

Logic in the Middle Ages.

- *Peripatetic position*: Logic is a preliminary to scientific inquiry.
- *Stoic position*: Logic is part of philosophy.

In the Middle Ages:

- Logic as *ars sermocinalis*. (Part of the preliminary studies of the *trivium*.)
Part II of today's lecture and next lecture.
- Logic (in a broader sense) as central to important questions of philosophy, metaphysics and theology.
Part I of today's lecture.

Theological Questions.

Theological questions connected with the set-up of logic.

- The Immortality of the Soul.
- The Eucharist.
- The Trinity and the ontological status of Father, Son and Holy Spirit.
- Free will and responsibility for one's actions.
(Recall the *Master argument* and its modal rendering as $\diamond \varphi \rightarrow \varphi$.)

The Categories.

Aristotle, *Categories*:
The ten categories (1b25).

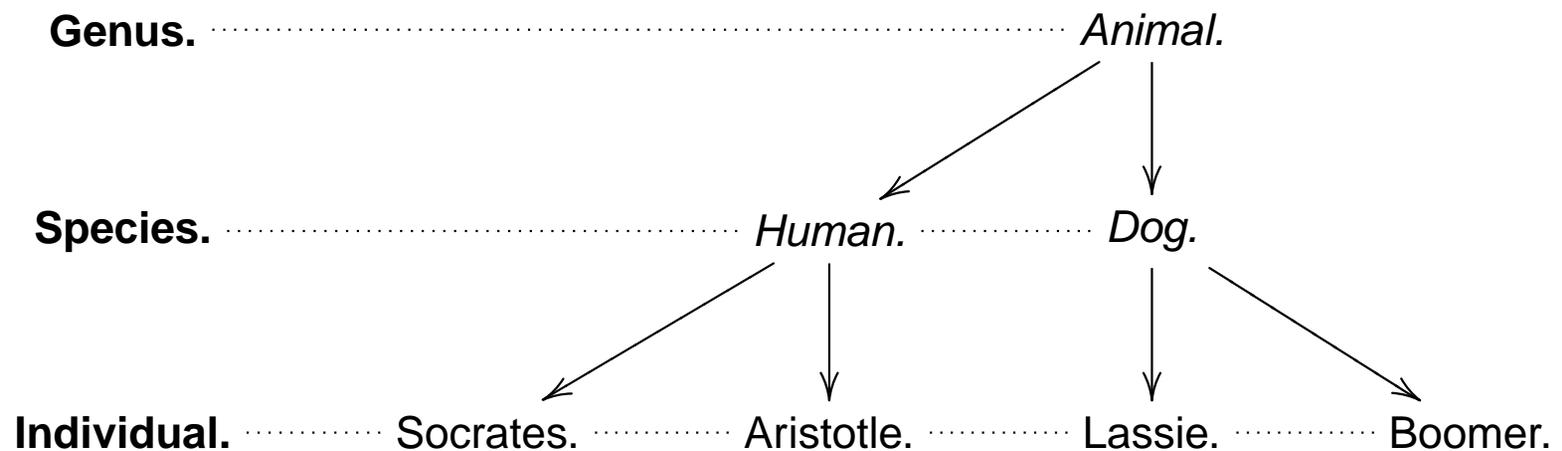
| | |
|-----------|----------|
| Substance | When |
| Quality | Position |
| Quantity | Having |
| Relation | Action |
| Where | Passion |

The two ways of predication.

- *essential predication*: “Socrates is a human being”;
“*human* IS SAID OF Socrates”
- *accidental predication*: “Socrates is wise”; “*wisdom* IS
IN Socrates”

Essential predication.

- “essential”: You cannot deny the predicate without changing the meaning of the subject.
 - “*animal* IS SAID OF *human*”.
 - “*human* IS SAID OF Socrates”.
- IS SAID OF is a transitive relation (reminiscent of **Barbara**).
- Related to the category tree:



Substances.

| | NOT IN | IN |
|-------------|---|---|
| SAID OF | Universal substances <i>human, animal</i> | Universal accidents <i>wisdom</i> |
| NOT SAID OF | Particular substances Socrates, Aristotle | Particular accidents |



- **Plato** (↑). The **universal substances** are the (only) real things.
- **Aristotle** (↓). Without the **particular substances**, nothing would exist.

Matter & Form.

- *Categories / De anima*: There are three kinds of substance: *matter*, *form* and the compound of the two.
- *Matter is potentiality; form is actuality.*
- **Aristotle in the *Metaphysics*: Primary substances** cannot be compounds, not even of matter and form. Matter cannot be *primary*, therefore, the *primary substance* is the form.
- *Metaphysics Z (1037a6)*: “it is also clear that the soul is the primary substance, the body is matter, and man or animal is composed of the two as universal.”

The soul as form of the animal.

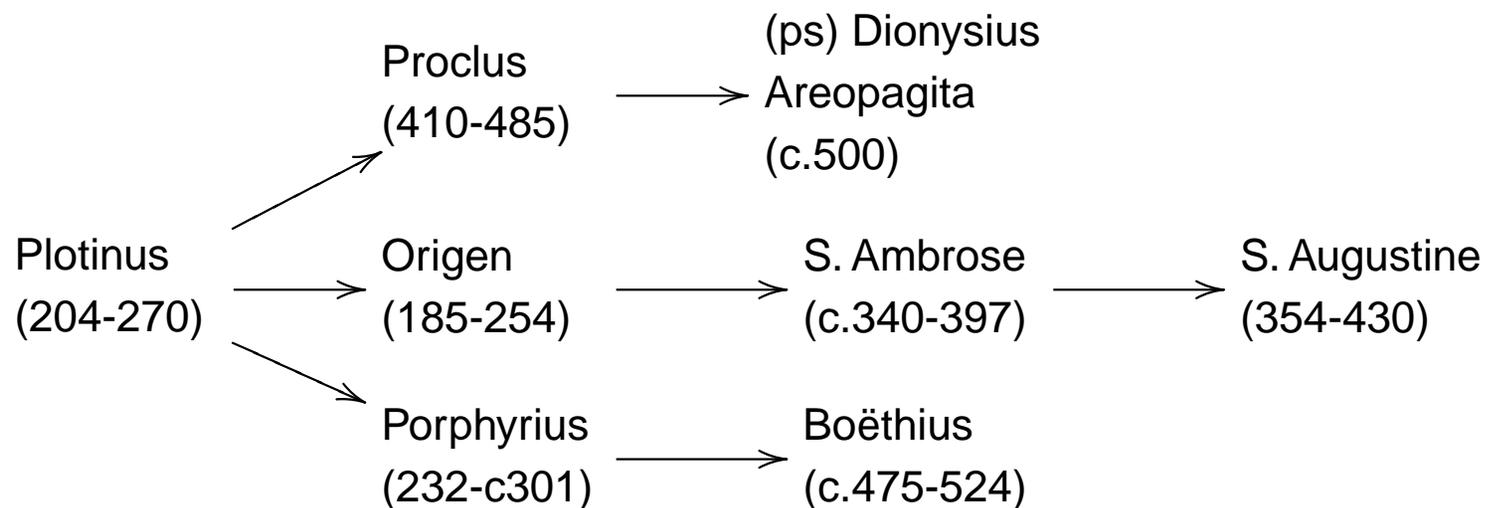
- A living being (plant, animal, human) is a compound of its matter and its form. The form is its capacity to engage in its characteristic activities (“first actuality” = instantiated skill): **Self-nourishment**, **Growth**, **Movement**, **Perception**, **Intellect**.
- The **nutritive soul**, the **sensitive soul**, and the **intellectual soul**.
- *De anima* (414a20): The soul does not exist without a body and yet is not itself a kind of body.

Two interpretations.

- “The individual form theory”. There are individual forms: the form (soul) of Socrates and the form (soul) of Aristotle. As soon as they are not instantiated anymore, they cease to exist.
- “Monopsychism”. There is one intellectual soul that is instantiated in all human beings. Individuality comes from being instantiated by matter.

(Neo)platonism in the Middle Ages.

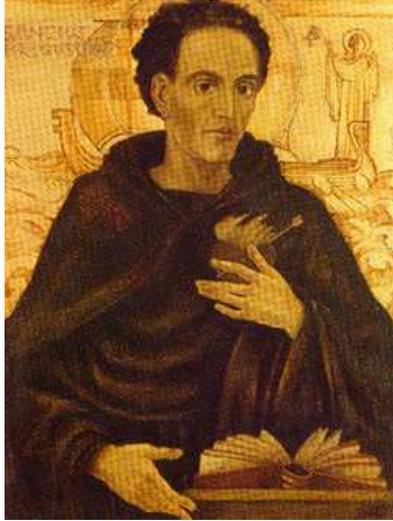
- *(Really old-fashioned) received opinion.* The middle ages were Aristotelian, the rediscovery of Plato's works marked the beginnings of the Renaissance.
- *But:* until the XIIth century, Aristotle was only known via neoplatonistic scholars.
- **Sources of neoplatonism.**



Platonic dualism (1).

- Matter-form (body-mind) dualism in Plato. (*Phaedo*.)
- **Plato** opposed relativism in ethics.
- Moral categories of *good* and *bad* mix with theological questions: “If God is good, and God created the world, how can there be Evil in the world?”
- *Augustine / Thomas Aquinas*. Evil is the absence of Good. Evil has no ontological status. (*privatio*).
- The opposite view: *Manicheism* (Mani of Persia; c.215-276). “Moral Dualism”: there are two principles at work; Good and Evil.

Platonic dualism (2).



(Sanctus) Aurelius Augustinus

(354-430)

doctor ecclesiae

Follower of Manicheism for nine years (375-384 AD) before rejecting these teachings under the influence of Ambrose.

Albigensians / Cathars.

- Southern France, XIth-XIIIth century.
- “Neomanicheism”, “Latin Manicheism”.
- Albigensian crusade (1209-1255); massacre of Béziers (1209): *Caedite eos. Novit enim Dominus qui sunt eius.* (Caesarius of Heisterbach c.1225)

Immortality of the Soul.

- *De anima* not known until early XIIIth century.
- Averroes (Ibn Rushd; 1126-1198).
- Averroism banned 1270 and 1277.
- *Radical Aristotelianism*: Siger of Brabant (d.1282), Boëthius of Dacia (d.1290), Dante Alighieri (1265-1321).
- Giovanni Pico della Mirandola (1463-1494).



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- Giovanni Pico della Mirandola (1463-1494).
- Giordano Bruno (1548-1600).



The Eucharist.

- Transformation of bread and wine into body and blood of Christ during the Holy Mass.
- Key ideas present in S. Ambrose's *Sacraments*.
- *Berengar of Tours* (c.1000-1088). Criticism of the theory of substantial change (Paschasius Radbertus):
 - (a) problems with category changes,
 - (b) analysis of the pronoun in *Hoc est corpus meum*.Dialectical battle with Lanfranc.
Cf. T. J. **Holopainen**, *Dialectic & Theology in the Eleventh Century*, Leiden 1996.
- *Transsubstantiation* (1215): Bread and wine keep their accidents (taste *etc.*), but change substance.
- *Consubstantiation*: Lutheran, Anglican, Reformed.
Symbolism: Zwinglian.
Spiritual presence: Methodist.

Trinity and Incarnation (1).

● Trinity

- *Council of Toledo (675)*: “Although we profess three persons we do not profess three substances but one substance and three persons... If we are asked about the individual Person, we must answer that he is God. Therefore, we may say God the Father, God the Son, and God the Holy Spirit; but they are not three Gods, he is one God... Each single Person is wholly God in himself and ... all three persons together are one God.”
- *Modalism*. Plato is a teacher, a student and a philosopher at the same time.
- *Tritheism*. Father, Son and Holy Spirit are three persons. (Roscelin of Compiègne; c.1045-c.1120.)
- *homousios vs homoiousios*. The **iota** that almost split the Christian church (Edward Gibbon). Arius vs Athanasius. Council of Nicaea (325).

Trinity and Incarnation (2).

● Incarnation.

- *Council of Chalcedon (451)*: We confess one and the same our Lord Jesus Christ... the same perfect in Godhead, the same in perfect manhood, truly God and truly man ... acknowledged in two natures without confusion, without change, without division, without separation.

So, God the Son has two mutually contradictory properties at the same time.

- *Kenotism*. When God the Son was incarnated, he was not divine.
- *Monophysitism*. God the Son has one nature. (Eutychianism, Apollinarism, Miaphysitism.) Still found in the Syrian or Coptic Orthodox Church.

Free will.

- **Predestination:** the fate of human beings is predestined. The only way to salvation is **Grace**. Your actions do not change your chances of being saved.
- **Pelagius** (Vth century AD) and the Pelagians reject predestination.
- **Predestination** (catholic dogma); **double predestination** (Gottschalk, Calvin).
- **Augustine's** theory of time (*Confessiones*): subjectivism. Contrast to the eternity of the creator.

Anselm's Ontological Proof (1).



Anselm of Canterbury (1033-1109)

- Archbishop of Canterbury
- “*sola rationale*”
- *De Libertate Arbitrii, Cur Deus Homo*
- A combination of Christianity, neoplatonic metaphysics, and Aristotelean logic.

Nam potest cogitari esse aliquid quod non possit cogitari non esse, quod maius est quam quod non esse cogitari potest. Quare si id quo maius nequit cogitari potest cogitari non esse, id ipsum quo maius cogitari nequit non est id quo maius cogitari nequit; quod convenire non potest. Sic ergo vere est aliquid quo maius cogitari non potest ut nec cogitari possit non esse. (Proslogion 3)

Anselm's Ontological Proof (2).

- *Premiss 1.* It is better to exist than not to exist.
- *Premiss 2.* Everyone –even the atheist– can understand the meaning of the phrase “*aliquid quod maius non cogitari potest*” and imagine this in his mind.
- Suppose the atheist believes that “*aliquid quod maius non cogitari potest*” does not exist, and let the atheist imagine this non-existent “*aliquid quod maius non cogitari potest*”. Then he can imagine something greater than that, namely the same thing plus the property “existence”. Consequently, he cannot maintain the view that “*aliquid quod maius non cogitari potest*” does not exist.

Anselm's Ontological Proof (3).

- Criticized by Gaunilo (“the greatest conceivable island”); Thomas Aquinas (1264).
- Abstract impossibility arguments due to Kant (1787), in terms of first-order / second-order logic due to Frege (1884).
- Ontological proof (in a framework of second-order modal logic) due to Gödel (1970).

The Education System (1).

- **Trivium.** (*Artes sermocinales.*)
 - *Grammar.*
 - *Rhetoric.*
 - *Dialectic/Logic.*
- **Quadravium.** (*Artes reales / Artes physicae.*)
 - *Arithmetic.*
 - *Geometry.*
 - *Astronomy.*
 - *Music.*

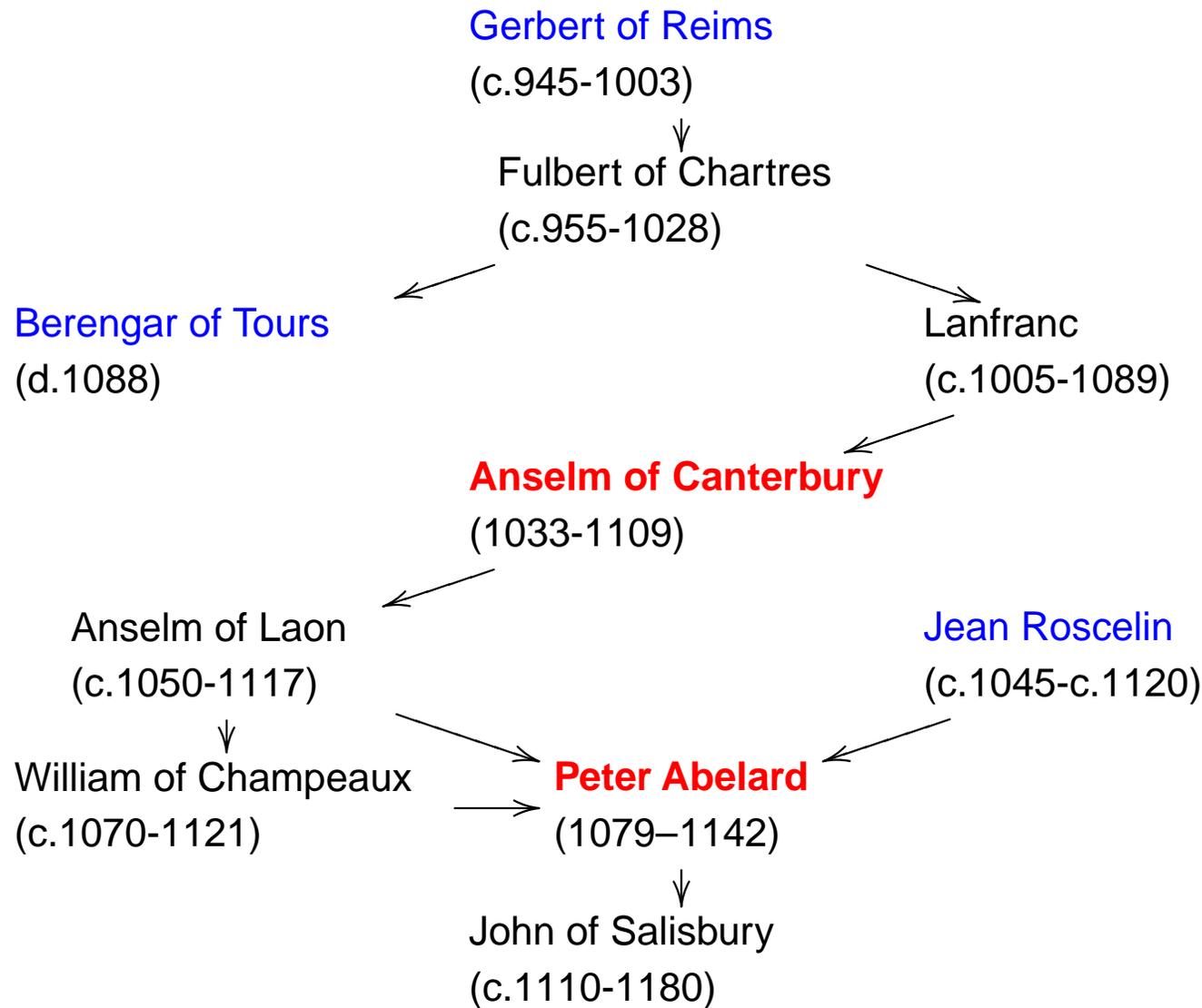
Ancient sources. Varro (116-28 BC), Sextus Empiricus (IInd century), Martianus Capella (Vth century), Cassidorus (c.490-c.585), Boëthius (c.475-524).

The Education System (2).

“Renaissances” of the Middle Ages.

- *Karolingian Renaissance.* Alcuin (735-804). Gottschalk and the first debate on double predestination. Johannes Scotus Eriugena (c.810-877).
- *Ottonian Renaissance.* Gerbert of Reims (later *Pope Sylvester II*; c.945-1003). Fulbert of Chartres (c.955-1028). Berengar of Tours (d.1088). Lanfranc (c.1005-1089). Anselm of Canterbury (1033-1109).
- *Renaissance of the XIIIth century.* Peter Abelard (1079-1142). John of Salisbury (c.1110-1180). The birth of the European University.

The Education System (3): A continuum?



Peter Abelard (1).



- 1079-1142.
- Abelard decides in favour of a clerical career against the will of his noble father. In 1094, he leaves home to study logic and dialectics under [Roscelin of Compiègne](#).
- Abelard comes to Paris and studies under [William of Champeaux](#). Public debates during lectures on universals.

Peter Abelard (2).

- 1102-1111. Abelard teaches in Melun, Corbeil, Paris.
- 1111-1113. Abelard goes to Laon to study theology with [Anselm of Laon](#).
- 1113-1118. Abelard is the mentor of Héloïse (1100-1163). They have a child, Astrolabe, and marry.
- 1118. Héloïse's uncle Fulbert hires thugs who castrate Abelard. Abelard becomes monk at St.Denis, Héloïse nun at Argenteuil.
- 1118-1136. Abelard lives as a monk.
- 1121. First condemnation (Council of Soissons).

Peter Abelard (3).

- 1136-1140. Abelard returns to teach in Paris.
- 1140. Second condemnation (Council of Sens).
- 1142. Abelard dies on the way to Rome.
- *Historia Calamitatum Mearum*. (1132)
- “*Stealing Heaven*” (1988, Yugoslavia).
- “*William Shakespeare’s Abelard + Heloise*” (2001, Taiwan).