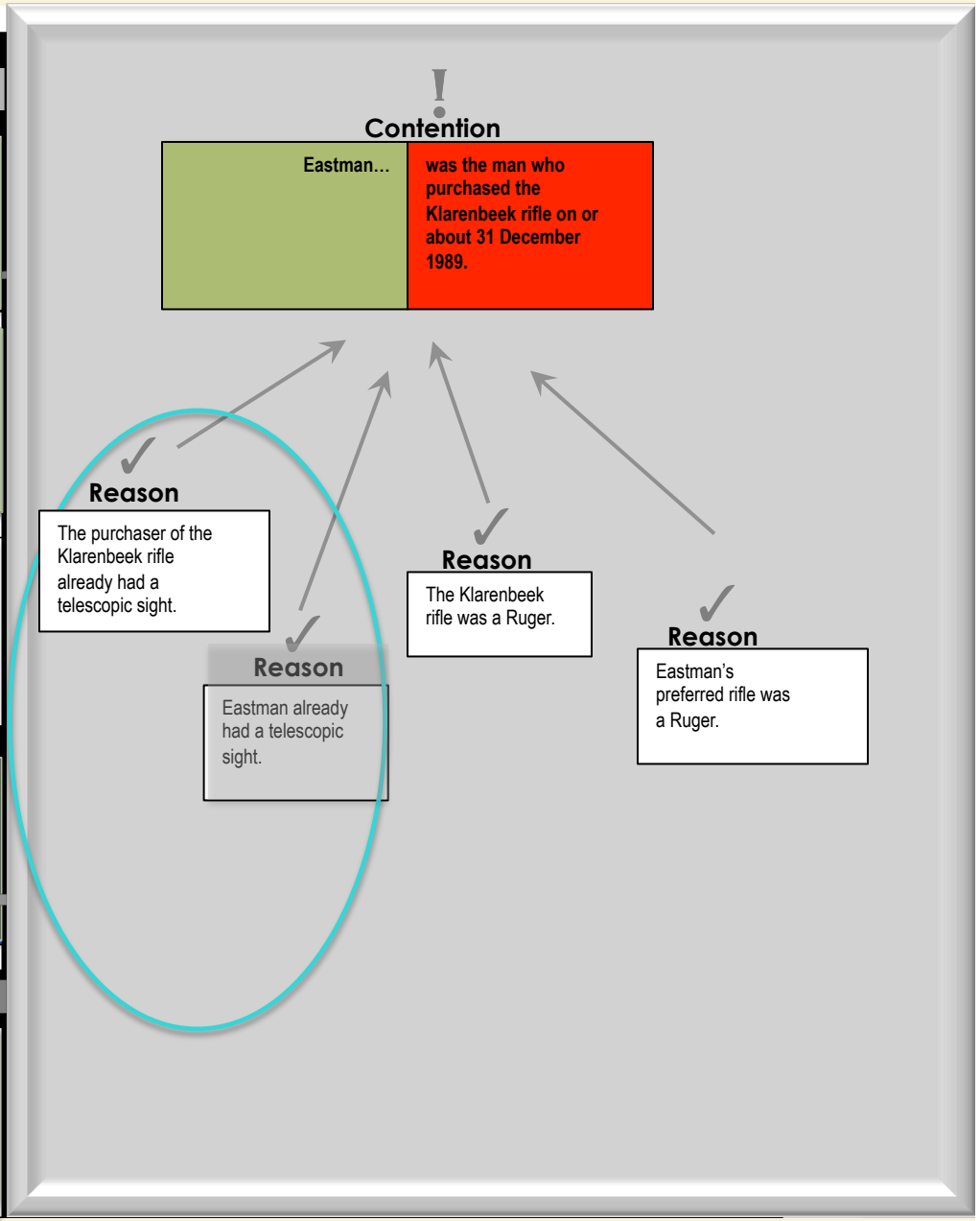
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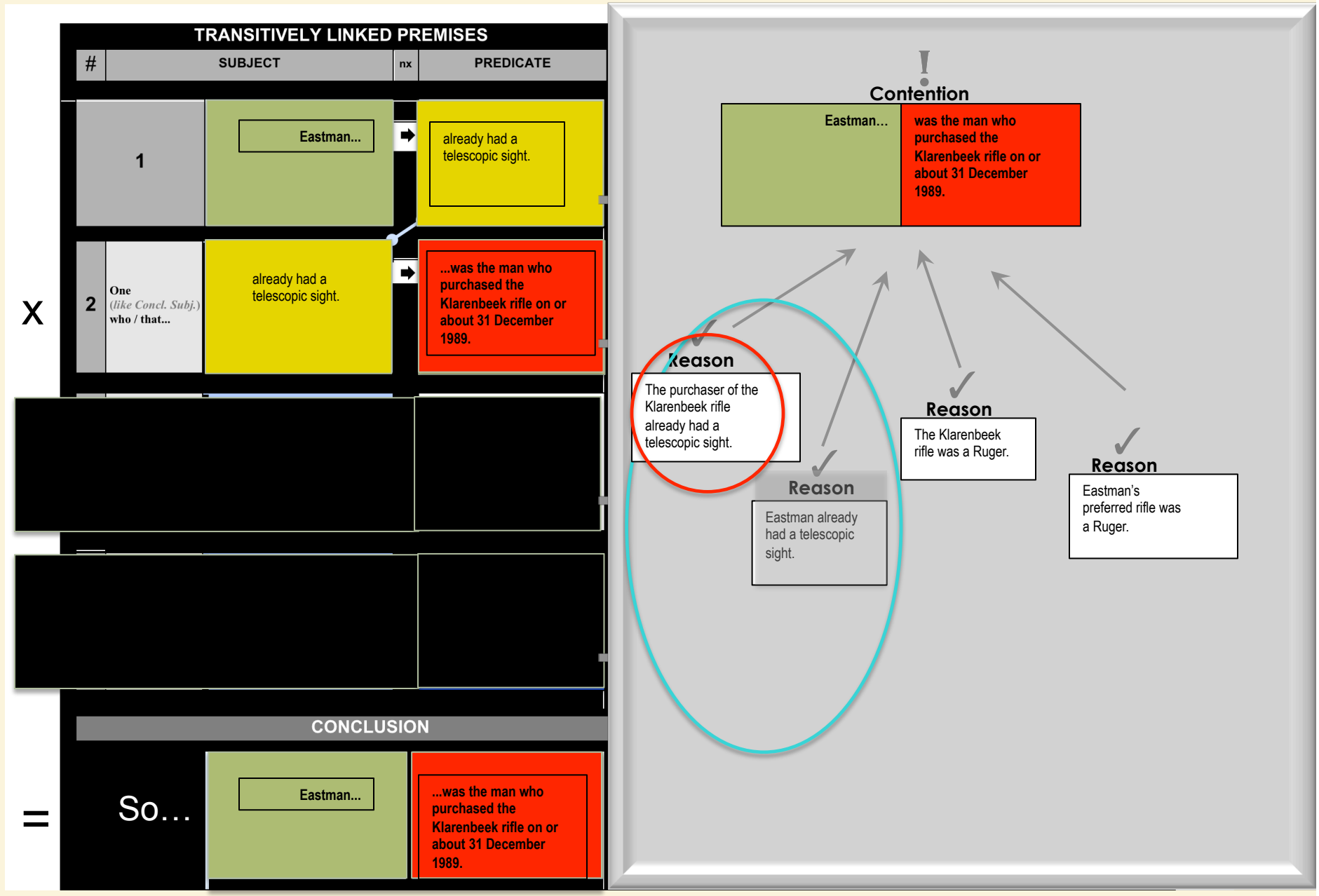
TRANSITIVELY LINKED PREMISES
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PREDICATE
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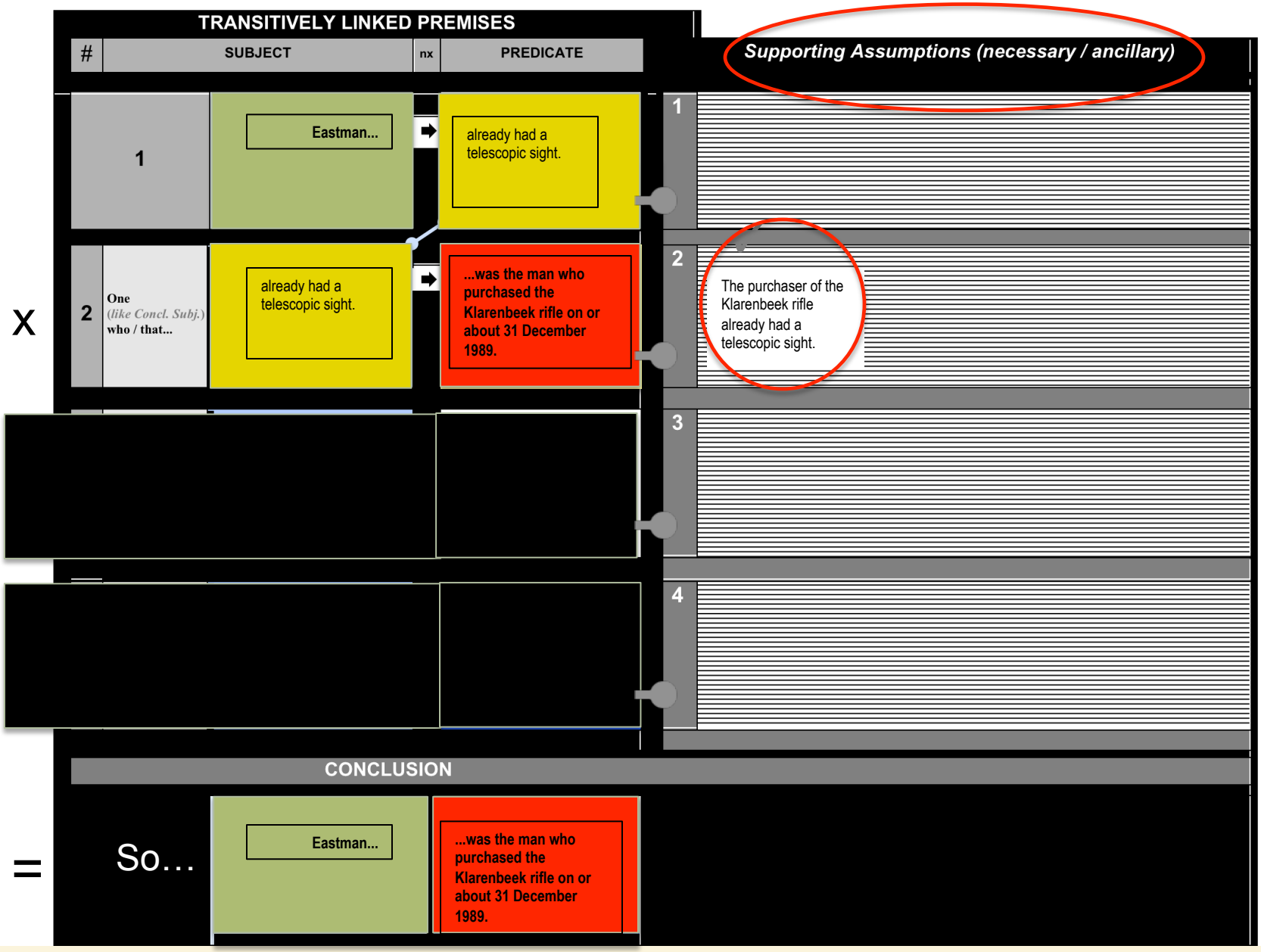
TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
Supporting Assumptions (necessary / ancillary)
1
Eastman...
already had a telescopic sight.
X
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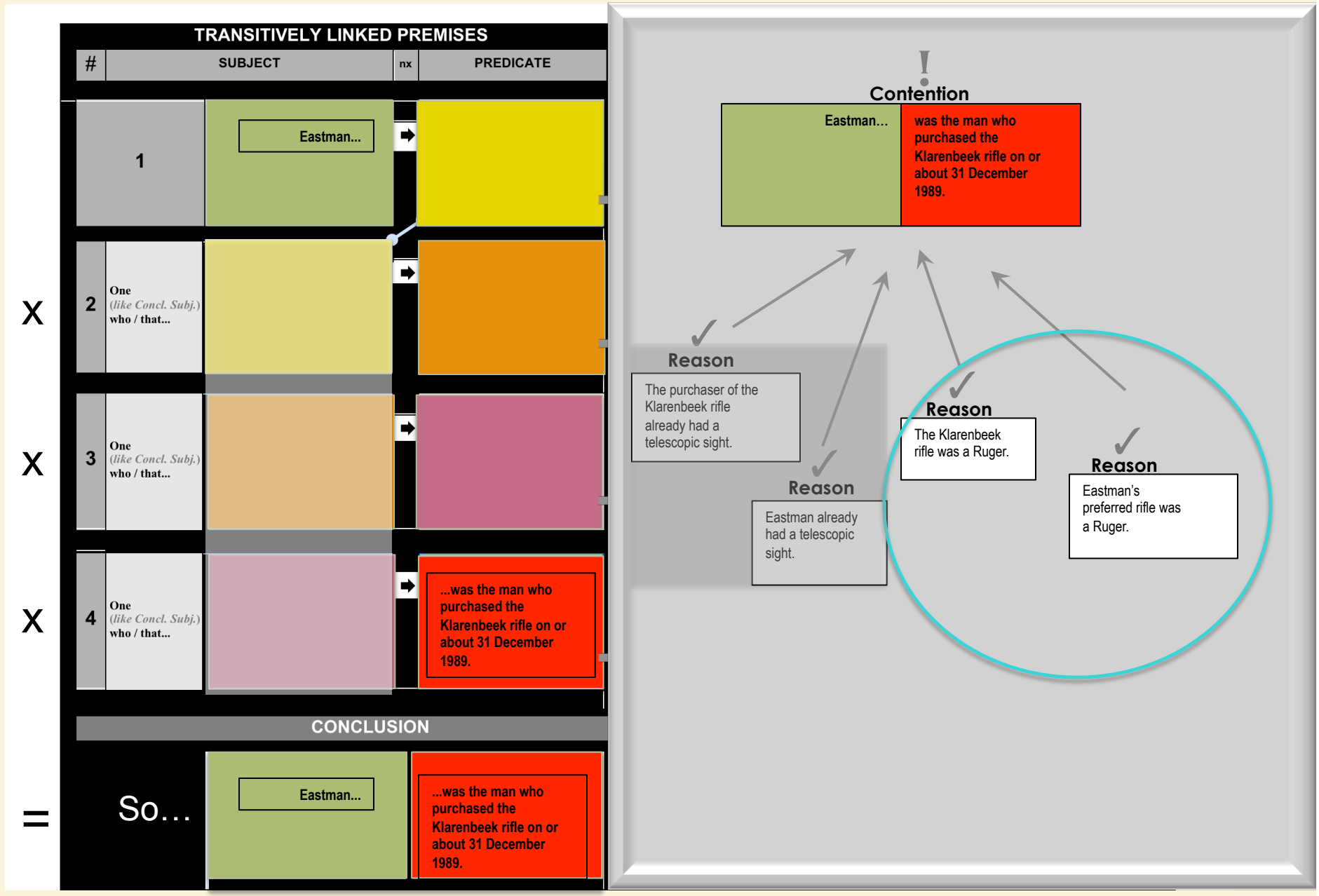
One
(like Concl. Subj.)
who / that...
already had a telescopic sight.
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The purchaser of the Klarenbeek rifle already had a telescopic sight.
3
4
CONCLUSION
=
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.


TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
Eastman...
2
One
(like Concl. Subj.)
who / that...
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(like Concl. Subj.)
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CONCLUSION
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Eastman...
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X
X
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Reason
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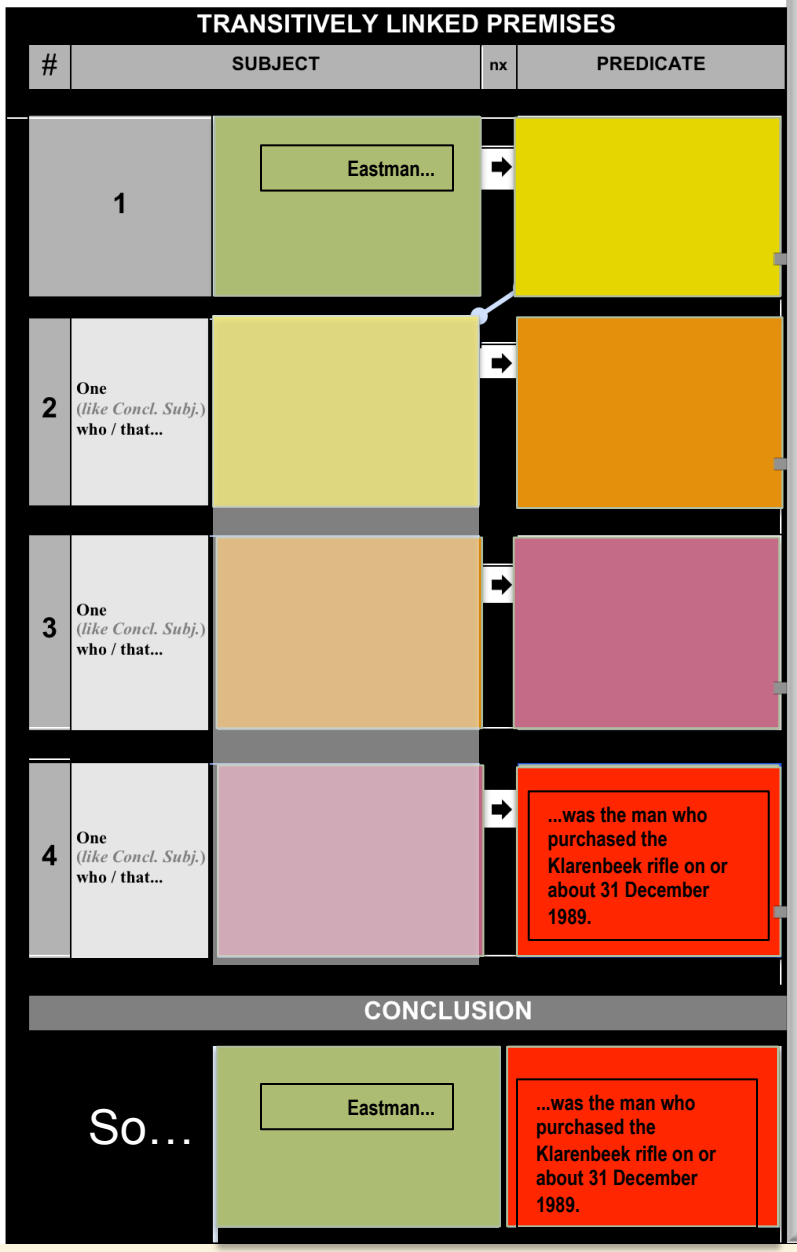
Reason
Eastman's preferred rifle was a Ruger.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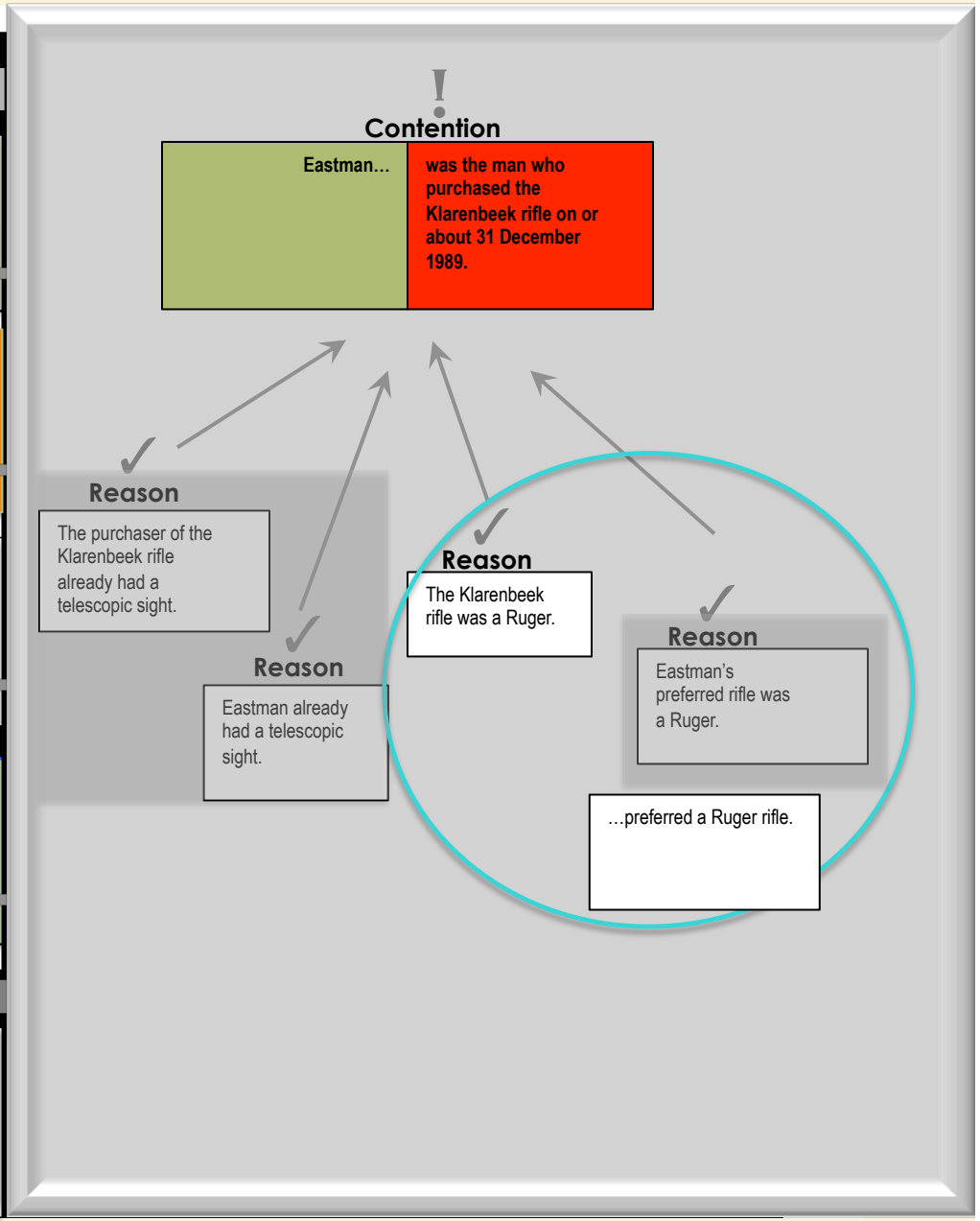
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Contention
Eastman…
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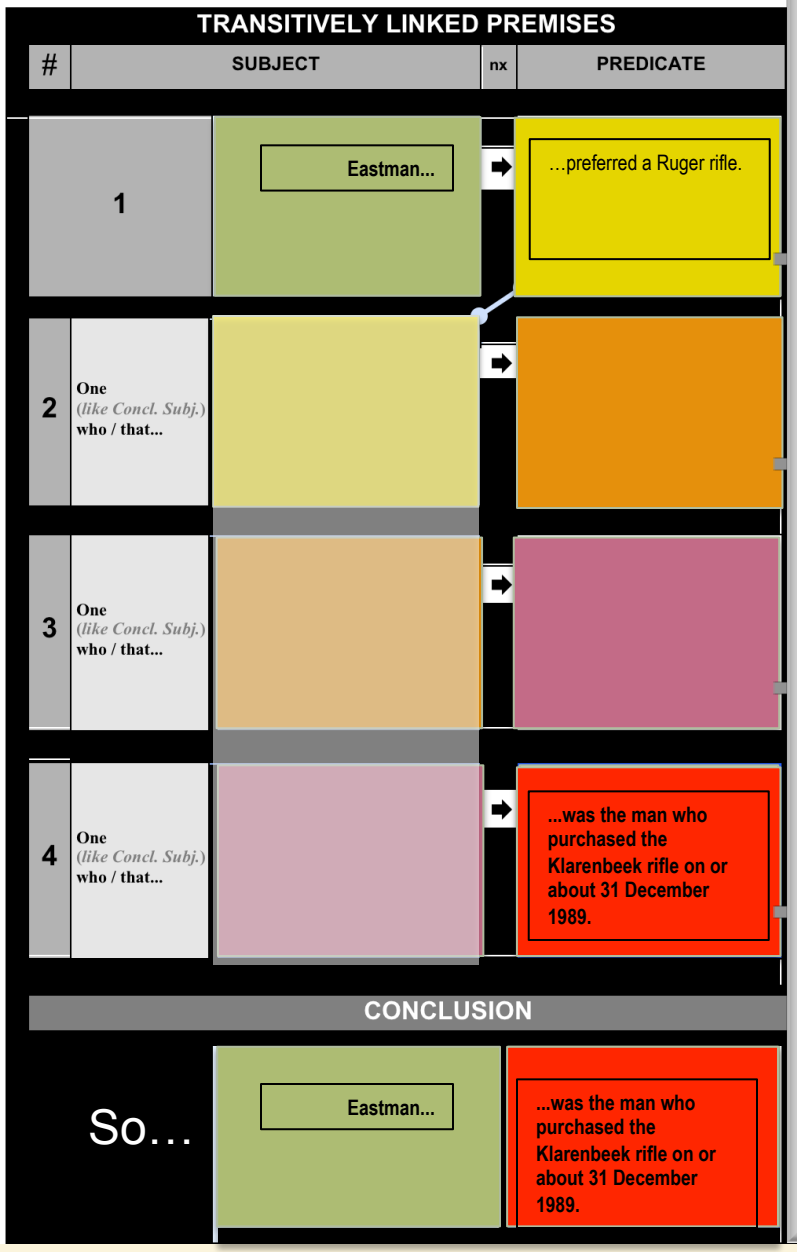
Reason
The purchaser of the Klarenbeek rifle already had a telescopic sight.
Reason
Eastman already had a telescopic sight.
Reason
The Klarenbeek rifle was a Ruger.
Reason
Eastman's preferred rifle was a Ruger.
…preferred a Ruger rifle.


TRANSITIVELY LINKED PREMISES
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Eastman...
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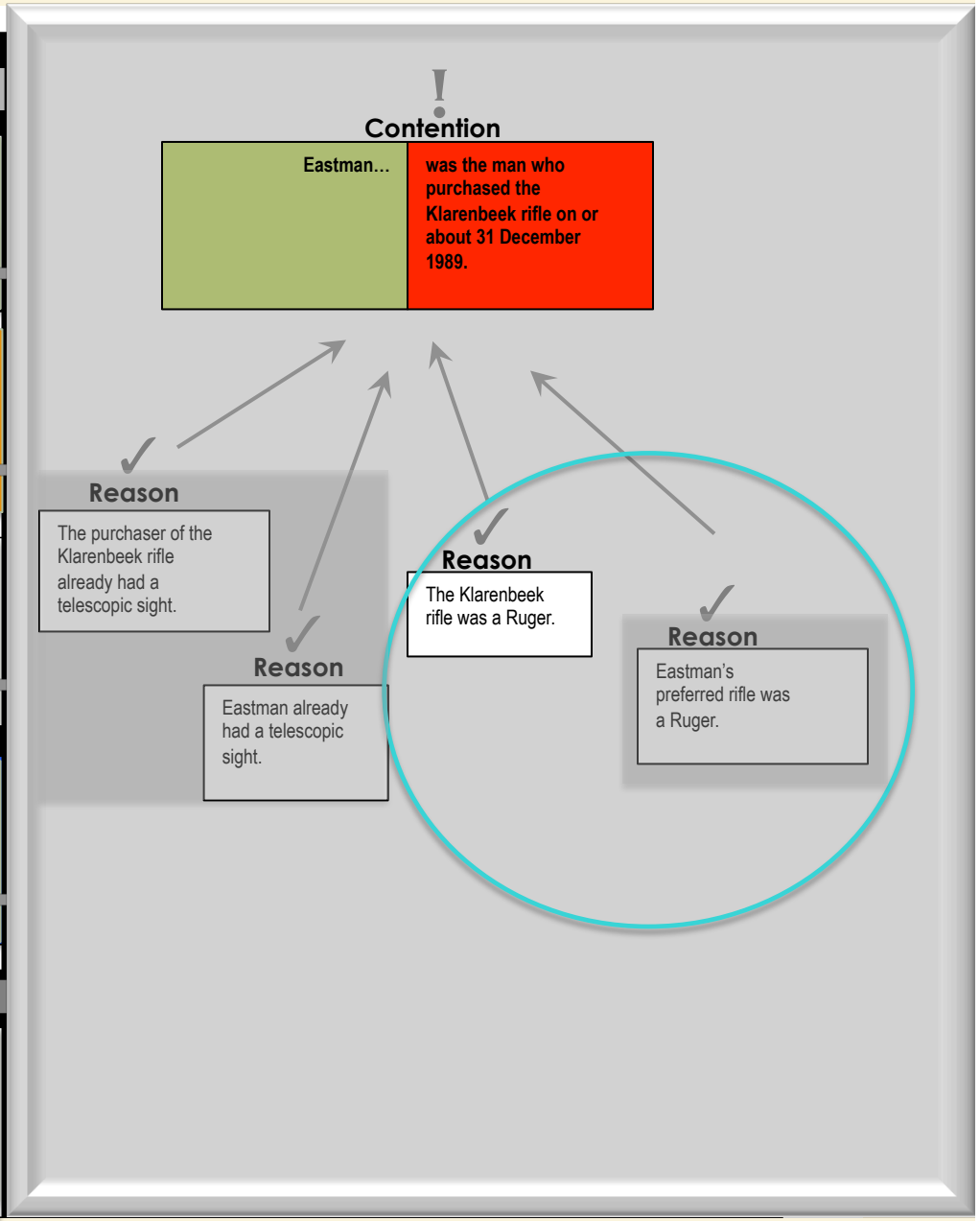
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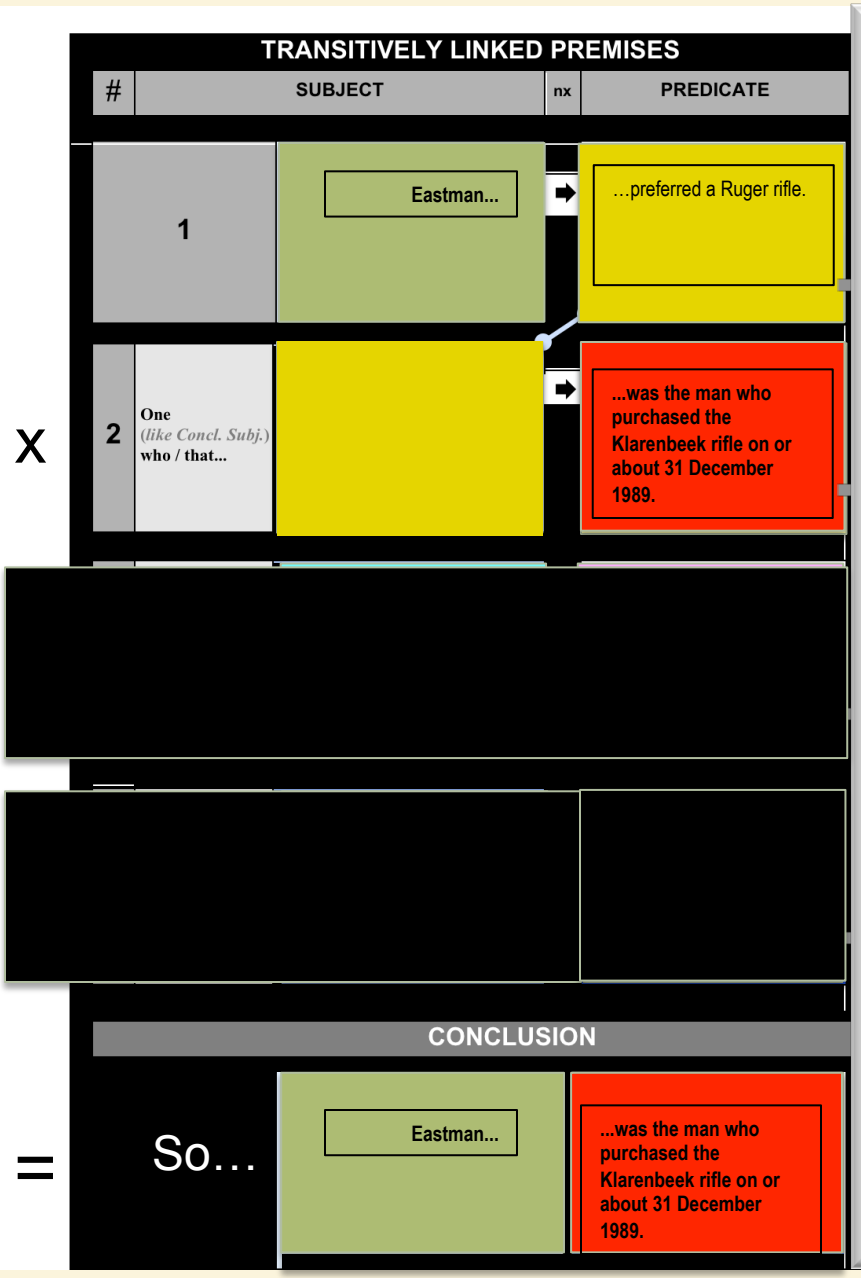
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(like Concl. Subj.)
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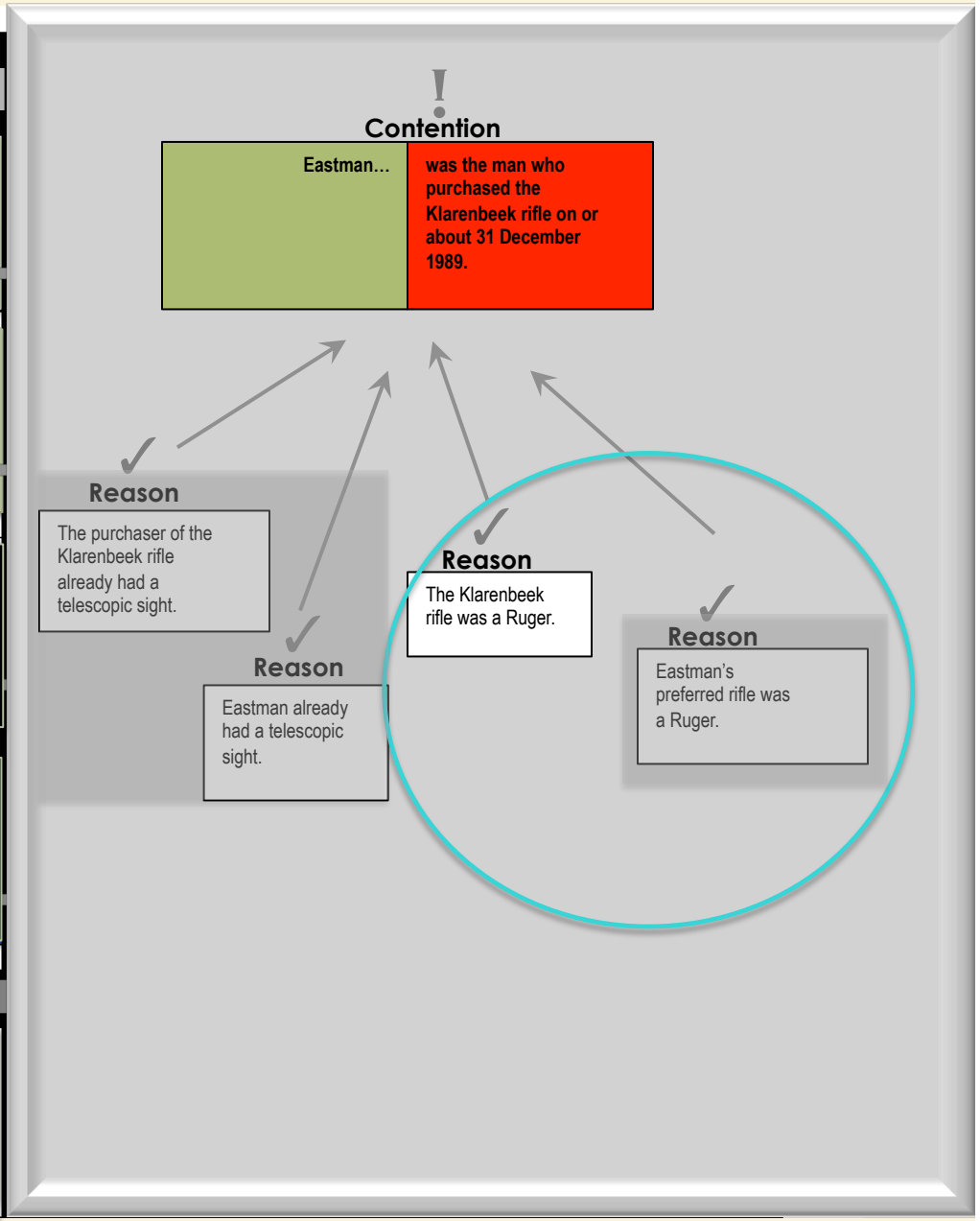
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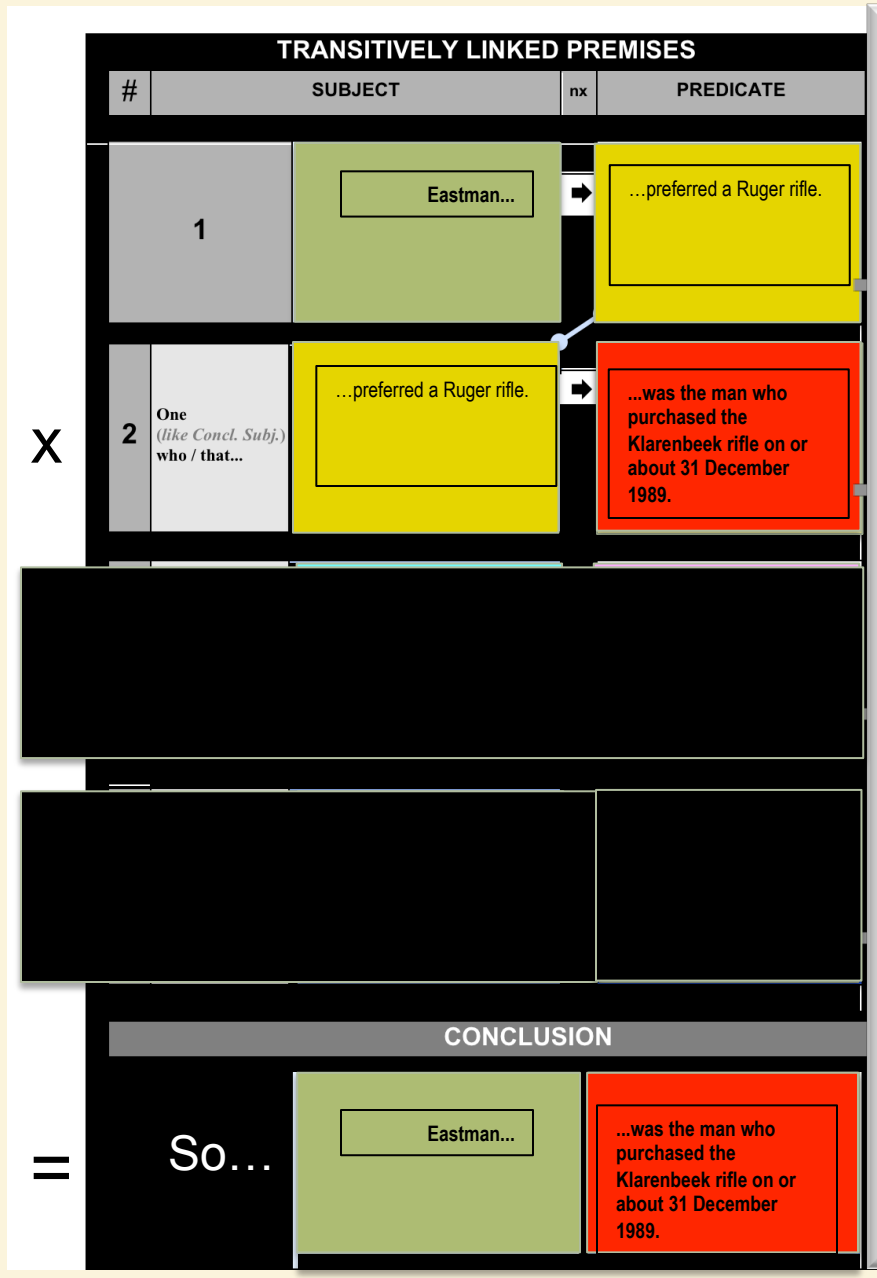
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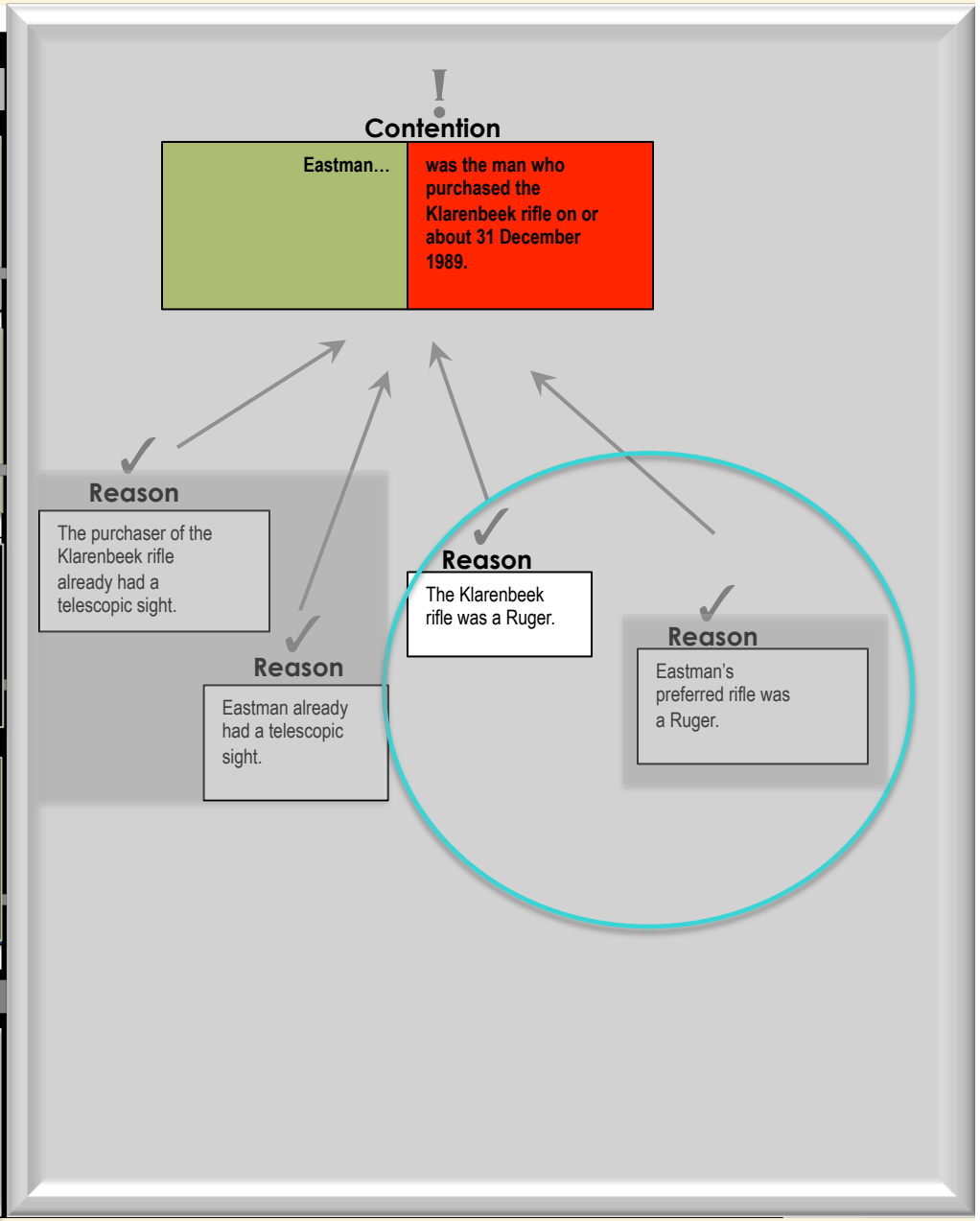
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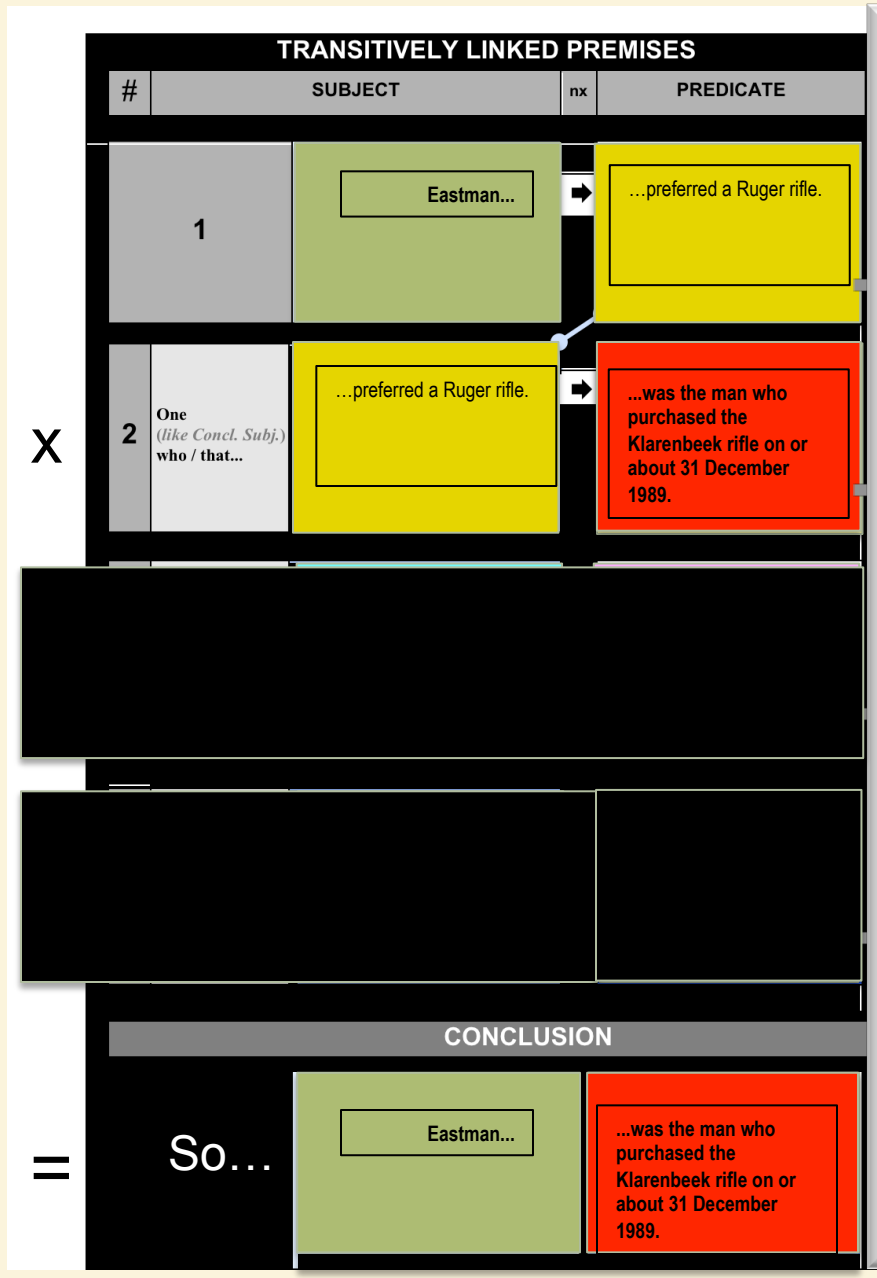
TRANSITIVELY LINKED PREMISES
#
SUBJECT
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PREDICATE
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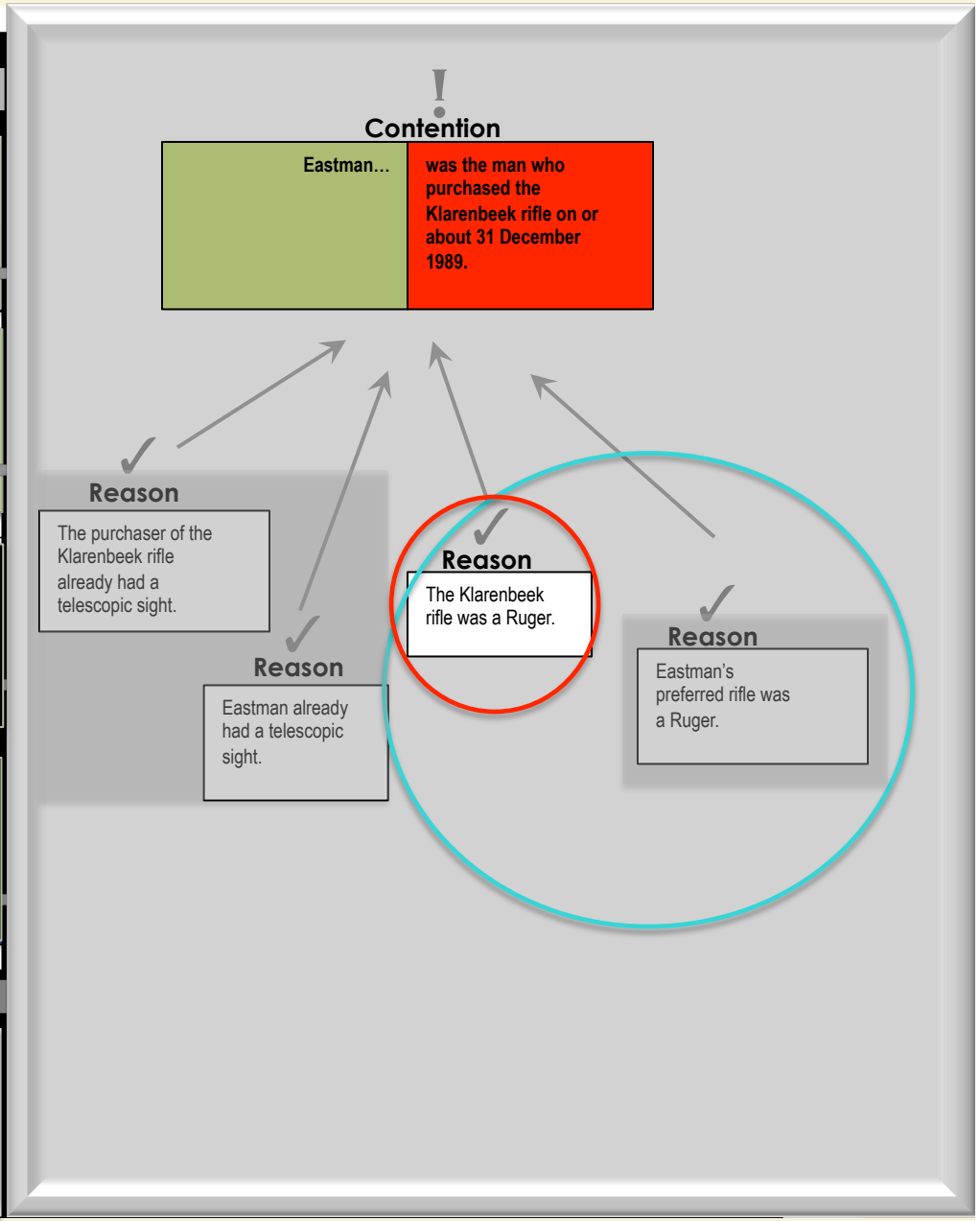
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Reason
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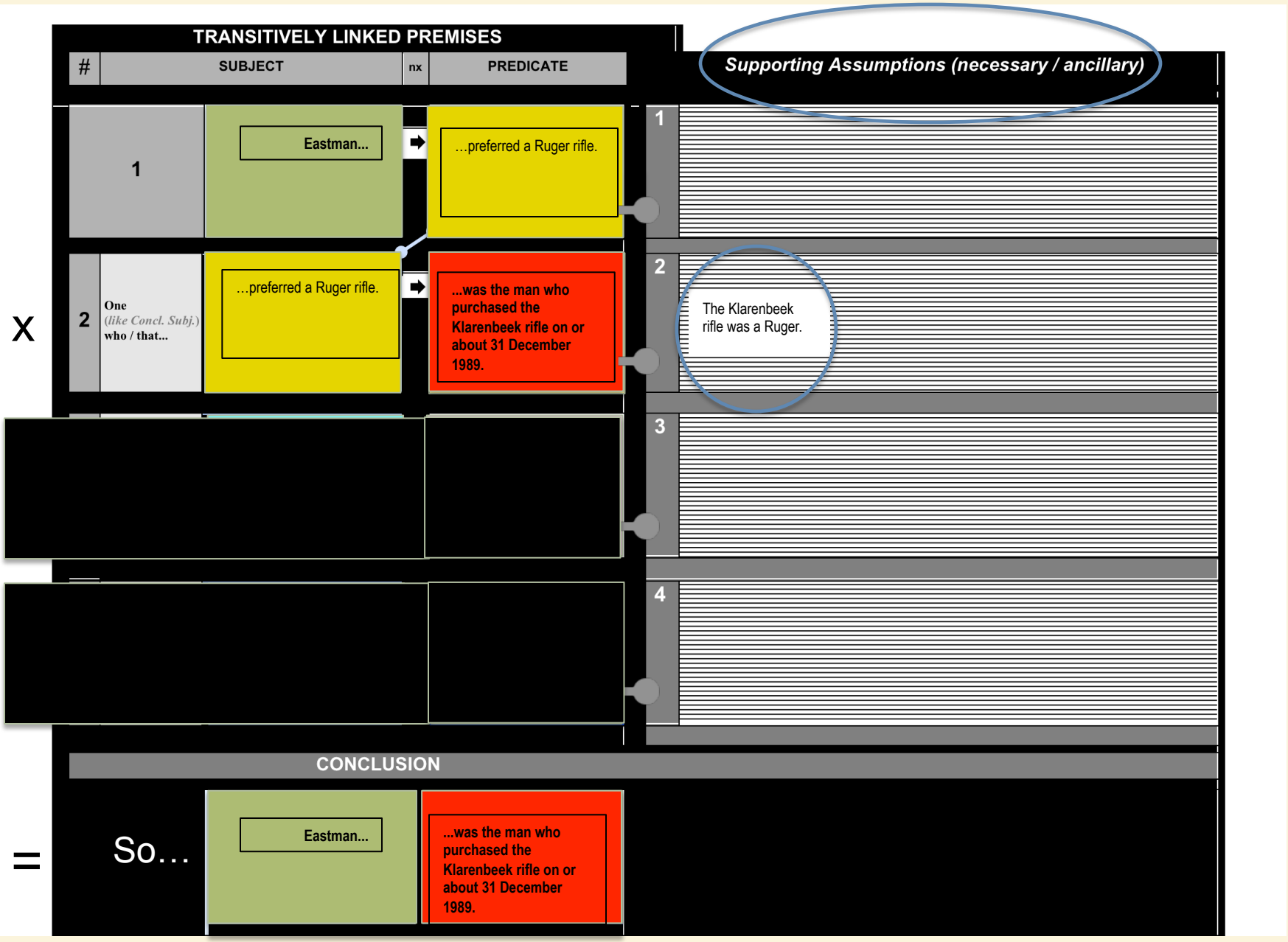
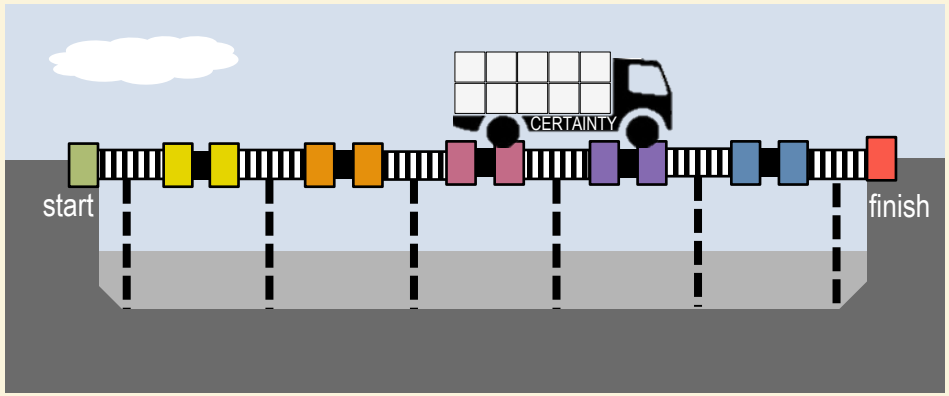
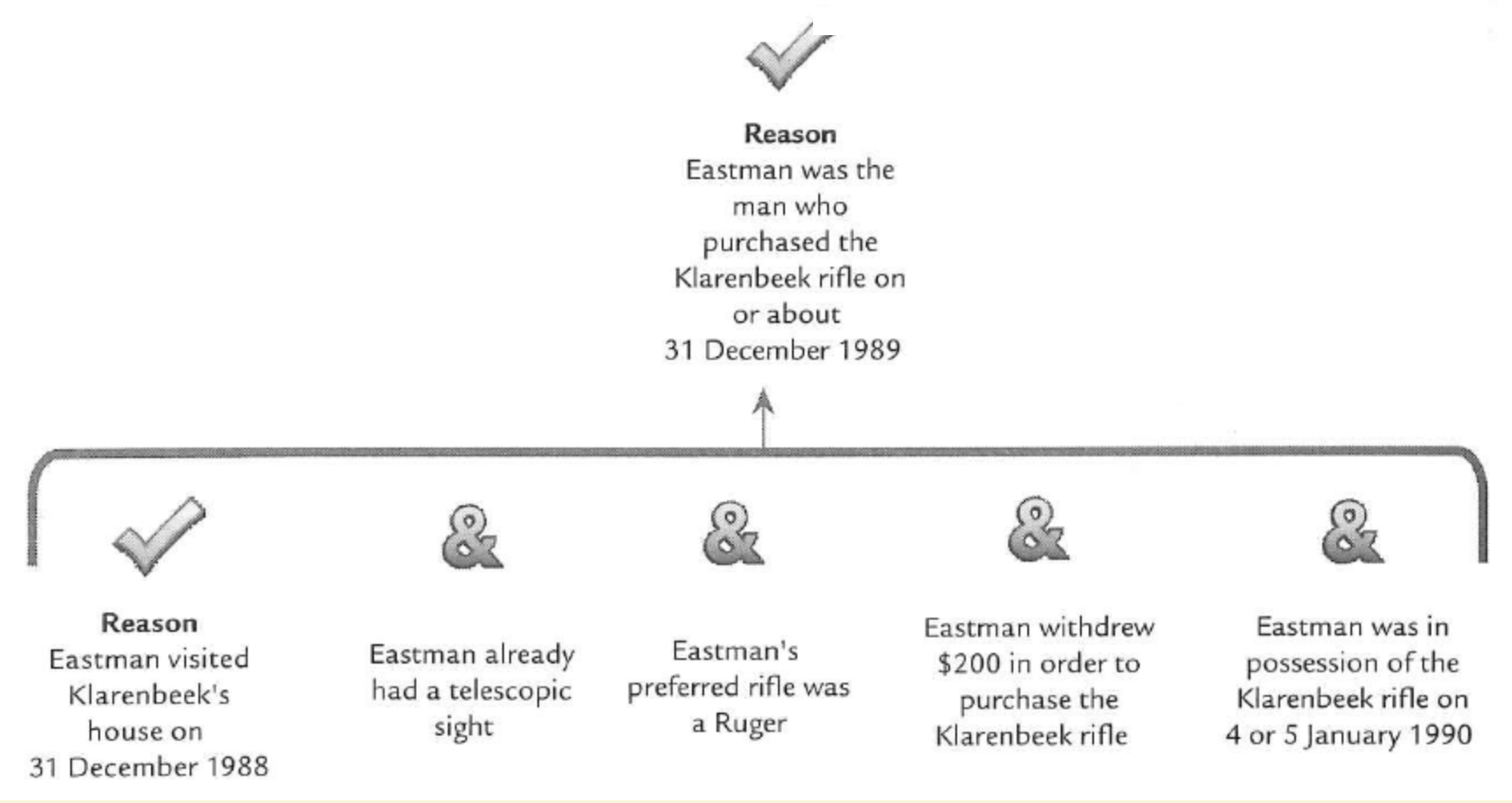

TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
Supporting Assumptions (necessary / ancillary)
1
Eastman...
…preferred a Ruger rifle.
2
One
(like Concl. Subj.)
who / that...
…preferred a Ruger rifle.
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
The Klarenbeek rifle was a Ruger.
3
4
X
CONCLUSION
So…
Eastman...
...was the man who purchased the Klarenbeek rifle on or about 31 December 1989.
=

Structural Errors 7




Reason
Eastman was the man who purchased the Klarenbeek rifle on or about 31 December 1989
Reason
Eastman visited Klarenbeek's house on 31 December 1988
&
Eastman already had a telescopic sight
&
Eastman's preferred rifle was a Ruger
&
Eastman withdrew $200 in order to purchase the Klarenbeek rifle
&
Eastman was in possession of the Klarenbeek rifle on 4 or 5 January 1990

…visited Klarenbeek's house on 31 December 1988.

…had already a telescopic sight.

...preferred a Ruger rifle.

...withdrew $200 in order to purchase the Klarenbeek rifle.

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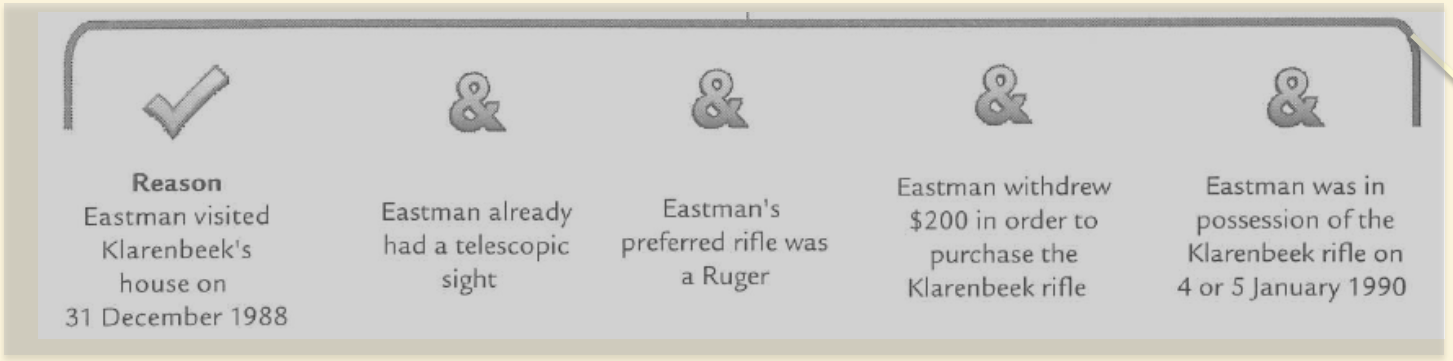

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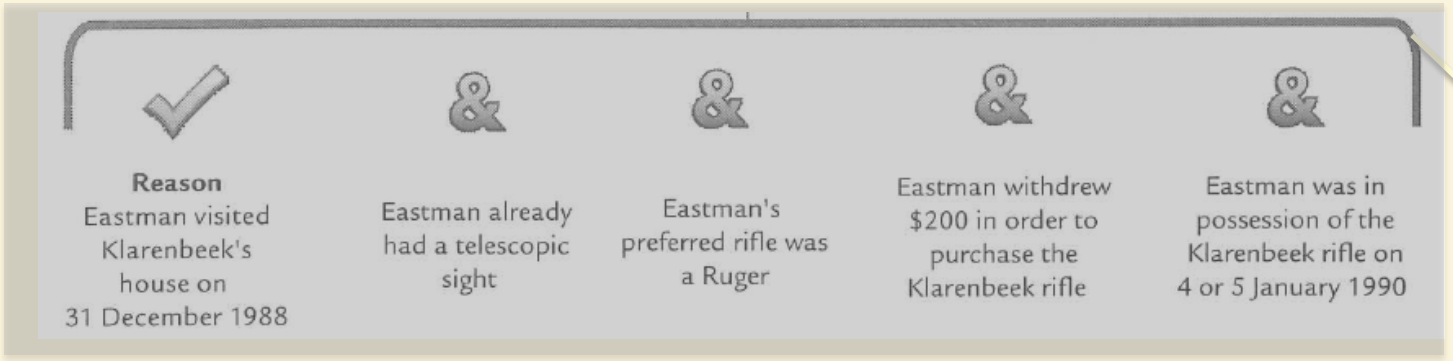

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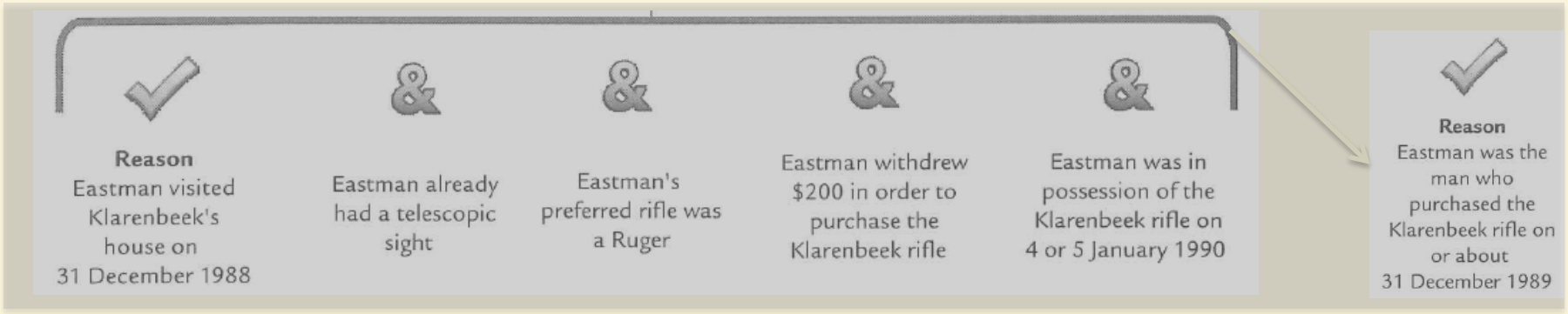
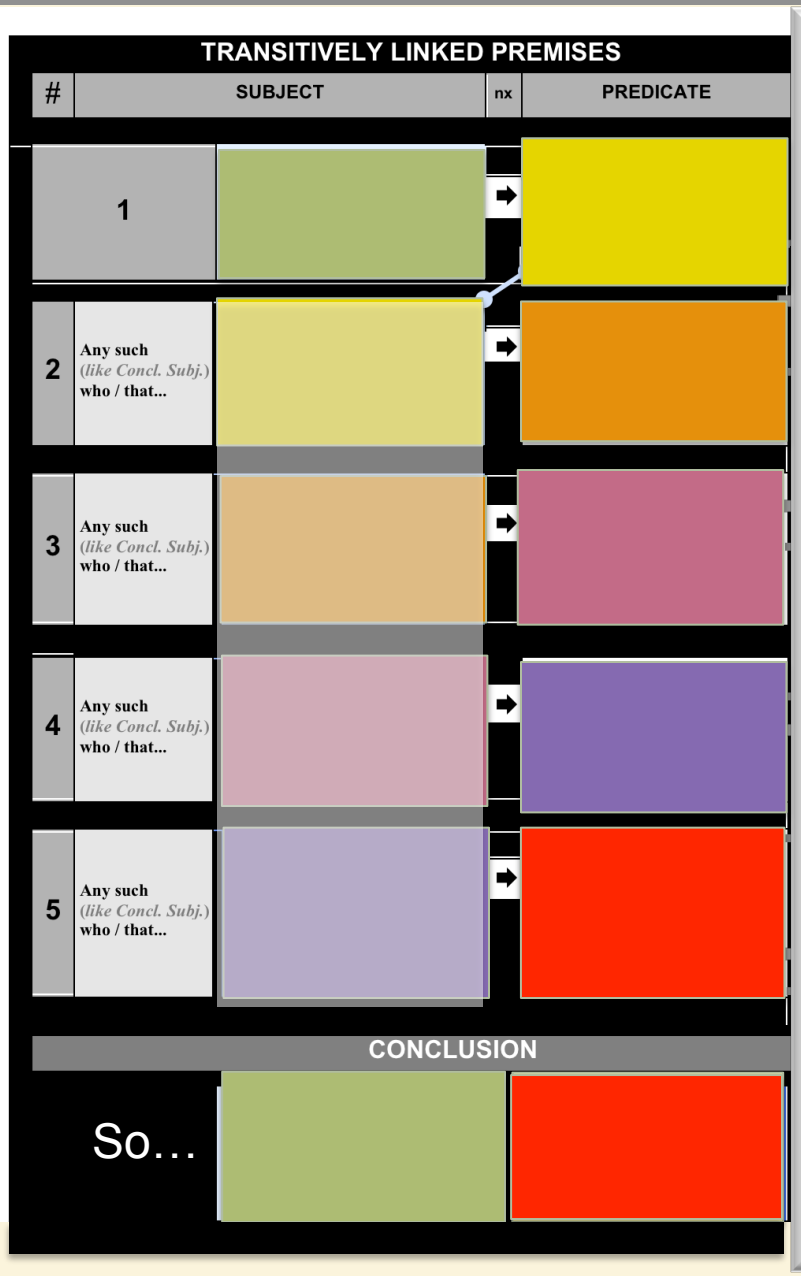
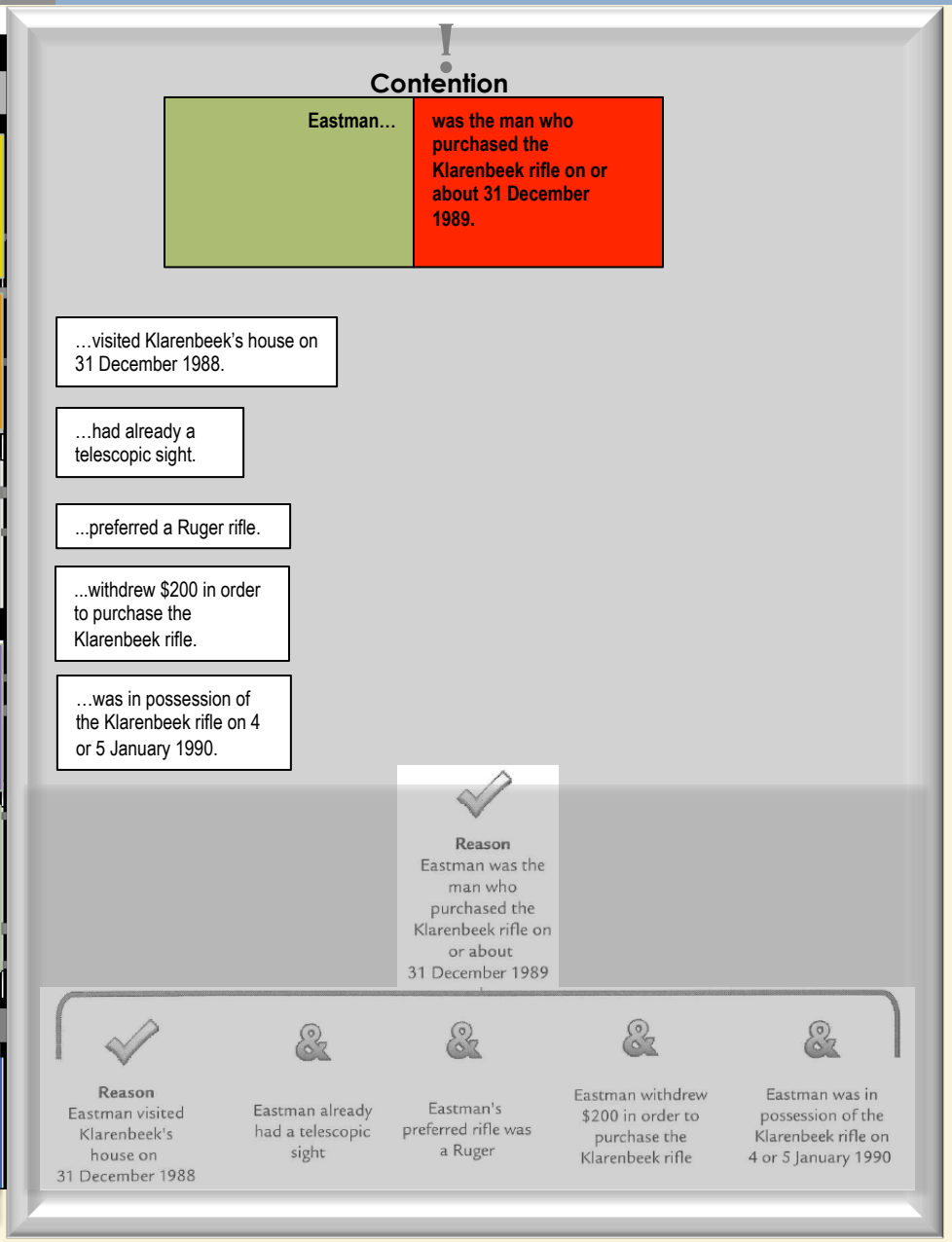



TRANSITIVELY LINKED PREMISES
#
SUBJECT
nx
PREDICATE
1
X
2
Any such (like Concl. Subj.) who / that...
X
3
Any such (like Concl. Subj.) who / that...
X
4
Any such (like Concl. Subj.) who / that...
X
5
Any such (like Concl. Subj.) who / that...
CONCLUSION
=
So…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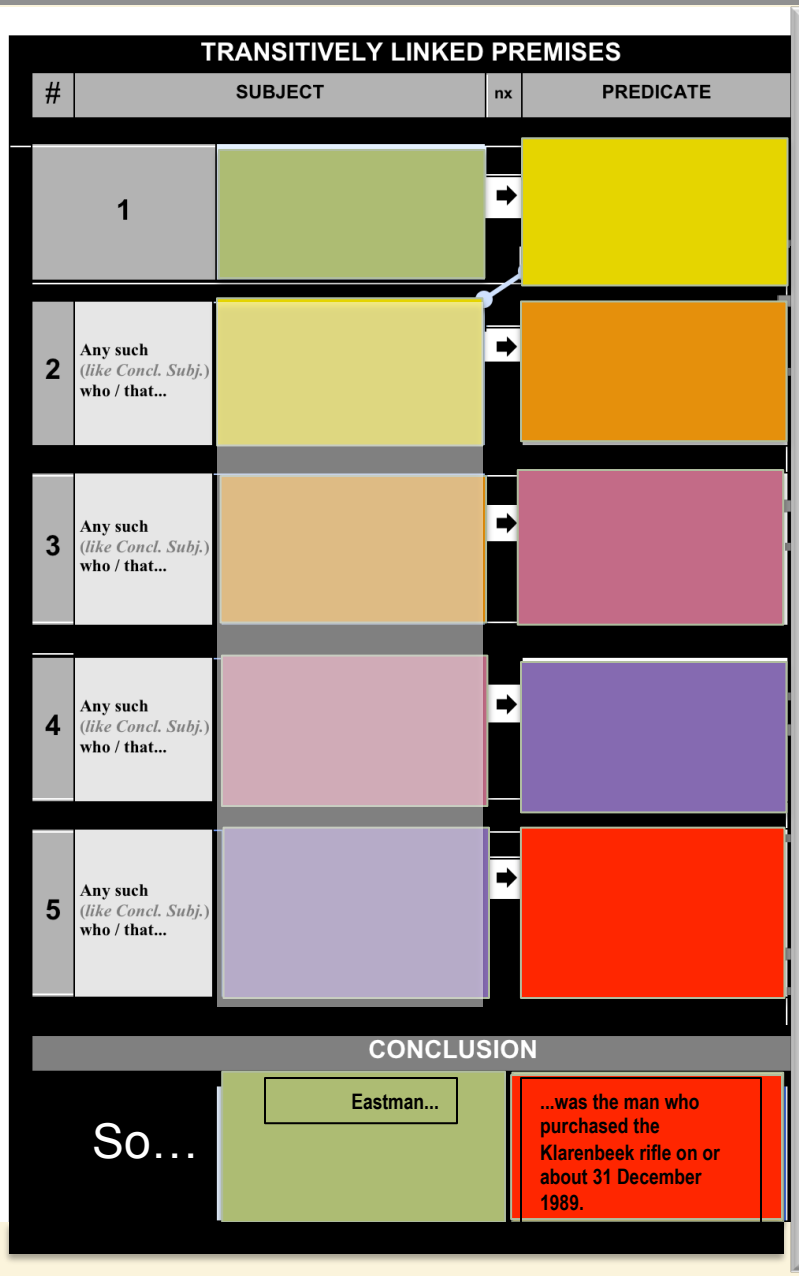
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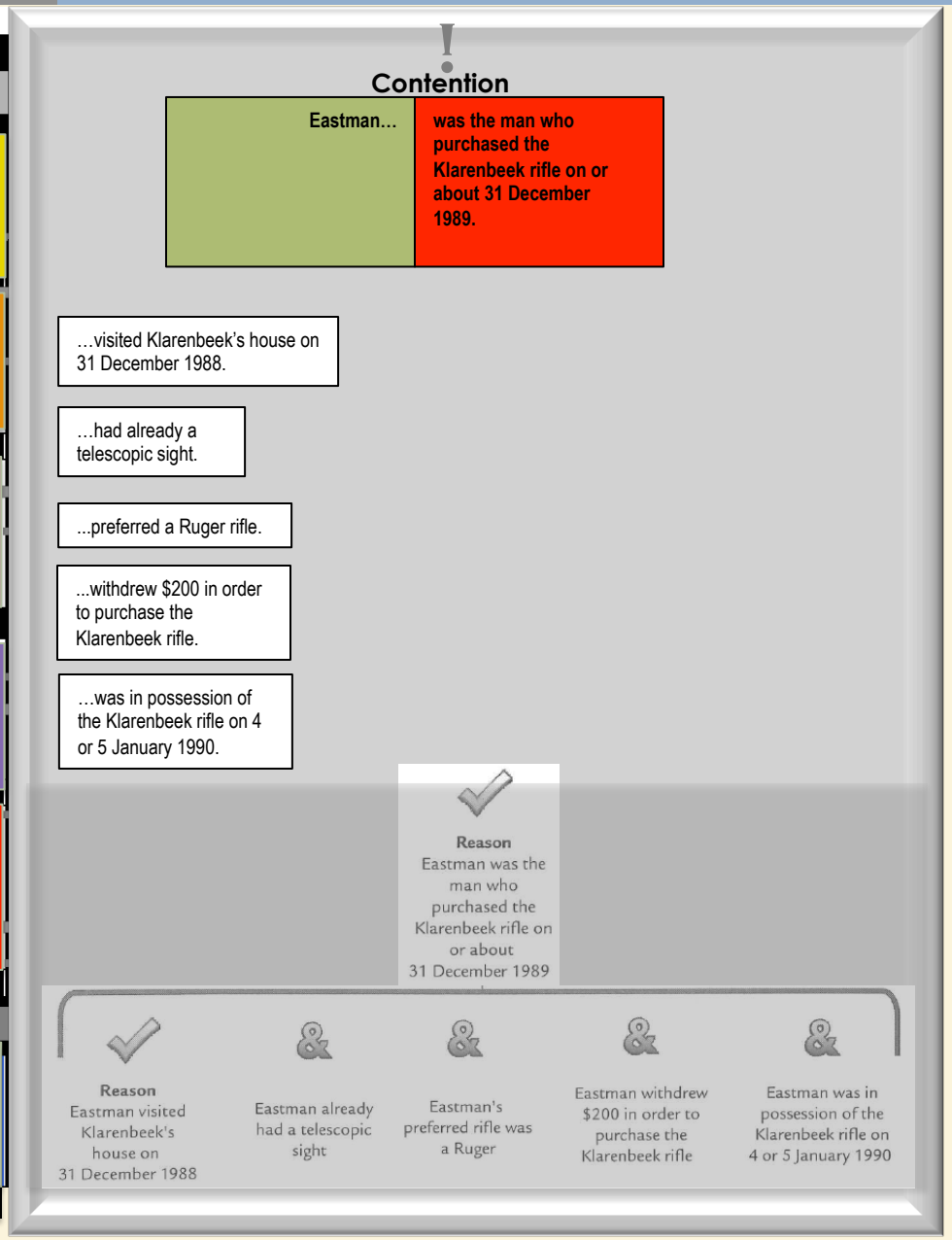
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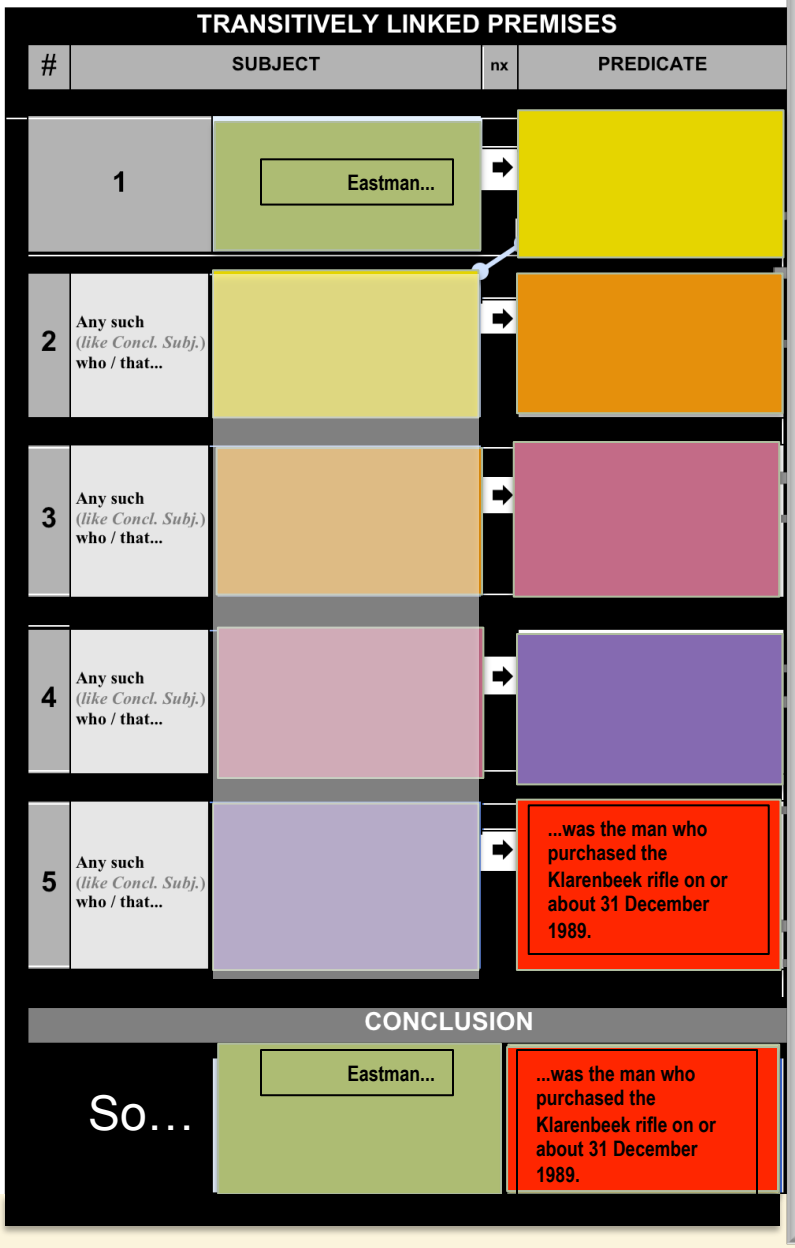
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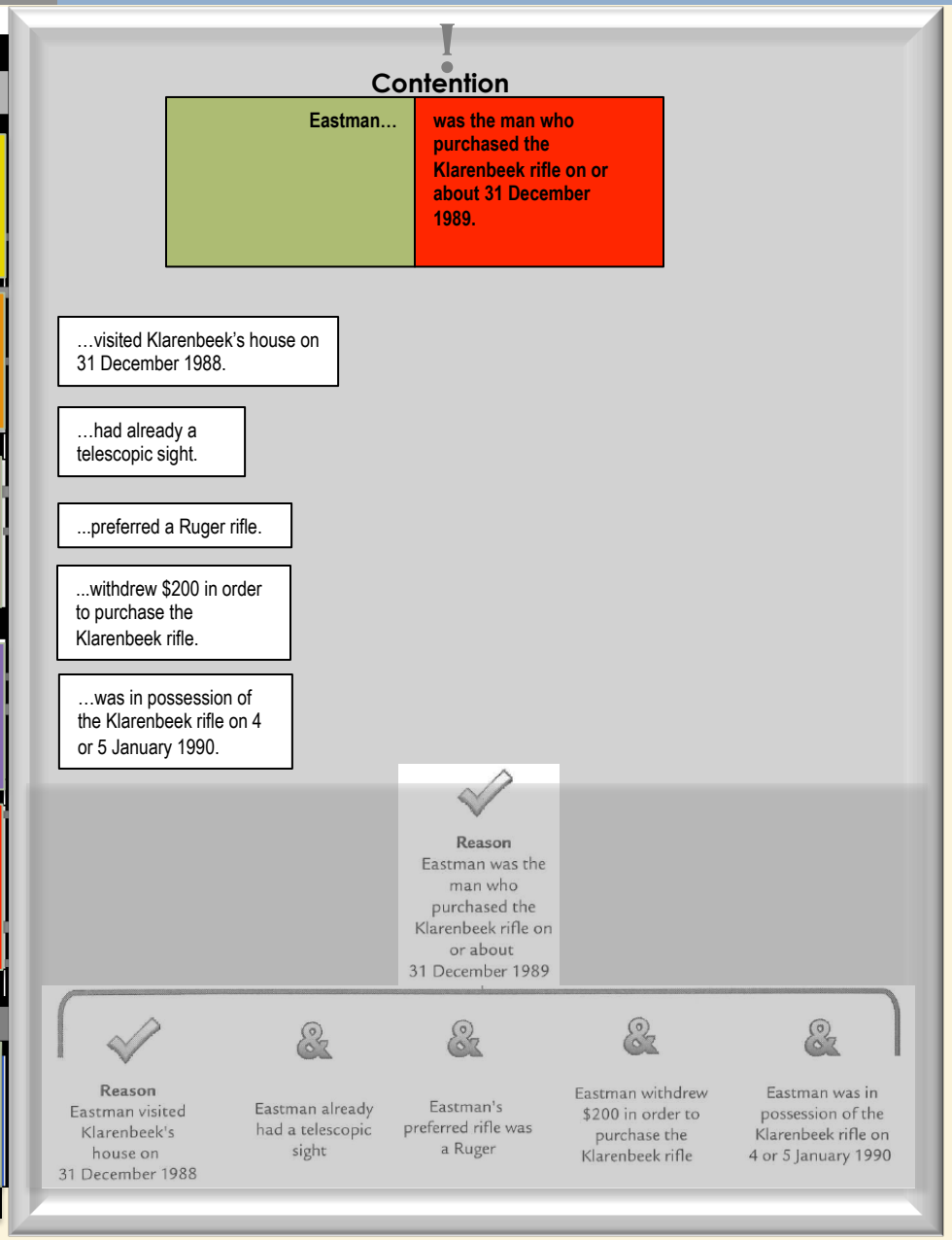
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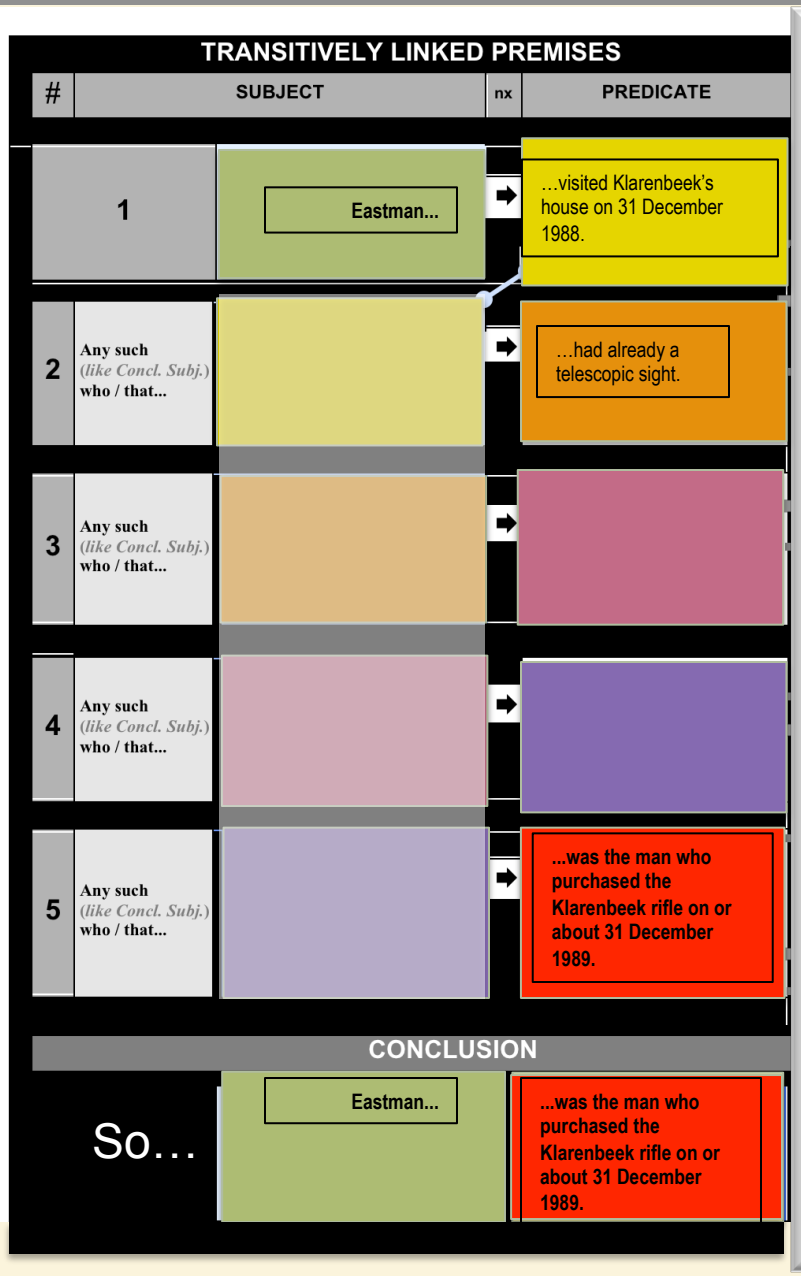
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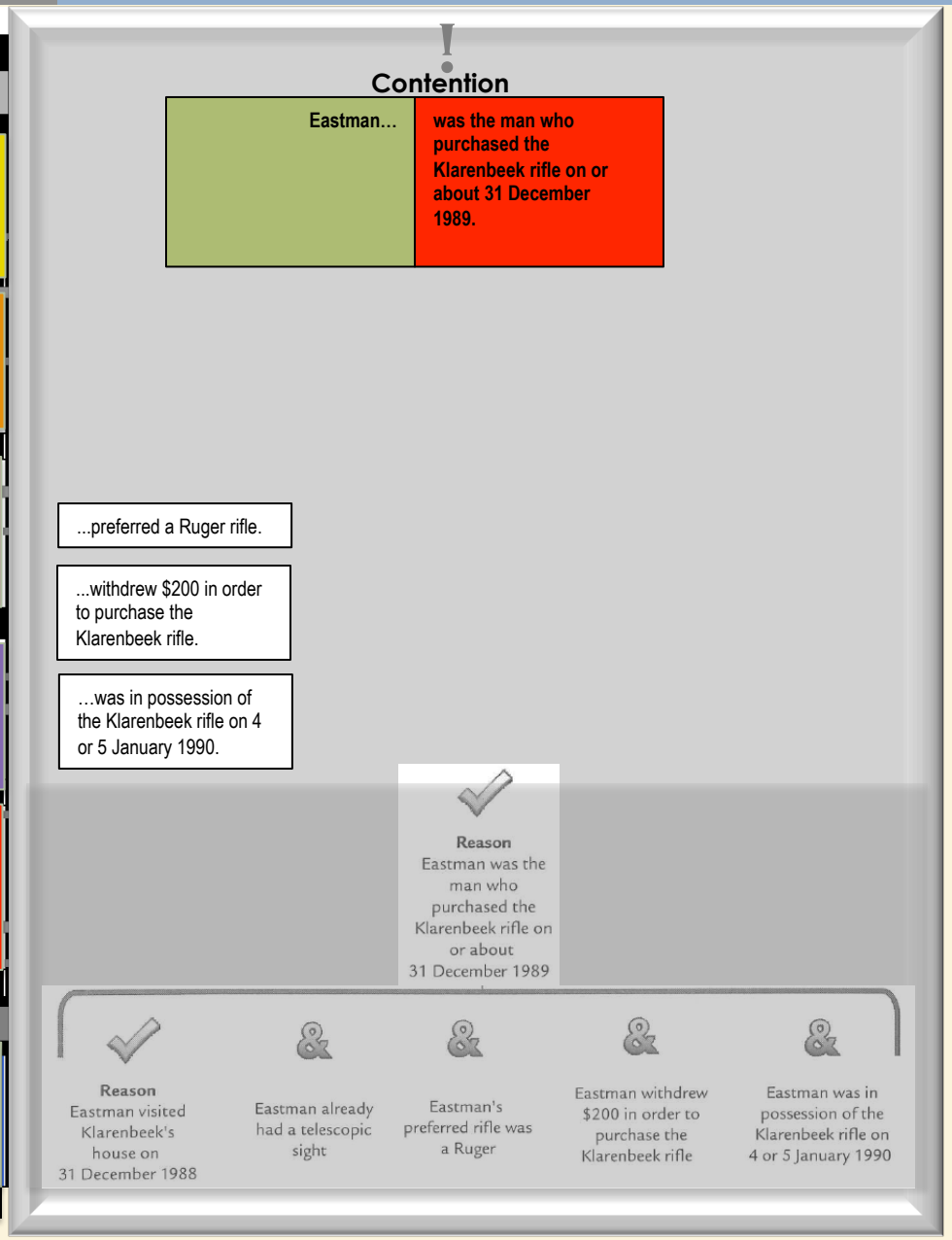
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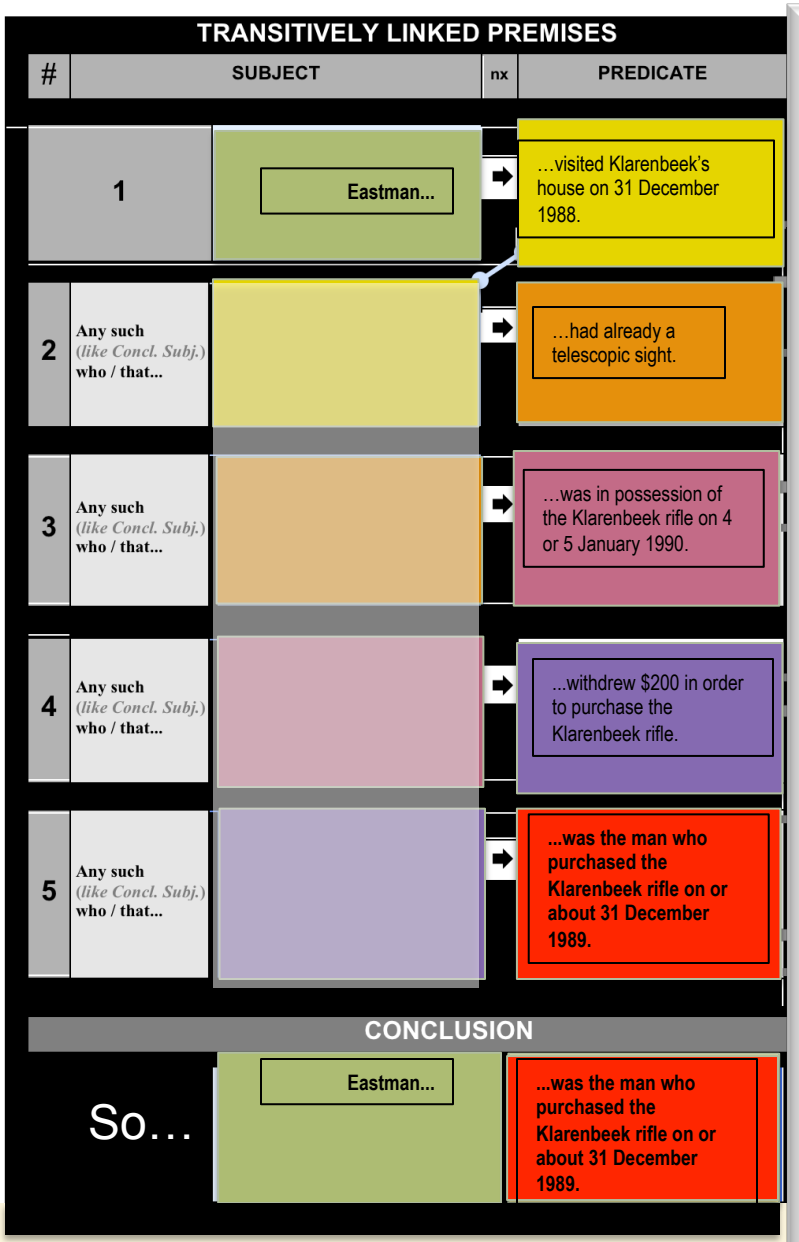
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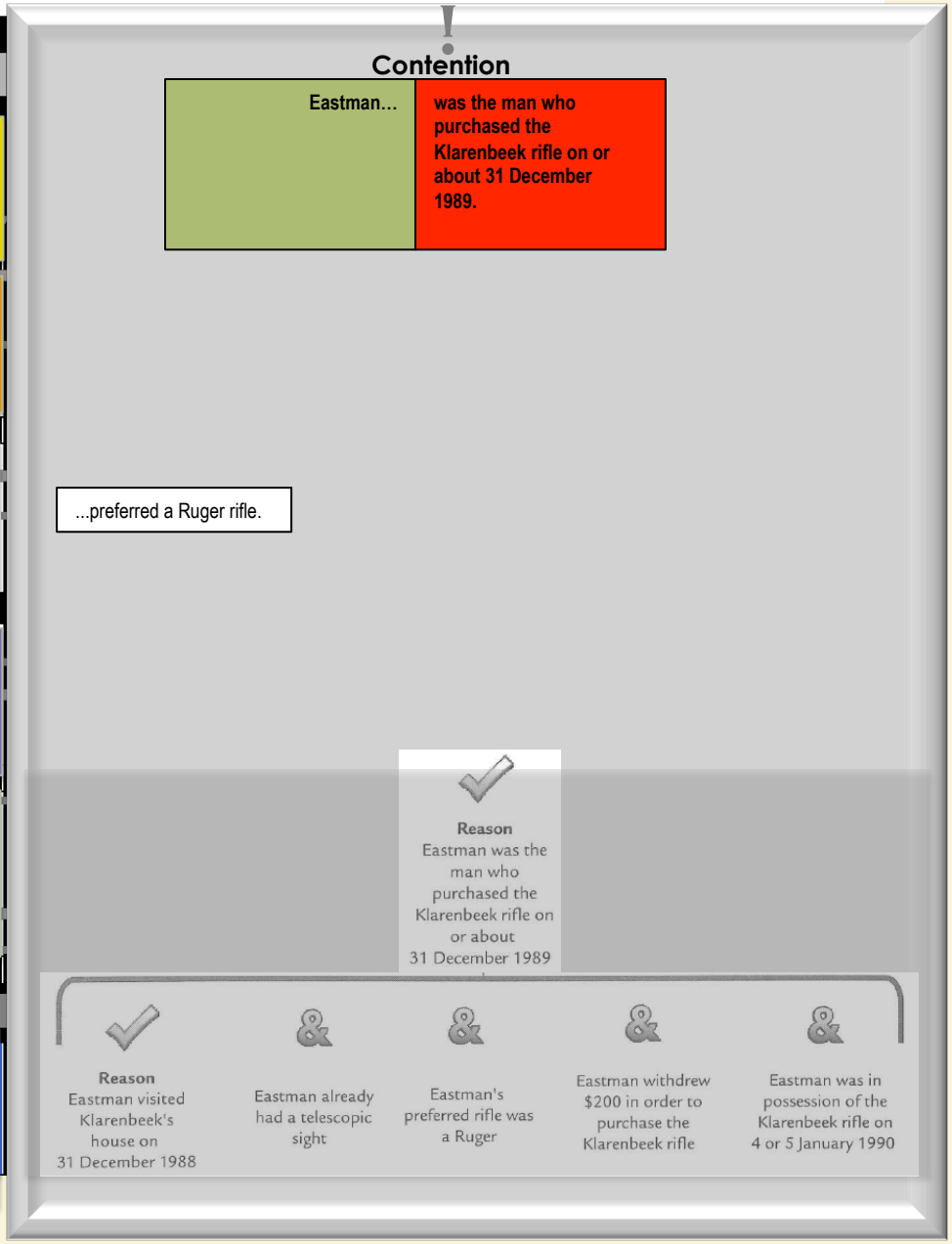
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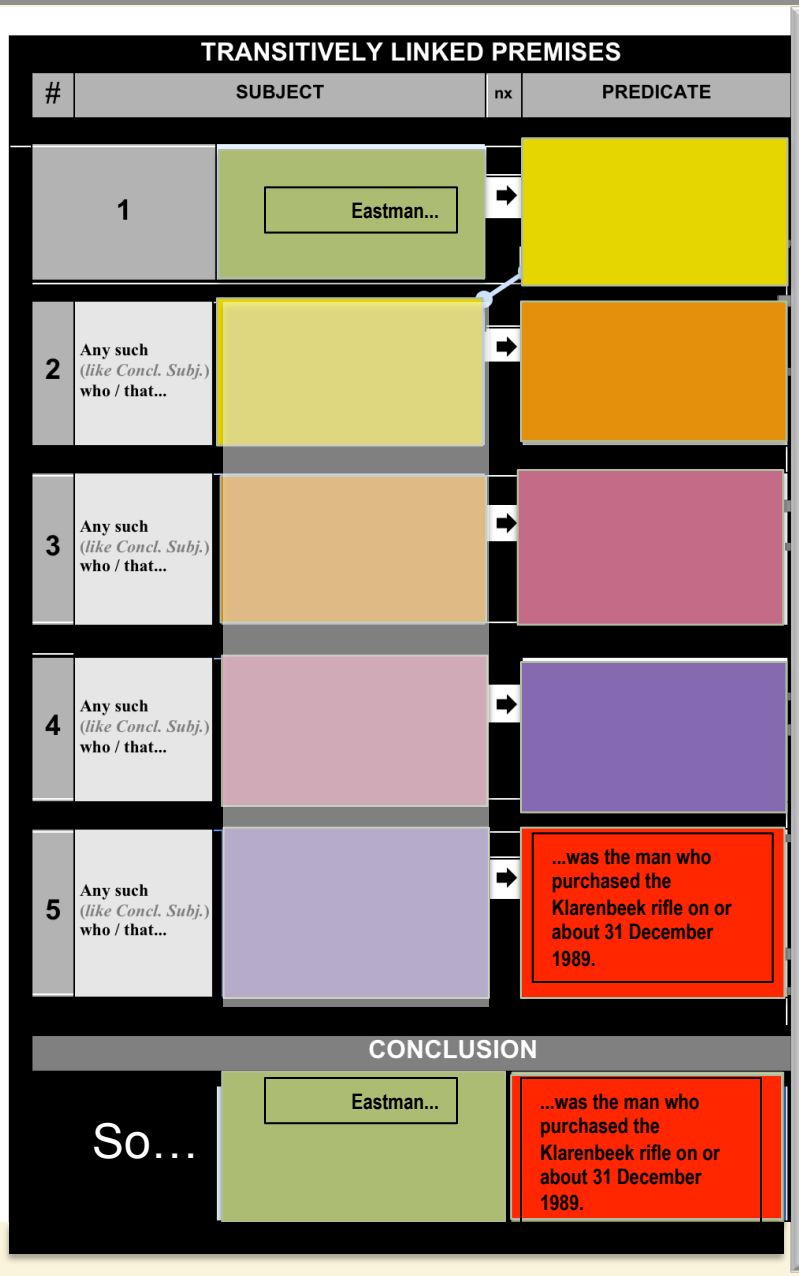
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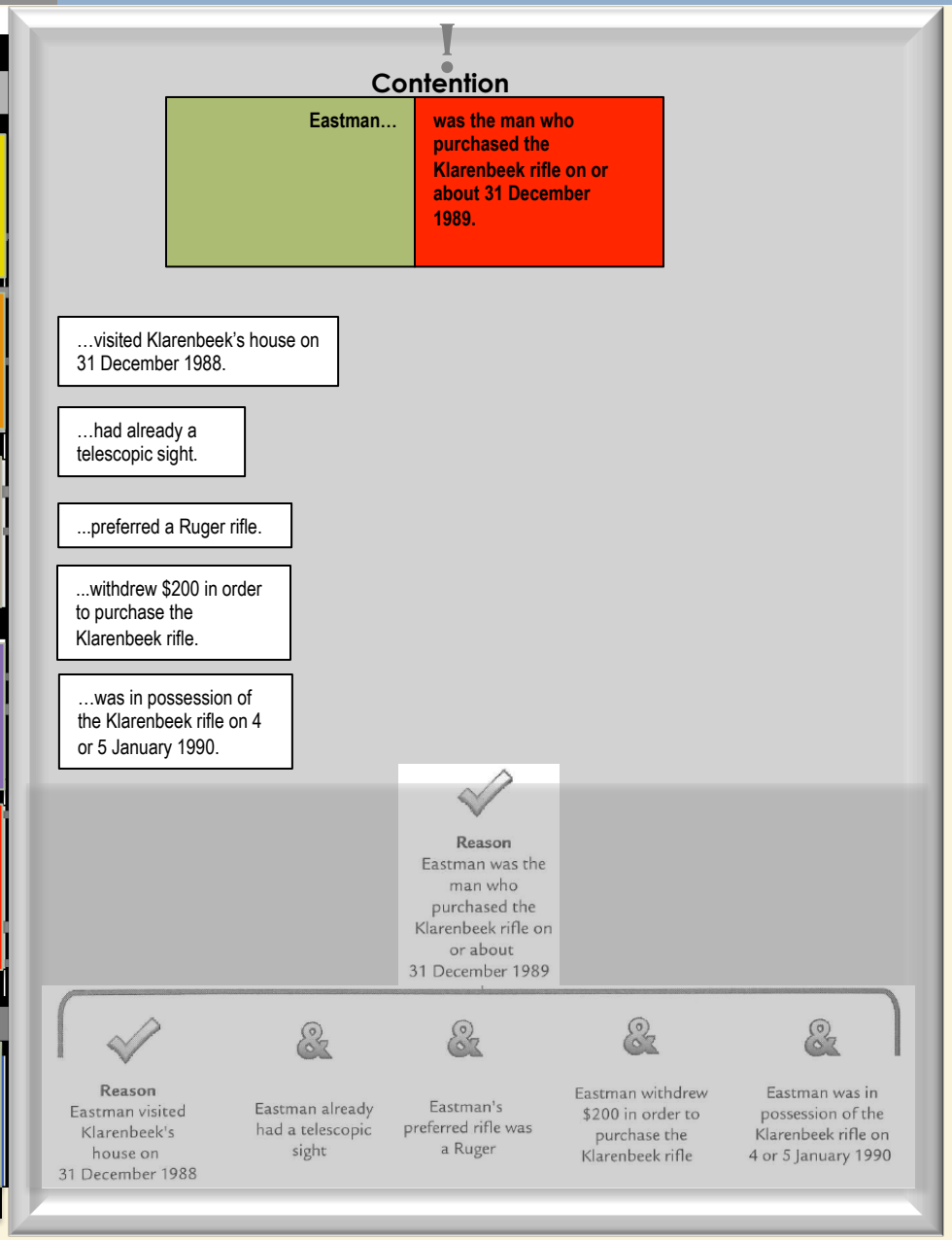
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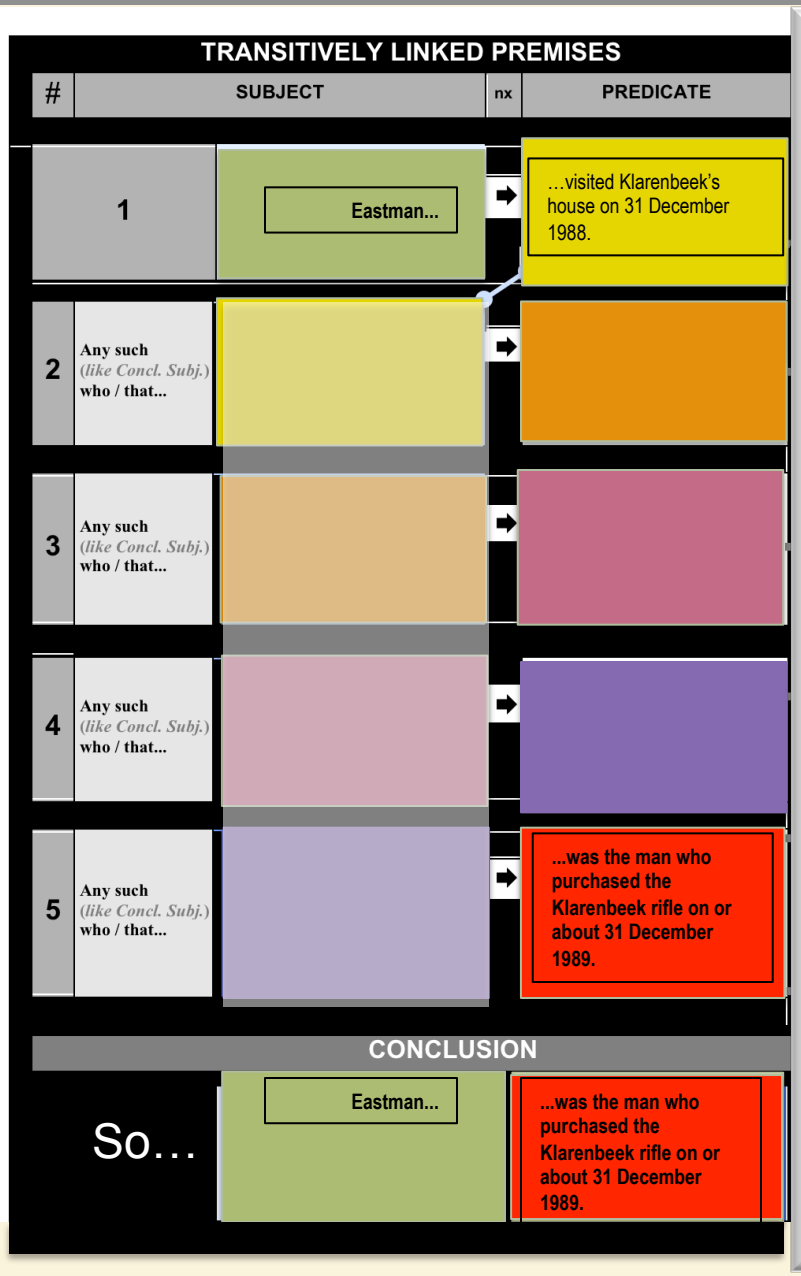
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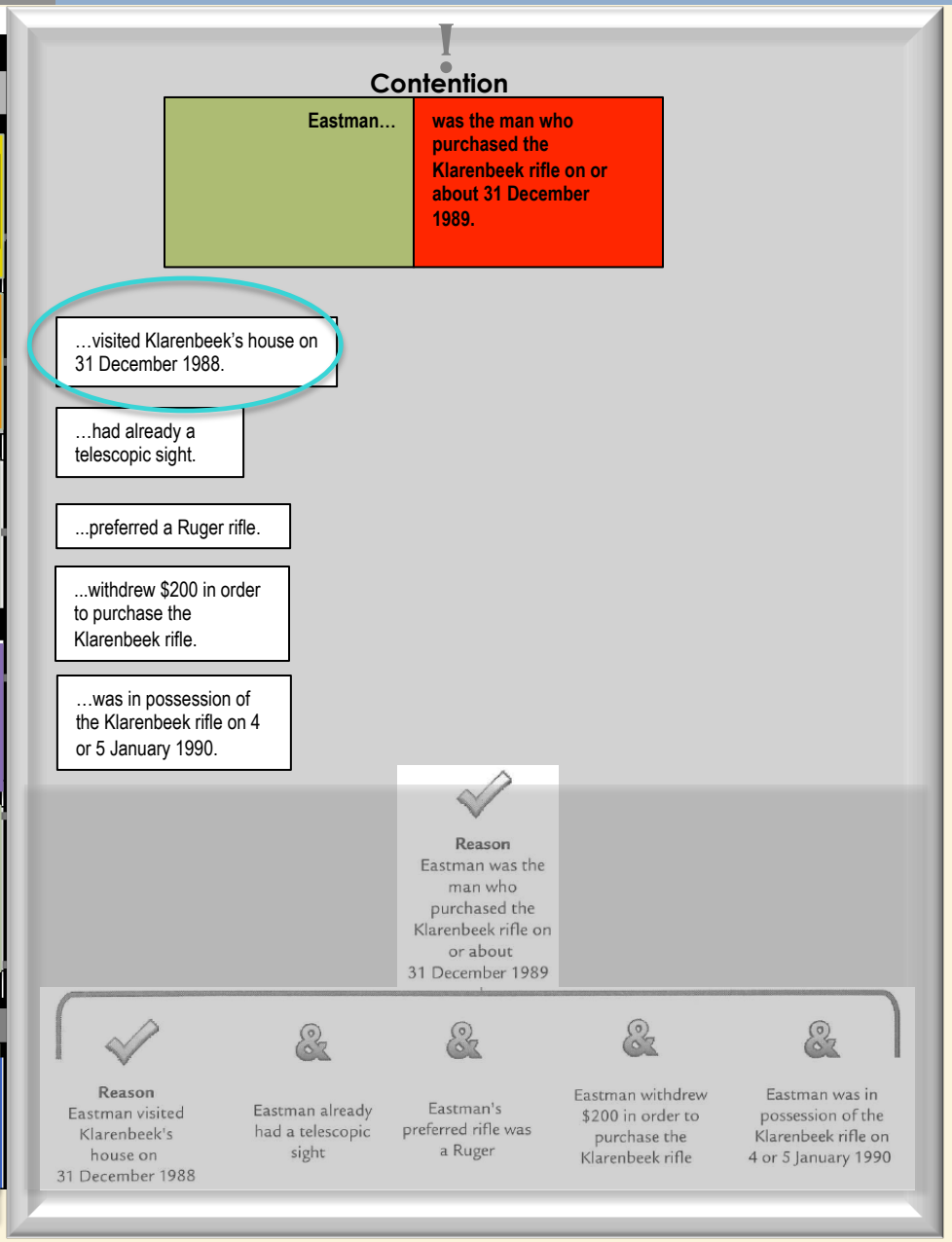
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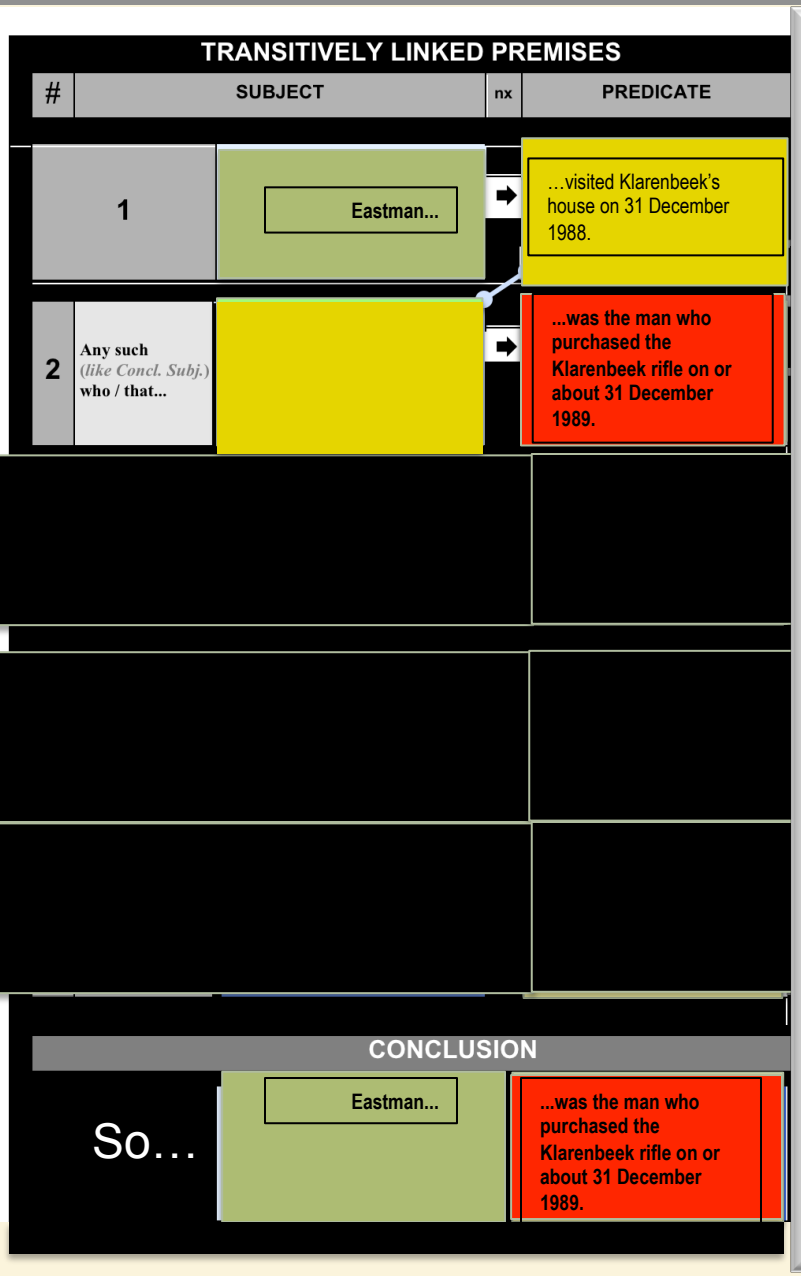
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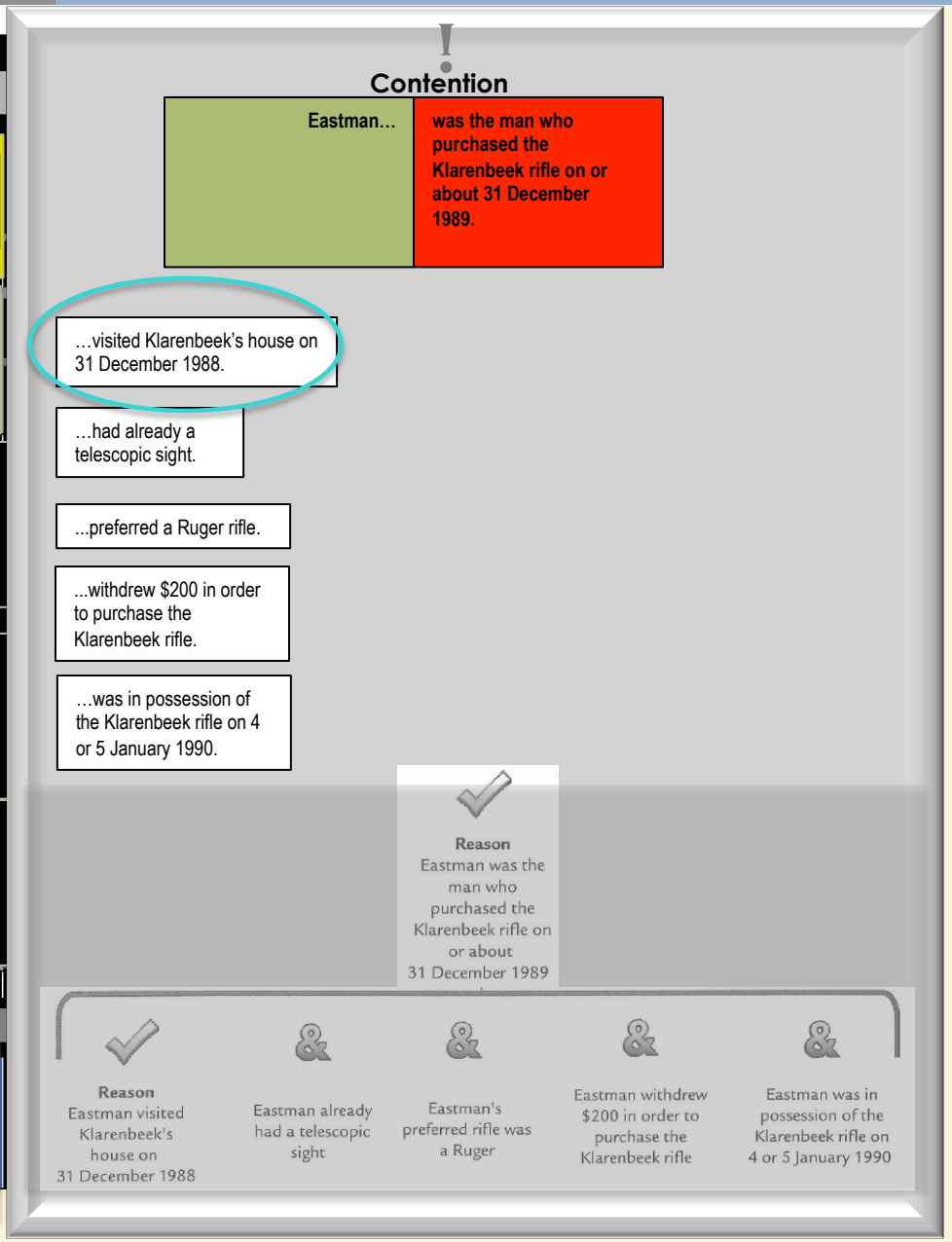
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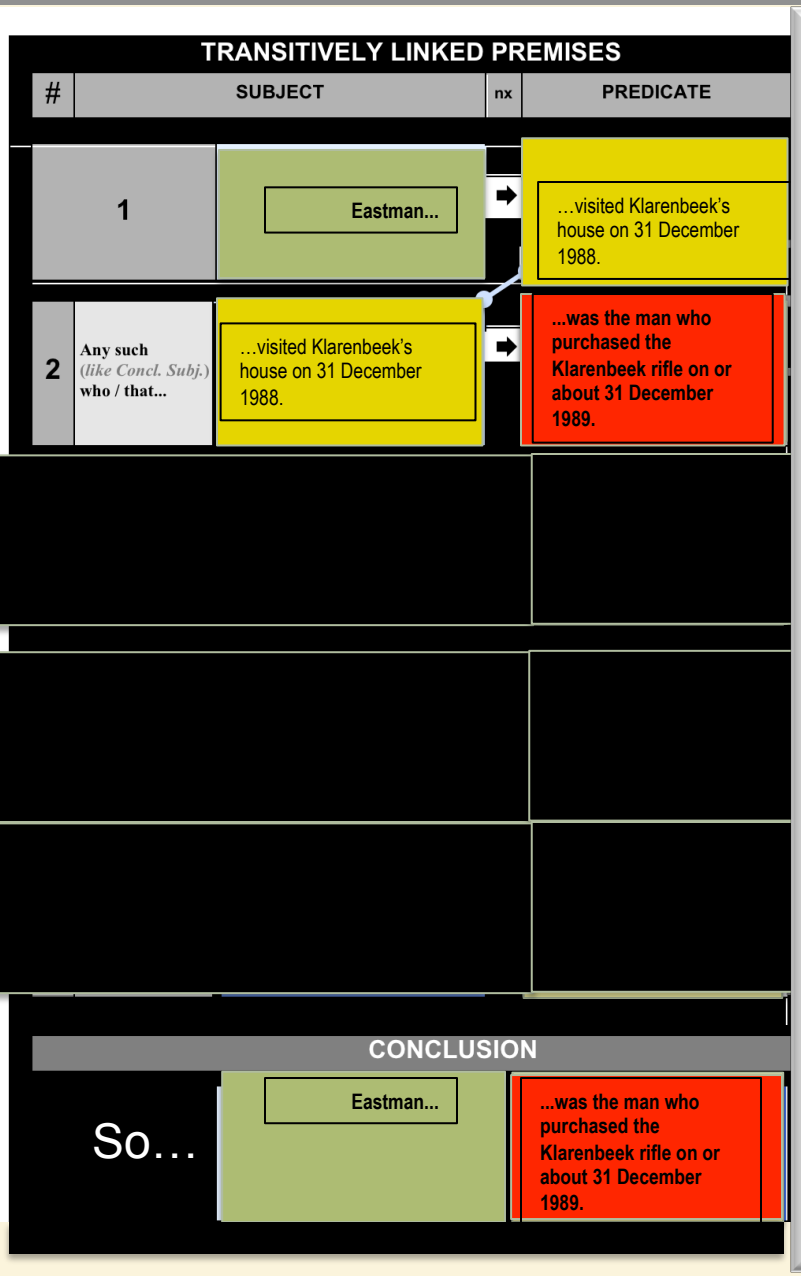
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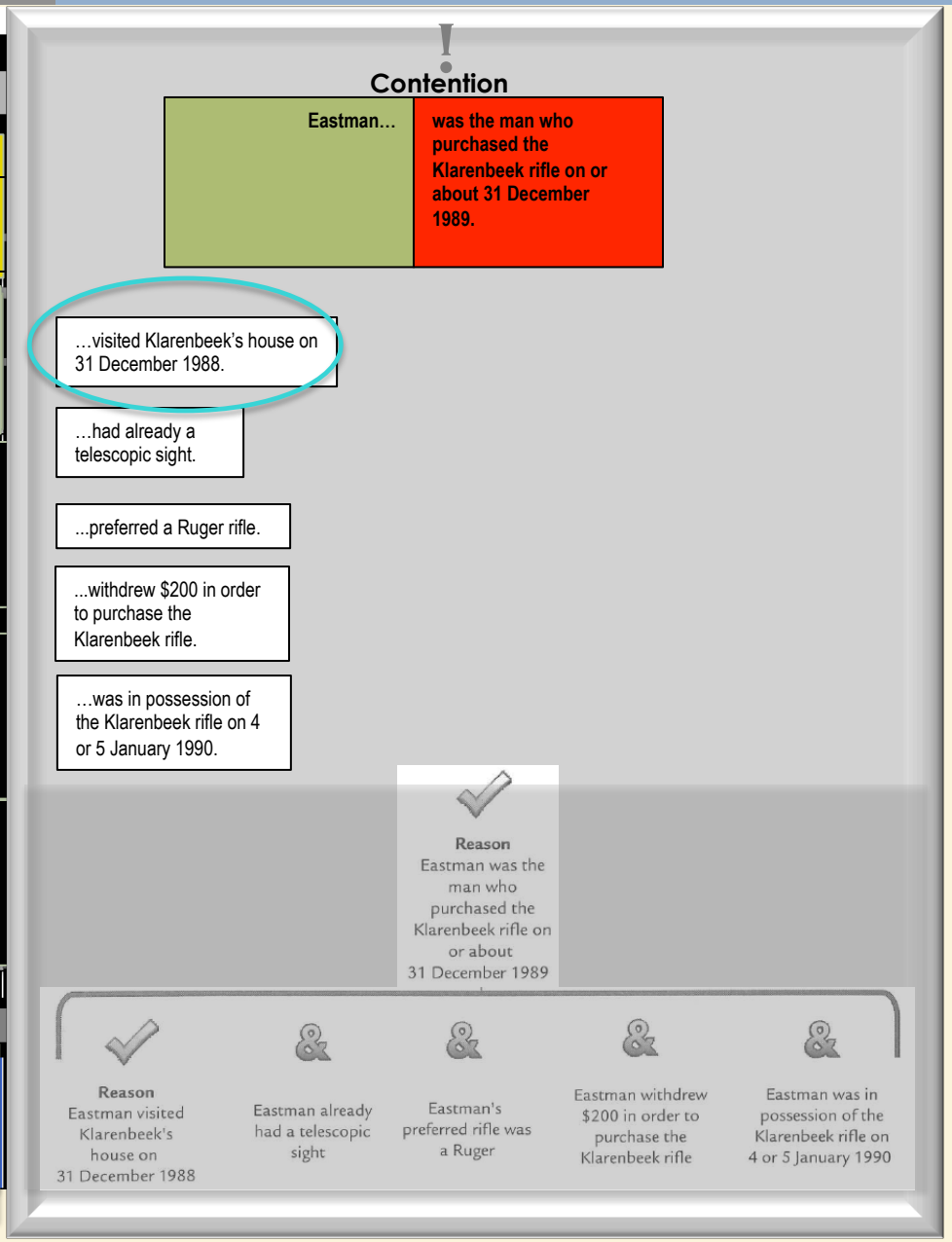
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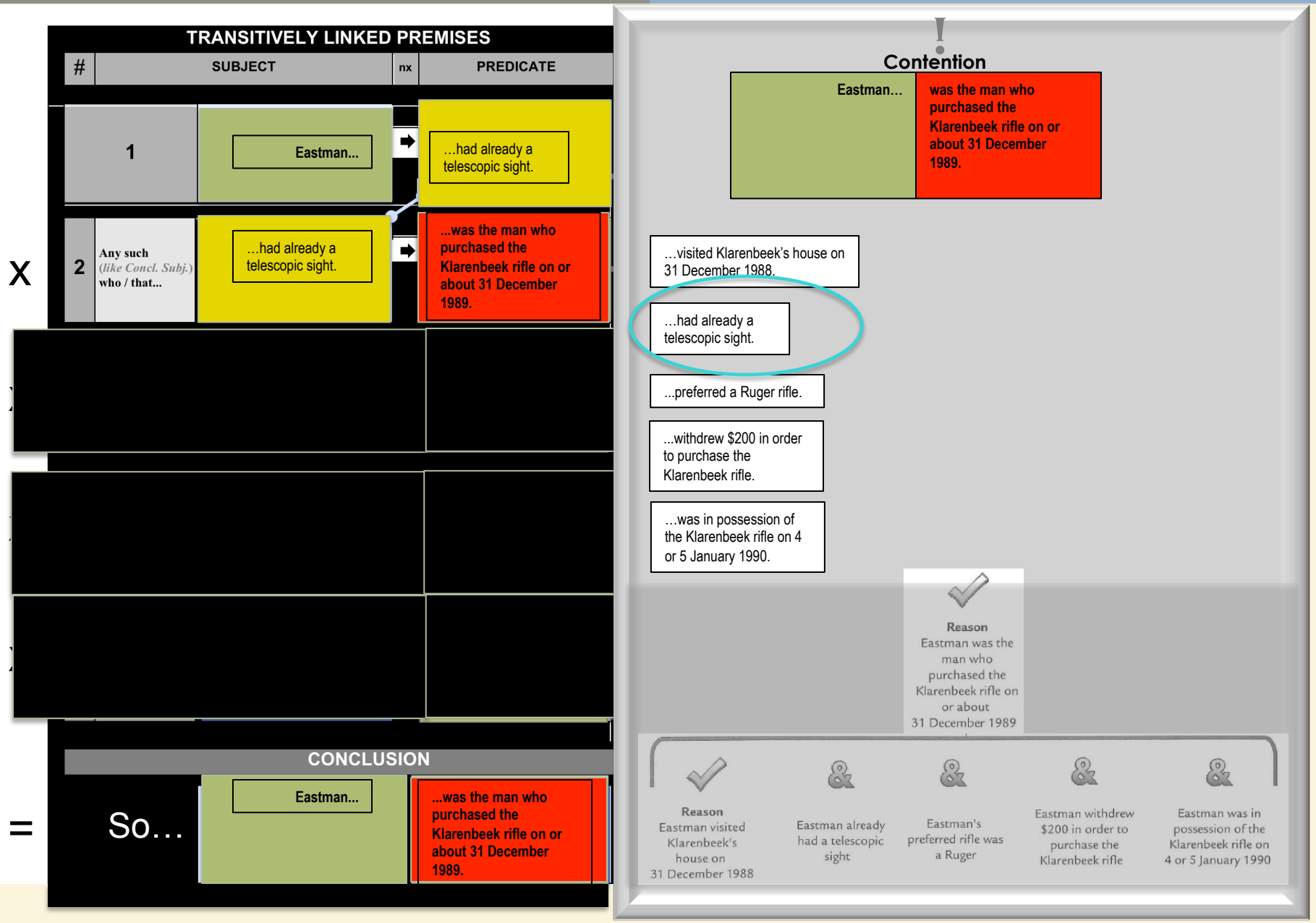
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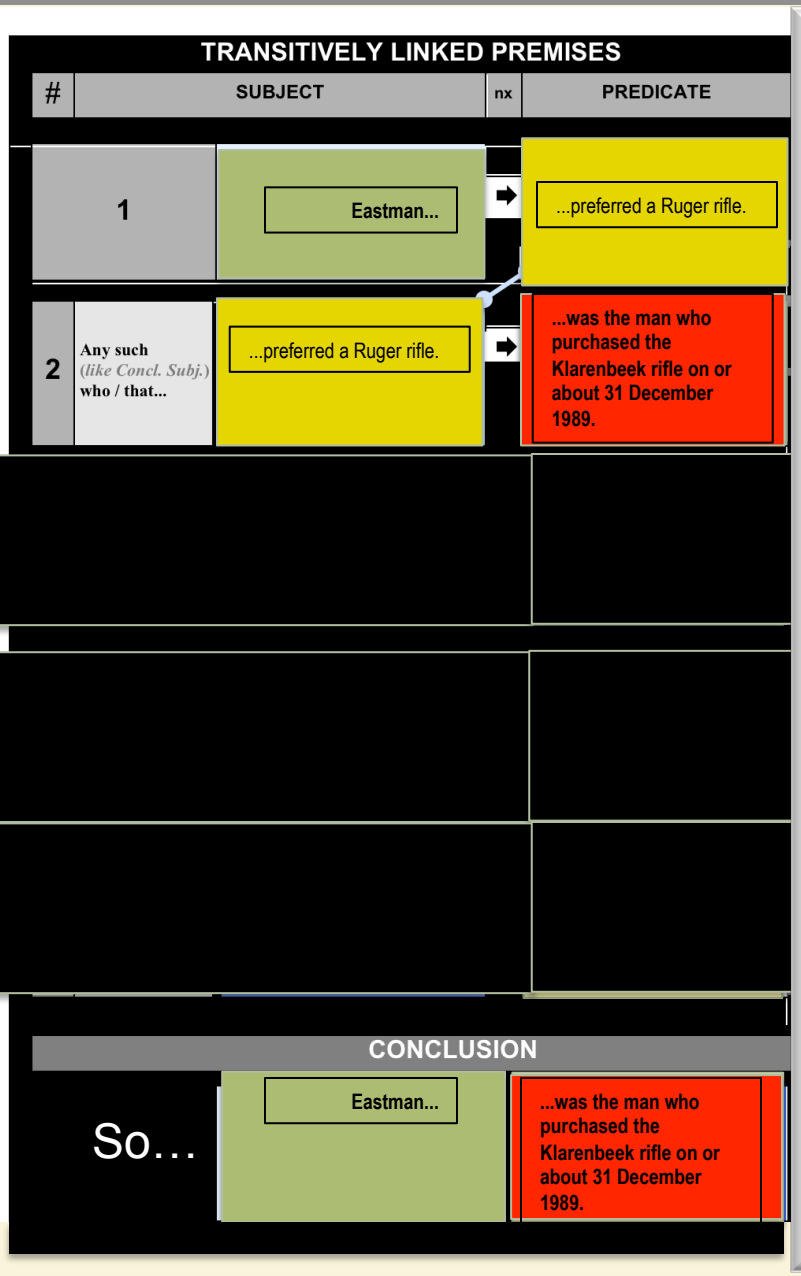
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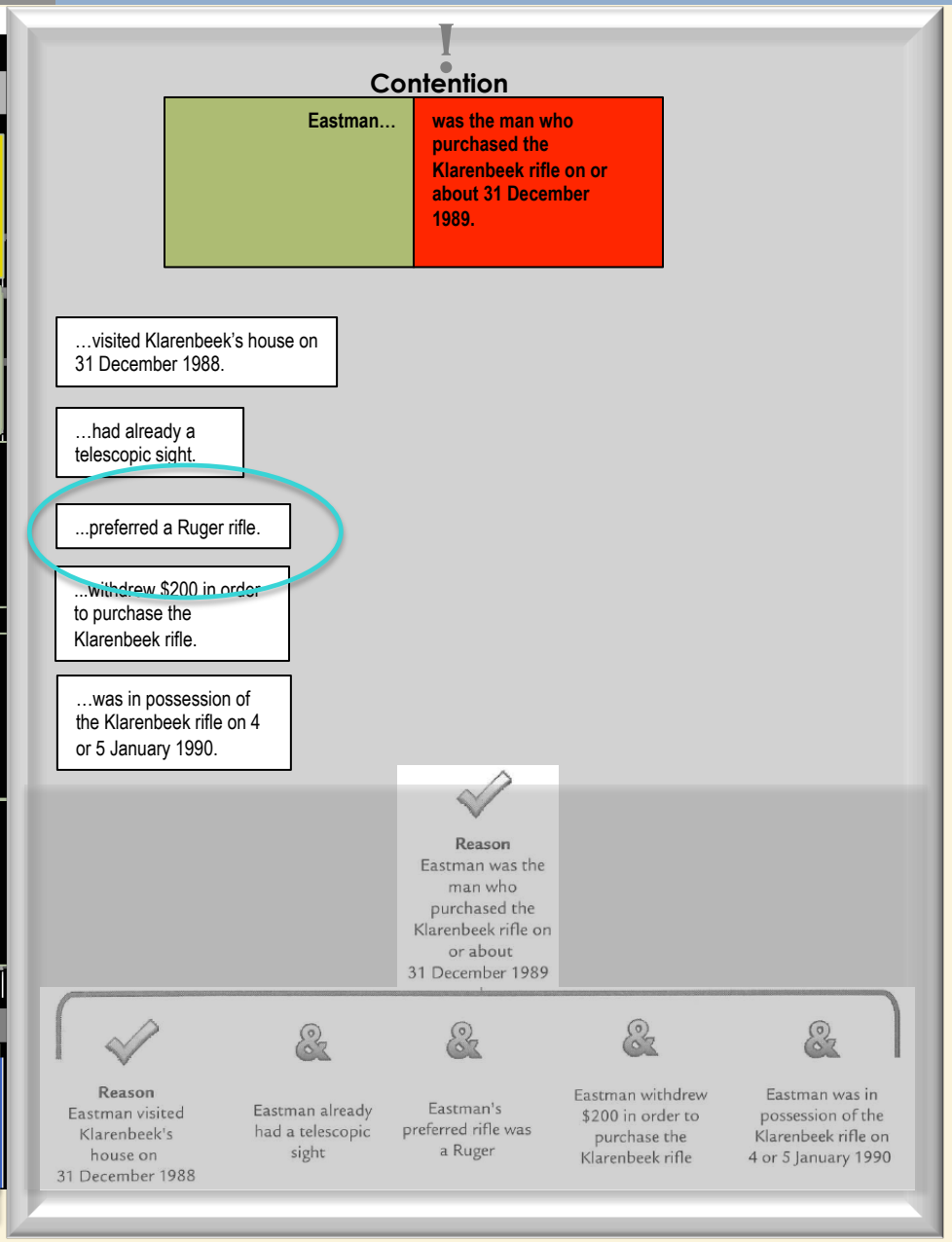
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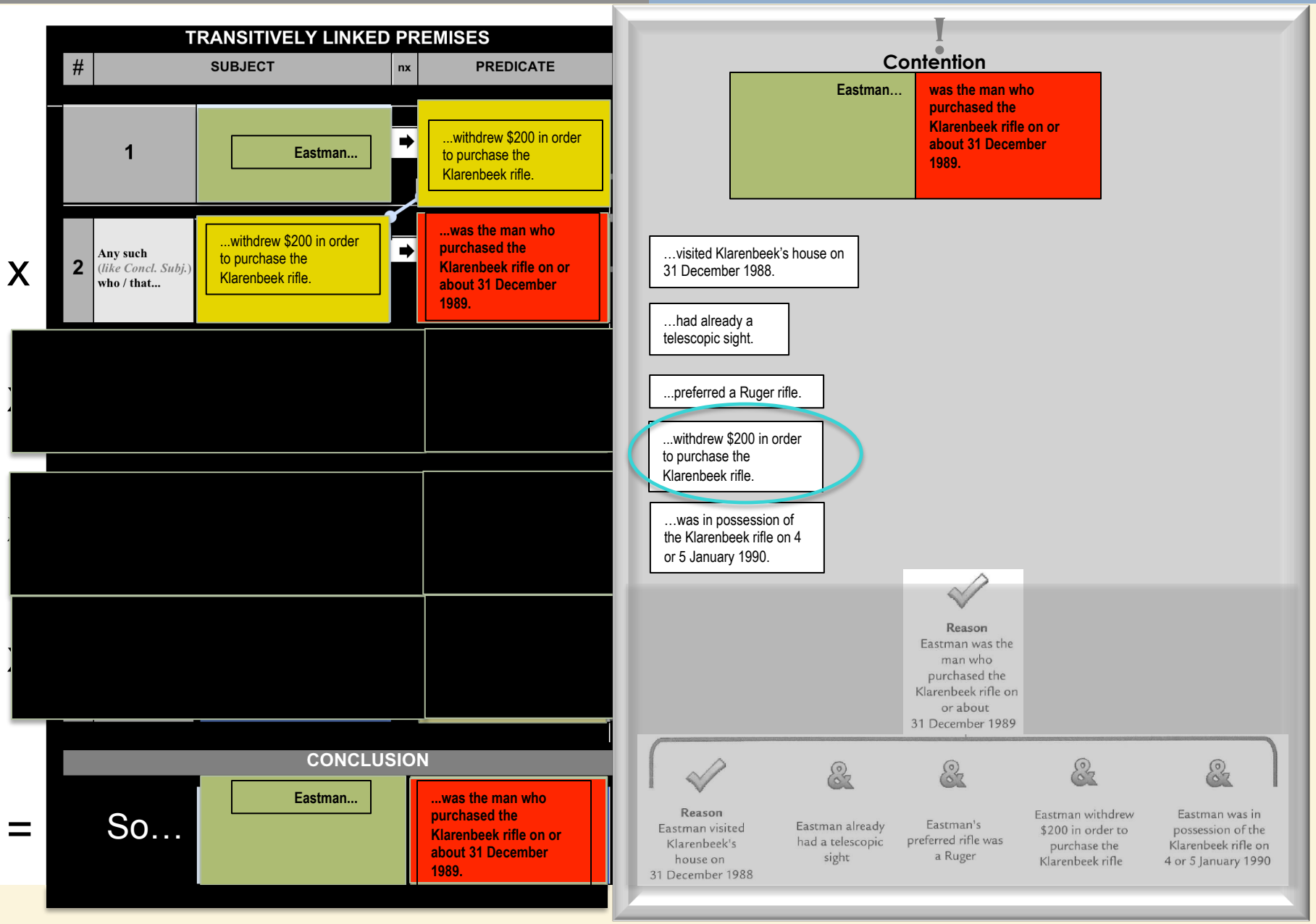
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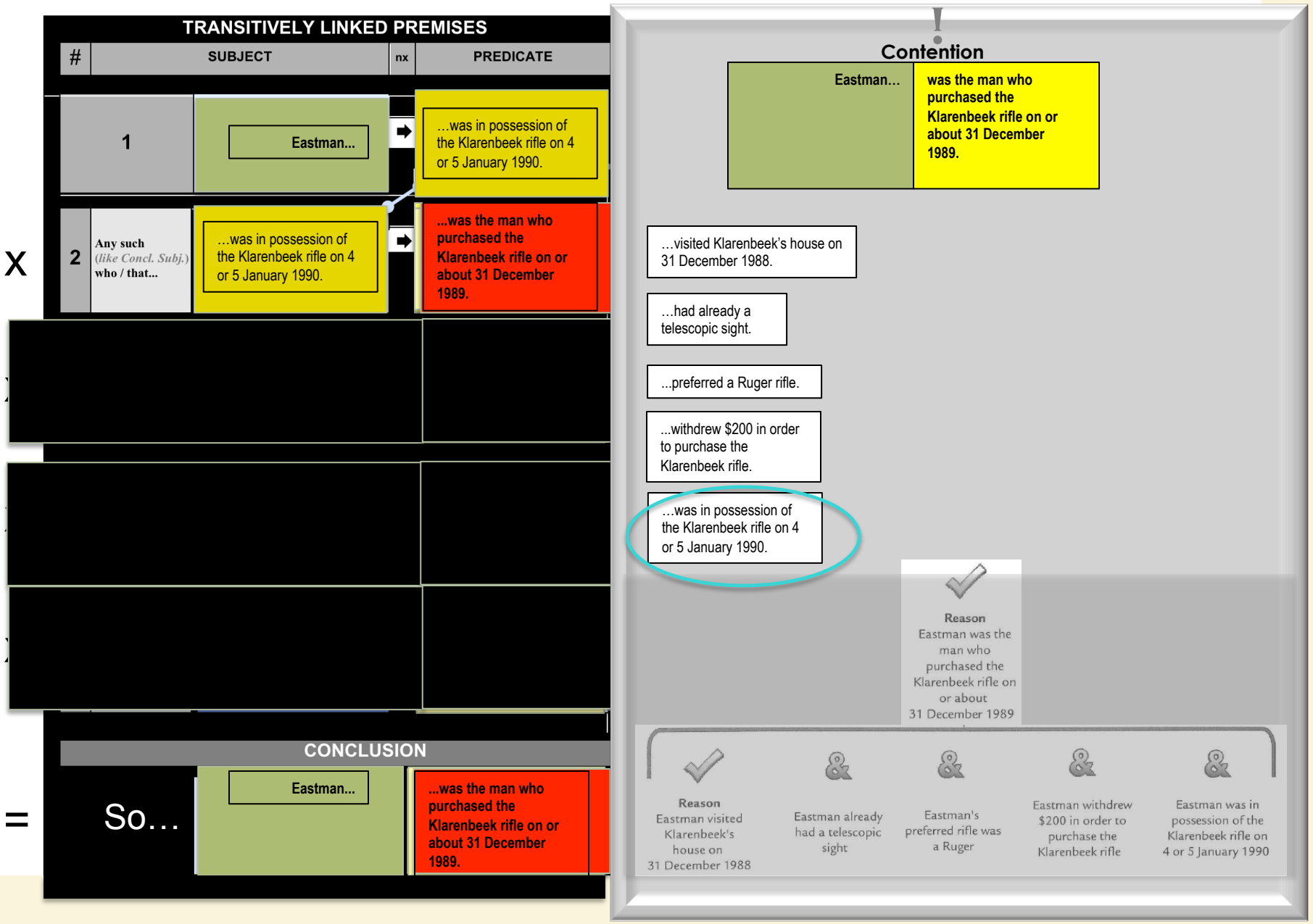
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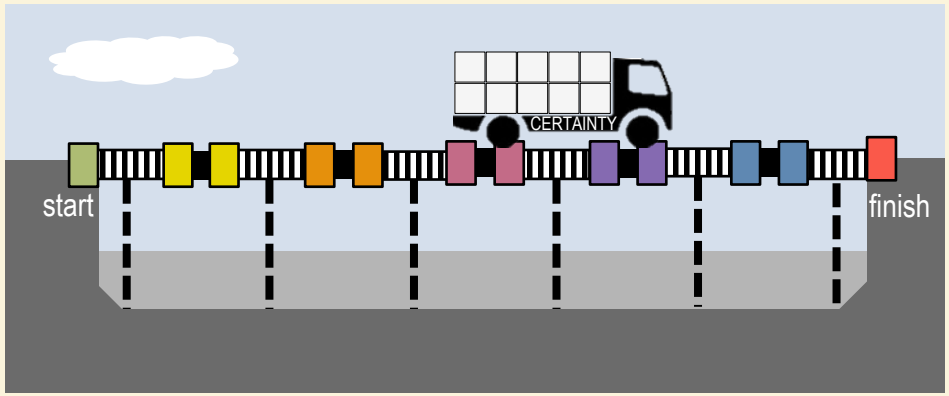
Logic-bridge Inference



Defeasible Class-Inclusion Transitivity (DCIT)

LOGICAL SYNTAX

- Predication is conceptualized as solely the relationship of "belongs to the class of."
- The logical syntax of a regimented sentence is based on a binary analysis consisting of the grammarian Subject (phrase) and the Predicate (phrase) as terms. There is no analytic recognition of a copula as a third expression.
- The Predicate (phrase) begins with a verb but is homogenous with the Subject placement with the addition of the universal quantifier: "Any (All,One) such [like the Subject] who (that)."
- Only the quantifier "Any (All,One) such [like the Subject] who (that)" is given logical import. So, for example, "some" and "none" have no logical import.
- There is no analytic distinction made between the "is" of identity and the "is" of predication.
- Likelihood of membership relies on degrees of probability based on a subjective assessment.
- Issues like proto-typicality of categorical membership are reflected in the "such [like the Subject]" words in the universal quantifier.
- Inference proceeds through defeasible class-inclusion transitivity.

Defeasible Class-Inclusion Transitivity

(DCIT pronounced dee•kit)

an empirically derived theory of inference, predication, categorization, argument structure and embodied visual language

Phillips S, Wilson WH, Halford GS (2009) What do Transitive Inference and Class Inclusion have in common? Categorical (co)products and cognitive development. PLoS Comput Biol 5: e1000599.

Defeasible Class-Inclusion Transitivity

THEORY OF INFERENCE

"

Children acquire various reasoning skills over remarkably similar periods of development. Transitive Inference and Class Inclusion are two behaviours among a suite of inferential abilities that have strikingly similar developmental profiles—all are acquired around the age of five years.

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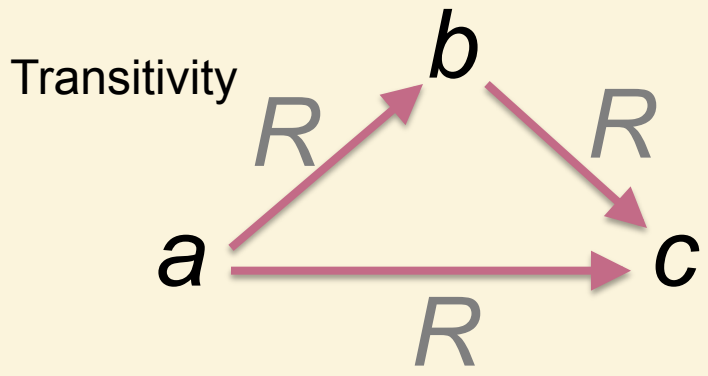
Defeasible Class-Inclusion Transitivity

THEORY OF INFERENCE

> A transitive inference has the general form that given *aRb* and *bRc*, then one can infer *aRc*, where R is some binary relation that has the transitivity property.
>
> For example, older children can infer that if *John is taller than Mary*, and *Mary is taller than Sue*, then *John is taller than Sue*. This form of reasoning is called Transitive Inference.



Phillips S, Wilson WH, Halford GS (2009) What do Transitive Inference and Class Inclusion have in common? Categorical (co)products and cognitive development. PLoS Comput Biol 5: e1000599.

Defeasible Class-Inclusion Transitivity

THEORY OF INFERENCE

> "Other evidence supported the conclusion that transitive inference was performed, not by logical reasoning, but by constructing a mental model comprising the ordered set of premise elements. The inference could be made simply by inspecting this mental model, a process that Thayer and Collyer (1978) described as "almost perceptual" (p. 1338).

Halford, G. S., & Andrews, G. (2004). The development of deductive reasoning: How important is complexity? Thinking and Reasoning, 10, 123–145.

Defeasible Class-Inclusion Transitivity

THEORY OF INFERENCE

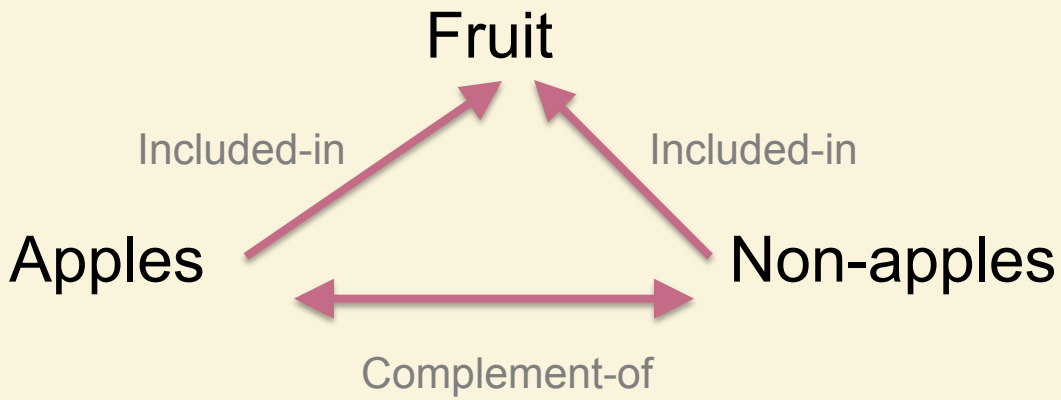
> [P]articipants performed the task by representing the elements as an ordered set, *a*, *b*, *c*, *d*, *e*, *(f)*.
>
> Repeated presentation of the premises, often over hundreds of trials, also permits simplifying strategies. For example, *a* can be identified as an end element because it is always less, whereas *e* *(f)* can be identified as an end element because it is always more. Once an end element is identified, the rest of the ordered set can be constructed by concatenation. With *a* as an end element, and given *a* < *b*, we can form the string *a*, *b*, then with *b* < *c* we can add *c*, yielding *a*, *b*, *c*, and so on.

Phillips S, Wilson WH, Halford GS (2009) What do Transitive Inference and Class Inclusion have in common? Categorical (co)products and cognitive development. PLoS Comput Biol 5: e1000599.

Defeasible Class-Inclusion Transitivity

THEORY OF INFERENCE

> Older children also understand that a grocery store will contain more fruit than apples. That is, the number of items belonging to the superclass is greater than the number of items in any one of its subclasses. This form of reasoning is called Class Inclusion.



Walton, Douglas, Defeasible Reasoning and Informal Fallacies (March 3, 2011). Available at SSRN: http://ssrn.com/abstract=1775825 or http://dx.doi.org/10.2139/ssrn.1775825

Defeasible Class-Inclusion Transitivity

THEORY OF INFERENCE

> "a claim being at first acceptable because it is supported by reasoning, but that is later defeated because circumstances are present that bring the case under an exception.

'Claims can usually be challenged or opposed in two ways. First, by a denial of the facts upon which they are based and secondly by something quite different, namely a plea that although all the circumstances on which a claim could succeed are present, yet in the particular case, the claim .. . should not succeed because other circumstances are present which brings the case under some recognized head of exception, the effect of which is either to defeat the claim . .. altogether, or to "reduce" it .. . .' (1951, 147-148).

Judging from this quotation, it would appear that Hart had the idea of a claim being at first acceptable because it is supported by reasoning, but that is later defeated because circumstances are present that bring the case under an exception. Thus we recognize the idea of a defeasible argument, of a kind so common in law.

DCIT does not rely on deduction.

The Logic-bridge uses a universal defeasible logic algebraic algorithm:

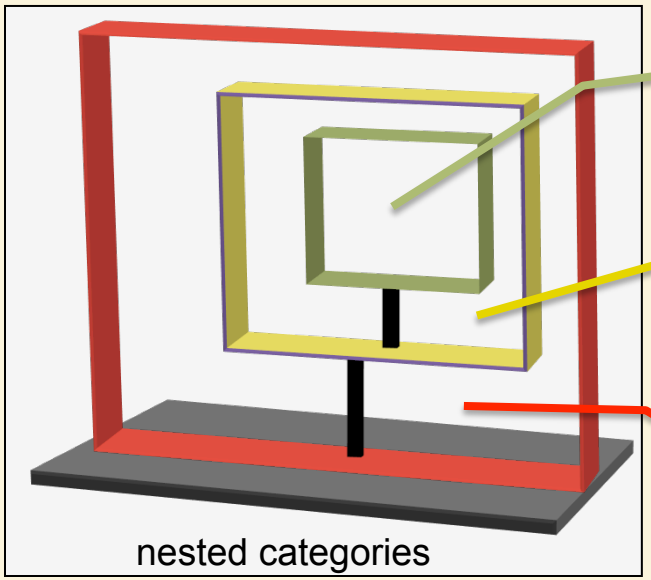
(A/Z) = (A/B) (B/C) (C/D) (D/E) (E/n) (n/Z)

That DCIT *multiplication* logic algorithm is related to Sommers (2000)[1] *plus/minus* term-functor algebraic monotonic logic algorithm in the "New Syllogism."

Each linked premise and the conclusion is constructed as a categorical sentence with two homogenous terms consisting of a complex subject phrase and a complex predicate phrase without the use of a copula (e.g., "is", "is not"). And the term is not a restricted to a single word.

So this logic algorithm relies upon a binary logical structure (e.g., Plato) rather than the "ternary theory of logical syntax" adopted by Aristotle (Englebretsen, 1996)[2]. But the algorithm retains Aristotle's homogeneity of the terms rather than Plato's heterogeneity of terms.

Also, unlike a deductive mode of inference, the Logic-bridge mode of inference is defeasible. New evidence can change the certainty of the conclusion. And the amount of certainty is not a bivalent (yes/no) determination. Like fuzzy logic, it comes in degrees.


nested categories

The President **A**

has a valid Hawaiian birth certificate **B**

was born in Hawaii **C**

SUBJECT COLUMN	PREDICATE COLUMN
1 The President...	... . has a valid Hawaiian birth certificate.
2 Any (all/one) who (that) [PREVIOUS PREDICATE]	...was born in Hawaii.
Therefore, CONCLUSION	
The President...	...was born in Hawaii.

The process by which the Logic-bridge line of reasoning justifies the conclusion (mode of inference) is called Defeasible Class-Inclusion Transitivity (DCIT dee•kit).

A belongs to (fits within) category B.

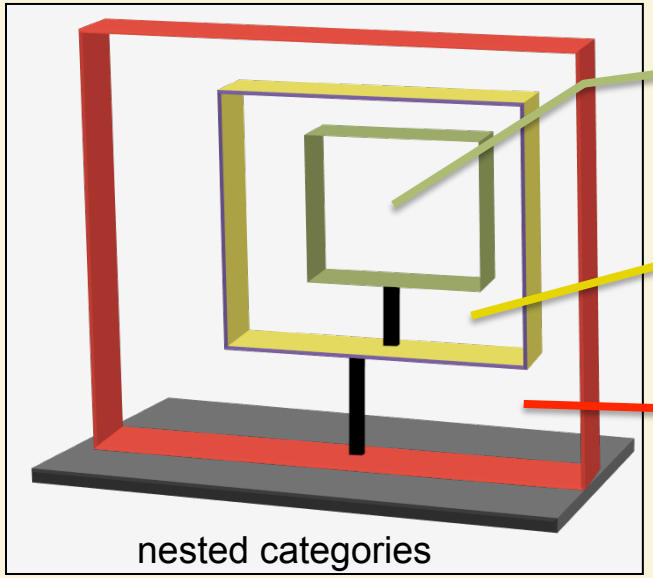
B belongs to (fits within) category C.

Therefore (through DCIT)...

A belongs to (fits within) category C.

Pollock (1995)

	INFERENTIALLY LINKED PREMISES		Supporting Assumptions (necessary and ancillary)
1	**The canary...**	...is yellow.	*N/A*
2	One [like the subject] that... [REPEAT PREVIOUS PREDICATE]	**...is a color.**	*N/A*
Therefore,	CONCLUSION		
	The canary...	**...is a color.**	



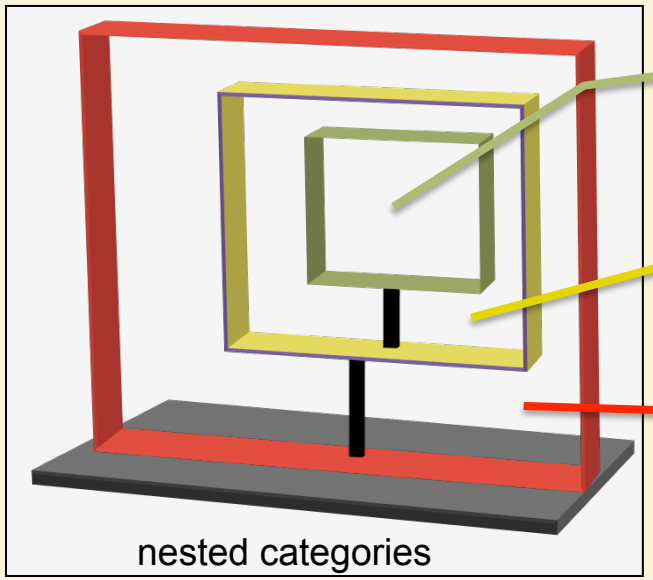
The canary **A**

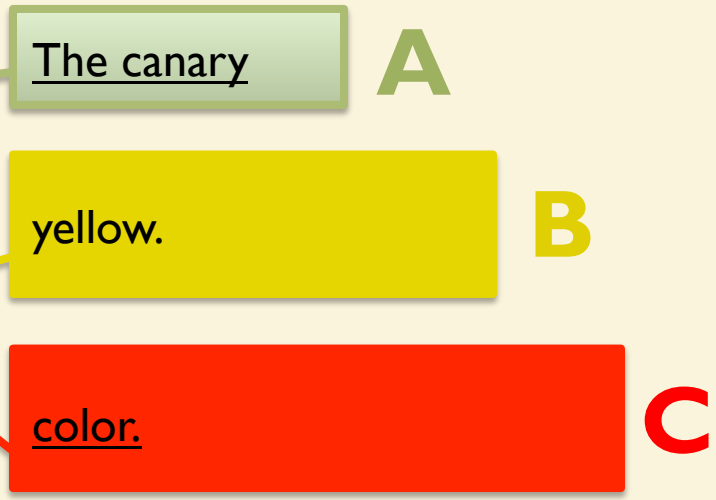
is yellow. **B**

is a color. **C**

Pollock (1995)

INFERENTIALLY LINKED PREMISES			Supporting Assumptions (necessary and ancillary)
1	**The canary...**	...is yellow.	*N/A*
2	Yellow...	**...is a color.**	*N/A*
Therefore,	**CONCLUSION**		
	The canary...	**...is a color.**	





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