

Early universities.

- **Bologna (c.1200), Paris (c.1200)**
- Oxford (1212)
- Salamanca (1218)
- Montpellier (1220)
- Naples (1224)
- Cambridge (1225)
- Toulouse (1229), Orléans (c.1235), Papal Rome (c.1245), Piacenza (1248), Angers (c.1250), Sevilla (1254), Valladolid (c.1290), Lisbon (c.1290), Lerida (c.1300), Avignon (1303), City of Rome (1303), Perugia (1308), Treviso (1318), Cahors (1332), Grenoble (1339), Pisa (1343), Prague (1348), Florence (1349), Perpignan (1350), Huesca (1354), Arezzo (1355), Siena (1357), Pavia (1361), Cracow (1364), Orange (1365), Vienna (1365), Pécs (1367), Lucca (1369), Erfurt (1379), Heidelberg (1385), Cologne (1388), Ferrara (1391), Buda (1395).
- **1400: 30. 1500: 60. 1600: 110. 1700: 150.**

The academic career.

Nullus sit scholaris Parisius qui certum magistrum non habet.

- *Schola / Familia Scholarum*, headed by a *magister*.
- The *magister* guides the student socially and academically to the baccalaureate.
- After that, the scholar starts an teaching assistantship with his *magister*.
- After two to three years, he becomes “licentiate” after a private *rigorosum*.
- To become *magister*, there is another public ceremonial exam, the *inceptio*, in combination with a public disputation.

Scholasticism.

The XIIIth century: the Golden Age of Scholasticism.

- Reasoning and analysis (involving logic, metaphysics and semantics), based on authorities: philological and logical analysis of original texts.
- Forms: *quaestiones*, *disputationes*.

Logica nova.

- *insolubilia*: fallacies and paradoxes.
- *syncategoremata*: and, or, not, if, every, some, only, except.
- *obligationes*: a game-theoretic approach to logic.
- “Terminist logic”: *proprietaes terminorum*.

Logic in the XIIth/XIIIth century.

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- Robert Kilwardby (c.1215-1279).
- Roger Bacon (1214-1292).



Logic in the XIIIth/XIVth century.

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- Johannes Duns Scotus (1266-1308). *Doctor Subtilis*.
- *The pseudo-Scot*. New modalities: *dubium, scitum, opinatum, volitum, dilectum*.
- William Ockham (c.1295-1349). *Entia non sunt multiplicanda praeter necessitatem*.

Via antiqua / via moderna.

XIVth and XVth century. Philosophy sharply divided into *via antiqua* and *via moderna*.

Via Antiqua.

- *logica vetus*
- Thomistic realism.

Via Moderna.

- *logica nova.*
- Semantical analysis.
- Nominalism.

- The Terminists.
- The Modists (XIIIth / XIVth century).
 - “speculative grammar” based on *modi*.
 - Boëthius of Dacia (d.1290)
 - Pierre d’Auvergne (d.1303)
 - Martin of Dacia (d.1304)
 - Thomas of Erfurt (c.1330)
 - Johannes Aurifaber (c.1330)

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- The Modists (XIIIth / XIVth century).
- Walter Burley (c.1275-1344).
- William Ockham (c.1295-1349).

Termistic logic (1).

Moving from **analysis of meaning in words** (what does *homo* mean?) to **analysis of meaning of terms in phrases** (what part of the meaning of *homo* is responsible for the fact that “*omnis homo mortalis est*” is true?).

- Syllogistics doesn't analyse the truth-status of categorial propositions any further.
- Linguistic analysis (predication vs non-predication) at the basis of the theory of categories.
- Grammar investigated the meaning of single words (outside of the context of propositions).
- Origins in the school of Chartres (c.1030): ‘contextual approach’ (de Rijk, 1967).

Termistic logic (2).

Subtle questions.

- Compare “*homo est animal*”, “*homo est species*”, and “*homo est disyllabum*”.
In each of the cases, the meaning of *homo* is slightly different.
- What do qualifiers do with meanings?
If I go from “*omnis homo est philosophus*” to “*paene omnis homo est philosophus*”, how does the explanation for the meaning change?

Syncategoremata.

- Grammarians' definition. A term is a **categorema** if it can be the subject or the predicate of a proposition. Other meaningful terms are **syncategoremata**.
- **Example 1.** *Socrates currit.*
- **Example 2.** *Socrates non currit.*
- Logicians' definition. An incomplete list of about fifty words that are discussed as syncategorematic. Among them are words like **omnis**.
- Important syncategoremata: *et, ut, cum, vel, omnis, uterque...*

Suppositio (1).

- An analysis of the meaning of terms in propositions:
Suppositio as a theory of reference.
- **Situation 1.**
 - Under what conditions is *omnis homo philosophus est* true?
 - If *philosophus* supposits for every instance of *homo* (*suppositio mobilis*).
 - *Instantiation: Aristoteles homo est. Aristoteles philosophus est.*
- **Situation 2.**
 - Under what conditions is *omnis homo praeter Socratem philosophus est* true?
 - If *philosophus* supposits for every instance of *homo* except for Socrates.
 - *Instantiation: Aristoteles homo est. ~~Aristoteles praeter Socrates philosophus est.~~*
(*suppositio immobilis*).

An aside.

- Latin doesn't have an indefinite article.
 - *Homo est philosophus.*
 - A man is a philosopher.
 - (Some man is a philosopher.)
 - *Aliquis homo est philosophus.*
- The medievals didn't use quotation marks.
 - *Homo est disyllabum.*
 - 'Human' is bisyllabic.

Suppositio (2).

● Situation 3.

- Under what conditions is *homo est disyllabum* true?
- If *disyllabum* suppositis for every instance of *homo*. (But here, *homo* is a singular term standing for 'homo').
- *Flawed instantiation: Aristoteles homo est. ~~Aristoteles disyllabum est.~~ (suppositio materialis).*

- Consequences for logic: Whether conversion rules can be applied depends on the type of supposition in the proposition.

homo est disyllabum.

aliquis homo est disyllabum.

aliquis disyllabum est homo. (simple conversion)

disyllabum est homo.

Bisyllabic is a man.

Suppositio (4).

- What makes *Aristoteles academicus erat* true?
- *Attempt 1.* If *academicus* supposits for *Aristoteles*. But if *academicus* supposits for *Aristoteles*, then *Aristoteles academicus est* is true.
- *Attempt 2* (modern reading). If there was a point in the past when *academicus* suppositied for *Aristoteles*.
- Medieval theory: **ampliation** and **restriction**: *si terminus communis verbo de praeterito supponeret, posset supponere pro non-enti, ut hoc homo cucurrit verum est pro Caesare* (William of Shyreswood, *Introductiones*).
- In general: the predicate determines the type of *suppositio* and whether *ampliatio* has to be used in order to determine the truth conditions.

Fallacies: *secundum quid et simpliciter.*

Around 1120, Boëthius' translation of the *Sophistici Elenchi* is rediscovered. Aristotelian discussions of fallacies.

The Oathbreaker:

- **Oath.** I shall never leave Rome. I shall become an oathbreaker.
- **Fact.** I have left Rome.

Argument. Since I have left Rome, I broke my oath. Since I have broken my oath, I have kept my oath. ~~I am an oathbreaker and an oathkeeper at the same time.~~ I am an oathbreaker and an oathkeeper.

secundum quid et simpliciter

- *simpliciter.* An oathbreaker is a person who breaks at least one oath.
- *secundum quid.* An oathkeeper is a person who keeps the oath.

Insolubles (1).

The most famous insoluble: **the Liar**.

This sentence is false.

φ : φ is false.

In the early literature on insolubles, there are five solutions to this paradox:

- *secundum quid et simpliciter*.
- *transcasus*.
- Distinction between the exercised act and the signified act.
- *restrictio*.
- *cassatio*.

Insolubles (2).

- *secundum quid et simpliciter.*

Insolubles (2).

- *secundum quid et simpliciter.*

Solution. Unclear.

- *transcasus.*

- Derives from the Stoic *metaptosis*: differing truth-values over time.
- When I say “I am speaking a falsehood” I am referring to what I said immediately preceding to that sentence.
- If I didn’t say anything before that, then the sentence is just false.

Insolubles (2).

- *secundum quid et simpliciter.*

Solution. Unclear.

- *transcasus.*

Solution. The Liar sentence is false.

- Distinction between the exercised act and the signified act.

- Johannes Duns Scotus, *Questiones.*

- The exercised act of the liar is “speaking the truth”.

- The signified act of the liar is “speaking a falsehood”.

- The liar expresses something which is not the truth, so it is false.

Insolubles (2).

- *secundum quid et simpliciter.*

Solution. Unclear.

- *transcasus.*

Solution. The Liar sentence is false.

- Distinction between the exercised act and the signified act.

Solution. The Liar sentence is false.

- *restrictio.*

- The *restringentes* do not allow assignment of truth-values to sentences with self-reference.
- Not only the Liar, but also the following insoluble: $\varphi : \psi$ is false. $\psi : \varphi$ is false ... and ... “This sentence has five words.”

Insolubles (2).

- *secundum quid et simpliciter.*

Solution. Unclear.

- *transcasus.*

Solution. The Liar sentence is false.

- Distinction between the exercised act and the signified act.

Solution. The Liar sentence is false.

- *restrictio.*

Solution. The Liar sentence does not have a truth value.

- *cassatio.*

- If you are uttering an insoluble, you are saying nothing.

- Therefore an insoluble has the same truth value as the empty utterance: none.

Insolubles (2).

- *secundum quid et simpliciter.*

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Solution. The Liar sentence is false.

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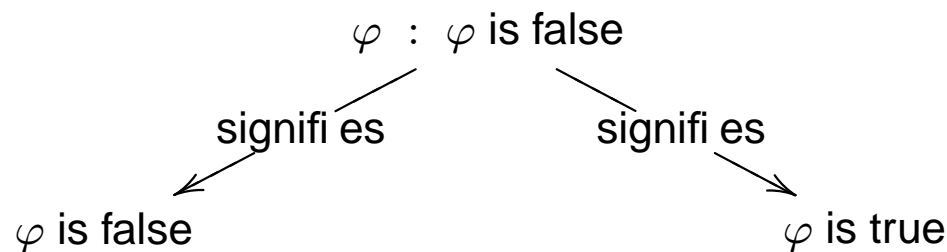
Insolubles (3).

- The most productive era in the theory of insolubles was from 1320 to 1350.
- **Thomas Bradwardine** (c.1295-1349).
- **Roger Swyneshed** (mid XIVth century).
- **William Heytesbury** (c.1310-1372).
- John Wyclif (c.1330-1384).
- Peter of Ailly (*Petrus de Alliaco*; 1350-1420).

Bradwardine.

Thomas Bradwardine (c.1295-1349).

- *Insolubilia*: 1321-1324.
- *Adverbial Theory of propositional signification* (Spade).
- Every sentence signifies that it is true.
- A sentence is **true** if and only if everything that it signifies is true (*sicut est*). A sentence is **false** if and only if there is something that it signifies which is false (*aliter quam est*).
- The Liar sentence signifies that it is false.



Swyneshed.

Roger Swyneshed (mid XIVth century).

- A sentence is true if and only if it signifies *sicut est* and if it not **self-falsifying**. Self-falsifying sentences are always false.
- The Liar is self-falsifying, so it is false.
- *Consequence of Swyneshed's definition of truth.*
 - φ : φ is false.
 - ψ : φ is not false.
 - φ is false as it is self-falsifying. But then ψ is false, too. But φ and ψ are contradictories.

Sophismata and semantics.

Some of the problems concerning the semantics of syncategoremata are part of the theory of sophismata:

Socrates bis videt (omnem hominem praeter Platonem).

- **Scenario 1.** Socrates enters the room and sees everyone. He leaves. Plato leaves the room. Socrates returns and sees everyone except for Plato.
Socrates videt Platonem.
- **Scenario 2.** Plato is not in the room at all. Socrates enters the room twice and sees everyone in there.
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