Obligations and Disputations

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Medieval Logic

- The legacy of Aristotle
  - *logica vetus*: *Categories, De Interpretatione* (c. 1100)
  - *logica nova*: the rest of the *Organon* (by c. 1200)
- The medievals’ contribution: *logica modernorum* (from c. 1150)
  - theory of properties of terms (signification, supposition, appellation, ampliation, restriction etc.)
  - theory of consequences
  - theory of insolubles
  - theory of obligations
- stimulated by the theory of fallacy, following recovery of *De Sophisticis Elenchis* around 1140
- reached fulfilment in the 14th century, the most productive century for logic before the 20th.
The purpose of obligational disputations

Obligations have been variously described as:

- Pedagogical exercises (Nicholas of Paris, Ralph Strode, anon. *Obligationes Parisienses*, anon. *De arte obligatoria*—Romuald Green, Mary Anthony Brown, Charles Hamblin, Jennifer Ashworth)
- Tools for solving sophisms and insolubles (*Tractatus Sorbonnensis*—Eleonore Stump)
- Experiments with counterfactual reasoning (Kilvington’s *Sophismata*—Paul Spade, Norman Kretzmann)
- A theory of belief-revision (Lagerlund and Olsson)
- A theory of thought-experiments (Mikko Yrjönsuuri)
- A sophisticated theory of argumentation and disputation (Hajo Keffer)
- Games of consistency maintenance (Chris Martin, Catarina Dutilh Novaes)
Obligations as Exercises

- No record of any actual disputation, rather than discussion of the theory of obligations, has survived.

- Nonetheless, I believe we should accept what is said in perhaps the longest passage describing the purpose of obligational disputations (anon., *De Arte Obligatoria*):

  “This art trains the Respondent so that he pays attention to what is granted and denied, in order not to grant two incompatible things at the same time. For in *De Sophisticis Elenchis*, Aristotle teaches the arguer to put forward many things so that the Respondent who does not remember because of the large number may be refuted as regards his response to the things put forward. It is partly from this that the art has derived its structure, so that as long as we pay attention we may keep ourselves from being tricked. Just as it is important for a liar to have a good memory in order to make claims without asserting contraries, so for someone who is good at responding it is appropriate that he respond formally regarding the things admitted, granted and appropriately denied and remembered.”
Disputations

The structure of a sophismatic disputation:

- Hypothesis
- Proof(s)
- Disproof(s)
- Question(s)
- Resolution
- Replies to opposing arguments
- Determination
Walter Burley (or Burleigh)

- Born Yorkshire, England, around 1275
- Master of Arts, Merton College, Oxford University, by 1301
- Treatises on *Suppositions* and *Obligations*, 1302
- Paris, before 1310 until 1326/7
- *De Puritate Artis Logicae* (‘On the Essentials of the Art of Logic’), 1324
- A member of Richard de Bury’s circle (Bishop of Durham)
- Envoy to papal court for Edward III from 1327
- Many works, including commentaries on Aristotle
- Died around 1344/5.
Incipiunt obligationes Burlei: In disputatione dialectica due sunt partes, scilicet opponens et respondens.
Obligational Disputations

- A disputation between an Opponent and a Respondent
Obligations and Disputations

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Obligations
Disputations
Walter Burley
Obligational Disputations

The Responsio Antiqua
Positio
Burley’s thesis
An Obligational Sophism

The Responsio Nova
Roger Swyneshed
Swyneshed’s Theses
Swyneshed’s theory

Other Types of Obligation
Institutio
Petitio
Depositio
Dubitatio
Sit verum

Conclusion
Summary
References

Obligational Disputations

- A disputation between an Opponent and a Respondent
- Burley distinguishes six types of obligation:
  - *Institutio* (or *Impositio*): where the Respondent is obligated to use a term with a new meaning
  - *Petitio*: where the Respondent is obligated to act in a certain way
  - *Positio*: where the Respondent is obligated to grant the *positum*
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  - *Dubitatio*: where the Respondent is obligated to doubt the *dubitatum*
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- Burley and earlier writers distinguish two types of *positio*, *positio possibilis* and *positio impossibilis*. 
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- A *casus*: a hypothetical background situation
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- there may follow an analysis of how well the Respondent responded.
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3. ‘You are a man’ Denied (true, but inconsistent with the *positum* and the opposite of what has been denied)
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- Is impossible *positio* useful? Yes, says Ockham: “by such *positio* one opens the way to recognising which inferences are good and self-evident and which are not.”
Burley’s thesis, or rule

Burley observes that in possible *positio*, the Respondent can be forced to grant any other false proposition compatible with the *positum*. E.g., to prove you are a bishop:

0. *Positum*: ‘You are in Rome’ Accepted (possible)
1. ‘You are not in Rome or you are a bishop’ Granted (irrelevant and the first disjunct is true)
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- For suppose at the start of the obligation, you are sitting, but having granted the irrelevant proposition ‘You are sitting’, you then stand up
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- You should grant it, even though it is now false, for it was true when you granted it, and “all responses must be for the same instant.”
- It was usual to take the instant to be the start of the *obligatio*. Suppose we call the instant $A$:
  0. *Positum*: ‘The Antichrist exists’ Accepted
  1. ‘The Antichrist exists at $A$’ Denied (the Antichrist exists only in the future)
  2. ‘It is $A$’ Denied (inconsistent with the *positum* and the opposite of what has been denied)
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However, although we must deny that it is $A$, that does not mean that ‘It is $A$’ is false.
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4. Cedat tempus

   If you grant it, you grant the opposite of the *positum*, so you respond badly

   If you deny it, you deny something that follows, so again you respond badly

   Solution: Burley says that step 1 should be denied: the rule is that if something follows from the *positum* it should be granted.
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   ???

4. *Cedat tempus*

   ▶ If you grant it, you grant the opposite of the *positum*, so you respond badly
Pragmatic Inconsistency

0. *Positum*: ‘Nothing is posited to you’  
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1. ‘Everything that follows from the positum must be granted’  
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   ▶ If you grant it, you grant the opposite of the *positum*, so you respond badly
   ▶ If you deny it, you deny something that follows, so again you respond badly
   ▶ Solution: Burley says that step 1 should be denied: the rule is that IF something follows from the *positum* it should be granted.
The **Responsio Nova**

Robert Fland tells us: “*Est tamen una alia responsio quasi nova ...*”:
The *Responsio Nova*

Robert Fland tells us: “*Est tamen una alia responsio quasi nova . . .*”:

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1. ‘Every man is running’  
2. ‘You are a man’

- Accepted
- Granted (the *positum*)
- Granted (irrelevant and true)
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1. ‘Every man is running’  
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3. ‘You are running’  
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Why is ‘You are running’ irrelevant? Not because it does not follow from the *positum* and what has been granted. He says it does. But he denies that the conjunction of (1) and (2) should be granted, that is, one can deny a conjunction both of whose conjuncts have been granted:
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“This response puts forward these two rules. The first is: A conjunction may be denied each of whose parts should be granted. The second is that a disjunction may be granted each of whose parts should be denied.”
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The author of the *responsio nova* was Roger Swyneshed. Indeed, Paul of Venice plays on the name, speaking of *oppositionem illorum quos porcinos vocat* (“the opinion of those whom he [the master he is criticizing] calls ‘swinish’.”)
Roger Swyneshed (or Suisset)

- Not to be confused with the better-known Merton Calculator, Richard Swyneshed (or Swineshead)
- Studied at Oxford under Thomas Bradwardine and Richard Kilvington
- Wrote treatises on *Insolubles* and *Obligations* between 1330 and 1335 (and also a treatise on *Consequences* now apparently lost)
- Author of *Descriptiones motuum* (or *De motibus naturalibus*), a treatise on natural changes, including locomotion
- Subsequently became Master of Theology (though his *Sentences*-lectures are also lost)
- Also a member of Richard de Bury’s circle
- A Benedictine monk of Glastonbury, died about 1365.

Subtle Swyneshed, denizen of Glastonbury,
Indeed a monk of fond memory,
Whose fame of industry has not perished,
Suffered the poor to live in peace.
Swyneshed’s Iconoclastic Theses

In his treatise on *Obligationes*, Swyneshed presents two striking theses:

- “Having granted the parts of a conjunction, the conjunction need not be granted”
- “Nor having granted a disjunction, need either of its parts be granted.”

Yet in an obligatory disputation, one must normally grant whatever follows from what has already been granted.

- What is Swyneshed’s new theory of obligations?
- Why does Swyneshed offer a new theory?
- Is Swyneshed’s theory a logical heresy?
Swyneshed’s Central Example

0. *Positum*: ‘Every man is running’  
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0. *Positum*: ‘Every man is running’  
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1. ‘Every man is running’
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3. ‘You are running’
   Denied† (irrelevant and false)
4. ‘Every man is running and you are a man, so you are running’
   Granted (since it is valid)
5. ‘Every man is running and you are a man’
   Denied† (irrelevant and false)
6. ‘Not every man is running or you are not a man’
   Granted (equivalent to the opposite of (5))
7. ‘Not every man is running or you are not a man, but you are a man, so not every man is running’
   Granted (since it is valid)
8. ‘Not every man is running or you are not a man, and you are a man’
   Denied (inconsistent with the *positum*)

(5) proves Swyneshed’s first thesis, and (6) his second thesis.
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Swyneshed’s *Responsio Nova*

Swyneshed’s theory differs from Burley’s in several respects:

- First, Swyneshed, and the *nova responsio* in general, recognises only *positio*, *impositio* and *depositio*.

- Next, Swyneshed makes a sharp distinction between the *positio* and the *positum* (and in general, between the *obligatio* and the *obligatum*).

- Swyneshed also characterizes possible *positio* differently from Burley.

- Most importantly, he characterizes “relevance” differently.

- Responses to irrelevant propositions need not be for the same instant, but only for the present.

- Finally, he characterizes success and failure (winning and losing) differently.
Positio: The Responsio Nova

Swyneshed’s rules for *positio*:

- The *positum* should be accepted only if it is contingent, that is, if responses to it outside the obligation would change as the facts change.
- If a proposition follows from or is inconsistent with the *positum* (regardless of what has been granted), it is said to be “relevant” (*pertinens*), otherwise “irrelevant” (*impertinens*).
- If it is relevant, it is “obligated” and should be
  - granted if it follows
  - denied if it is inconsistent
- If it’s irrelevant, it is not obligated and (given the *casus* and how things are at that instant) should be
  - granted if (known to be) true, provided that is not inconsistent with the *positio* (the *obligatio*).
  - denied if (known to be) false, provided that is not inconsistent with the *positio* (the *obligatio*), and
  - doubted if it is not known whether it is true or false.
- The obligation ends when either
  - the Respondent grants and denies the same proposition (unless it is irrelevant), or
  - when the Opponent says ‘cedat tempus’.
Swyneshed’s answer to the problems with Burley’s theory

- Not every false proposition (compatible with the *positum*) need be granted:
  - the “tricks” (*cautelae*) introduced by Burley no longer work, since they only require the false proposition to be granted because it follows from the *positum* in conjunction with a true irrelevant proposition which has been granted

- Responses change only when the facts change:
  - relevance is determined only by the *positum* and not by any irrelevant propositions subsequently proposed

- Order does not affect responses:
  - again, since relevance only looks back to the *positum*, it cannot depend on any subsequent responses or their order

- Possible *positio* need not lead to inconsistency:
  - the pragmatic inconsistency introduced by *posita* such as ‘Nothing is posited to you’ is excluded by treating them as irrelevant and evaluating them as if the *positio* never was.
The Subsequent Reception

Ashworth showed that each *responsio* had strong support in subsequent decades:

*Responsio Antiqua*
- Ralph Strode
- Albert of Saxony
- John Wyclif
- Richard Brinkley
- William Buser
- Marsilius of Inghen
- John of Holland
- Peter of Mantua
- Peter of Candia
- Paul of Venice

*Responsio Nova*
- Robert Fland
- Martinus Anglicus
- anon., *Tredicim questiones*
- anon., *Commentary on Marsilius*
- anon., *Tres sunt modi*
- anon., *Obligationes*
- *secundum usum Oxonie*
- Richard Lavenham

The majority of surviving treatises reject Swyneshed’s innovation. But his ideas still influenced those who rejected it.
Yrjönsuuri’s Explanation

- How heretical is this logic? Can a conjunction be false even though both its conjuncts are true?
- No: that is to confuse granting with being true, denial with being false:
  - A Respondent may be obliged to grant a proposition which is false (e.g., the *positum*)
  - He may be obliged to deny a proposition which is true (e.g., if it is incompatible with the *positum*)
  - He may even be obliged to doubt a proposition (i.e., to say ‘I doubt it’) which he knows to be true or false
- Mikko Yrjönsuuri suggested a book-keeping metaphor to explain the logic involved
- Catarina Dutilh Novaes formalized Yrjönsuuri’s account. Let
  - $P^+$ represent what is relevant and follows from the *positum* (*pertinens sequens*)
  - $P^-$ represent what is relevant and inconsistent with the *positum* (*pertinens repugnans*)
  - $I$ represent what is irrelevant (*impertinens*)
Swyneshed’s Logic

Then she sets out the tables for conjunction and disjunction as follows ($P^+$: pertinens sequens, $P^-$: pertinens repugnans):

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- So Swyneshed’s logic is thoroughly orthodox, as are Kleene’s matrices.
Institutio (or Impositio)

Let $A$ signify ‘man’ in a false proposition, ‘ass’ in a true proposition and the disjunctive term ‘a man or not a man’ in a doubtful proposition:
**Institutio (or Impositio)**

Let A signify ‘man’ in a false proposition, ‘ass’ in a true proposition and the disjunctive term ‘a man or not a man’ in a doubtful proposition:

1. ‘You are A’

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**Conclusion**

Summary

References
Institutio (or Impositio)

Let $A$ signify ‘man’ in a false proposition, ‘ass’ in a true proposition and the disjunctive term ‘a man or not a man’ in a doubtful proposition:

1. ‘You are $A$’
2. Cedat tempus
Institutio (or Impositio)

- Let A signify ‘man’ in a false proposition, ‘ass’ in a true proposition and the disjunctive term ‘a man or not a man’ in a doubtful proposition:
  1. ‘You are A’
  2. Cedat tempus
- Either you are A or not:

Swyneshed’s response: accept the obligation and deny ‘You are A’. For although A signifies ‘man’ in a false proposition and ‘You are A’ is false, and it would follow that you deny you are a man (that is, grant that ‘You are A’ is false), you can deny the conjunctive antecedent while granting the conjuncts.
**Institutio (or Impositio)**

- Let \( A \) signify ‘man’ in a false proposition, ‘ass’ in a true proposition and the disjunctive term ‘a man or not a man’ in a doubtful proposition:
  1. ‘You are \( A \)’
  2. *Cedat tempus*

- Either you are \( A \) or not:
  - If you are \( A \), ‘You are \( A \)’ is true and irrelevant, so you should grant it when under the obligation, and \( A \) signifies ‘ass’, so you should grant that you are an ass

- Burley’s response: “An *institutio* should never be accepted when what the proposition signifies depends on the truth or falsity of the proposition in which it is used.”

- Swyneshed’s response: accept the obligation and deny ‘You are \( A \)’. For although \( A \) signifies ‘man’ in a false proposition and ‘You are \( A \)’ is false, and it would follow that you deny you are a man (that is, grant that ‘You are \( A \)’ is false), you can deny the conjunctive antecedent while granting the conjuncts.”
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- Let A signify ‘man’ in a false proposition, ‘ass’ in a true proposition and the disjunctive term ‘a man or not a man’ in a doubtful proposition:
  1. ‘You are A’
  2. *Cedat tempus*

- Either you are A or not:
  - If you are A, ‘You are A’ is true and irrelevant, so you should grant it when under the obligation, and A signifies ‘ass’, so you should grant that you are an ass
  - If you are not A, ‘You are A’ is false and irrelevant, so you should deny it when under the obligation, and A signifies ‘man’, so you should deny that you are a man

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**Burley’s response:** “An *institutio* should never be accepted when what the proposition signifies depends on the truth or falsity of the proposition in which it is used.”

**Swyneshed’s response:** accept the obligation and deny ‘You are A’. For although A signifies ‘man’ in a false proposition and ‘You are A’ is false, and it would follow that you deny you are a man (that is, grant that ‘You are A’ is false), you can deny the conjunctive antecedent while granting the conjuncts.
Let $A$ signify ‘man’ in a false proposition, ‘ass’ in a true proposition and the disjunctive term ‘a man or not a man’ in a doubtful proposition:

1. ‘You are $A$’
2. *Cedat tempus*

Either you are $A$ or not:

- If you are $A$, ‘You are $A$’ is true and irrelevant, so you should grant it when under the obligation, and $A$ signifies ‘ass’, so you should grant that you are an ass
- If you are not $A$, ‘You are $A$’ is false and irrelevant, so you should deny it when under the obligation, and $A$ signifies ‘man’, so you should deny that you are a man
- If you doubt it, you doubt it when under the obligation, and $A$ signifies ‘man or not man’, so you doubt that you are a man or not.
**Institutio (or Impositio)**

- Let $A$ signify ‘man’ in a false proposition, ‘ass’ in a true proposition and the disjunctive term ‘a man or not a man’ in a doubtful proposition:
  1. ‘You are $A$’
  2. *Cedat tempus*

- Either you are $A$ or not:
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  - If you doubt it, you doubt it when under the obligation, and $A$ signifies ‘man or not man’, so you doubt that you are a man or not.

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  2. Cedat tempus

- Either you are A or not:
  - If you are A, ‘You are A’ is true and irrelevant, so you should grant it when under the obligation, and A signifies ‘ass’, so you should grant that you are an ass
  - If you are not A, ‘You are A’ is false and irrelevant, so you should deny it when under the obligation, and A signifies ‘man’, so you should deny that you are a man
  - If you doubt it, you doubt it when under the obligation, and A signifies ‘man or not man’, so you doubt that you are a man or not.

- Burley’s response: “An institutio should never be accepted when what the proposition signifies depends on the truth or falsity of the proposition in which it is used.”

- Swyneshed’s response: accept the obligation and deny ‘You are A’. For although A signifies ‘man’ in a false proposition and ‘You are A’ is false, and it would follow that you deny you are a man (that is, grant that ‘You are A’ is false), you can deny the conjunctive antecedent while granting the conjuncts.
I require *(peto)* you to grant that a man is an ass.

1. ‘You grant that a man is an ass’
2. *Cedat tempus*

   If you grant this, you grant what is false when not obligated to do so, so you responded badly

   If you deny it, you were obliged to grant that a man is an ass and you’ve denied it, so responded badly

Solution: You should deny ‘You grant that a man is an ass’, for you were obligated to grant that a man is an ass, not that you grant that a man is an ass.
**Petitio**

- I require *(peto)* you to grant that a man is an ass.
  1. ‘You grant that a man is an ass’
  2. *Cedat tempus*

  - If you grant this, you grant what is false when not obligated to do so, so you responded badly
  - If you deny it, you were obliged to grant that a man is an ass and you’ve denied it, so responded badly

  **Solution:** You should deny ‘You grant that a man is an ass’, for you were obligated to grant that a man is an ass, not that you grant that a man is an ass.

*Petitio* can be subsumed under *positio*. For example, instead of requiring that you grant $p$, simply posit ‘You grant $p$’.
Depositio

Since a *depositum* should always be denied, whatever implies the *depositum* must also be denied. E.g.,

0. *Depositum*: ‘You respond badly or you should deny that you respond badly’

Accepted (call it A)

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1. ‘A is deposited to you’
   Granted (irrelevant and true)
2. ‘You should deny A’
   Granted (follows from 1)
3. ‘You should deny that you respond badly’
   ???

Solution: ‘A is deposited to you’ should have been denied at line 1, for it already implies the depositum, and is not irrelevant: ‘A is deposited to you’
So you should deny A
So you should deny that you respond badly
So either you respond badly or you should deny that you respond badly.
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0. Depositum: ‘You respond badly or you should deny that you respond badly’
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4. Cedat tempus
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   ???
4. Cedat tempus

If you grant it, you grant something that implies the depositum
If you deny it, you deny something that follows from what you have granted, viz ‘You should deny A’, for you should deny the parts of any disjunction you should deny.
Since a depositum should always be denied, whatever implies the depositum must also be denied. E.g.,

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If you grant it, you grant something that implies the depositum.
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‘A is deposited to you’
So you should deny A
So you should deny that you respond badly
So either you respond badly or you should deny that you respond badly.
Dubitatio

“One must respond to the dubitatum, what is equivalent to it, what is contradictory to it, what is false and follows from it, and what is true and implies it, by saying one is in doubt.” (Burley)

- E.g., suppose Socrates is white and that you know this.

0. *Dubitatum*: ‘Socrates is white’  
   Accepted
Dubitatio

“One must respond to the dubitatum, what is equivalent to it, what is contradictory to it, what is false and follows from it, and what is true and implies it, by saying one is in doubt.” (Burley)

▶ E.g., suppose Socrates is white and that you know this.

0. Dubitatum: ‘Socrates is white’  
1. ‘You are in doubt whether Socrates is white’  
   Accepted  
   Denied (irrelevant and known to be false)
Dubitatio

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0. Dubitatum: ‘Socrates is white’
   Accepted

1. ‘You are in doubt whether Socrates is white’
   Denied (irrelevant and known to be false)

2. ‘You know that Socrates is white’
   Denied (implies the dubitatum)

▶ If you grant it, you grant the opposite of the dubitatum
▶ If you deny it, you deny something that follows from the opposites of what has been denied (for ¬3 and ¬2 imply 1, so ¬1 and ¬2 imply 3)

Solution: ‘You are in doubt whether Socrates is white’ should have been doubted at line 1, for it cannot be granted (since it is false and known to be false), and it cannot be denied (since its denial implies ¬2 which together imply 3, the opposite of the dubitatum).
**Dubitatio**

“One must respond to the dubitatum, what is equivalent to it, what is contradictory to it, what is false and follows from it, and what is true and implies it, by saying one is in doubt.” (Burley)

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1. ‘You are in doubt whether Socrates is white’
   
   Denied (irrelevant and known to be false)

2. ‘You know that Socrates is white’
   
   Denied (implies the *dubitatum*)

3. ‘Socrates is not white’
   
   ???

4. *Cedat tempus*
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“One must respond to the dubitatum, what is equivalent to it, what is contradictory to it, what is false and follows from it, and what is true and implies it, by saying one is in doubt.” (Burley)

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*S Solution*: ‘You are in doubt whether Socrates is white’ should have been doubted at line 1, for it cannot be granted (since it is false and known to be false), and it cannot be denied (since its denial implies ¬2 which together imply 3, the opposite of the *dubitatum*).
“It is usually said that sit verum creates an obligation on a mental state, and since mental states are of three kinds, namely, the state of knowledge, of doubt and of ignorance, this obligation is of three kinds, either through a verb of knowing, or through a verb of doubting, or through a verb if ignorance. For example, ‘Let it be true that you know you are running’, or ‘Let it be true that you doubt you are running’.” (Burley)

Again, sit verum, like petitio, can be subsumed under positio. For example, instead of letting it be true that you know $p$, simply posit ‘You know $p$’.
Summary

- The function of obligational disputations was to test students’ ability to handle logical inferences.
- This interpretation is supported by the very few texts which describe their function.
- It is not surprising that we have no record of any actual disputation: one doesn’t need to engage in these often short exchanges; just thinking about them trains one to think logically.
- Swyneshed’s *responsio nova* seems radical and iconoclastic, in, e.g., denying conjunctions both of whose conjuncts have been granted.
- But it is important to distinguish ‘true’ from ‘granted’, ‘false’ from ‘denied’, and when we do so, Swyneshed’s theory is thoroughly mainstream.
- Examination of the subtleties of obligational disputation shows that it does inculcate close attention to logical relationships.
- We see this training preserved in the use of obligational terminology in other logical treatises, e.g., on insolubles.
References