Logic & Theology in the Middle Ages.

- Logic (in a broader sense) as central to important questions of philosophy, metaphysics and theology.

  Medieval logic is not devoted to the setting up of formal systems or any metalogical analysis of formal structures. Logic in the medieval sense of the discipline is necessarily connected with semantical aspects of natural language. Accordingly, we are confronted with a discipline going far beyond the formal structures of discourse.   Christoph Kann

Logic & Theology in the Middle Ages.

- Logic (in a broader sense) as central to important questions of philosophy, metaphysics and theology.

  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.**

- Logic as *ars sermocinalis*. (Part of the preliminary studies of the *trivium*.)

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.

- In gross oversimplification, we can say that the soul of a plant / horse / human is its form.

- **Interpretation 1** ("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.

- **Interpretation 2.** ("Monopsychism"). There is one intellectual soul that is instantiated in all human beings. Individuality comes from being instantiated by matter.

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).

An aside: 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.

An aside: Platonic dualism (2).
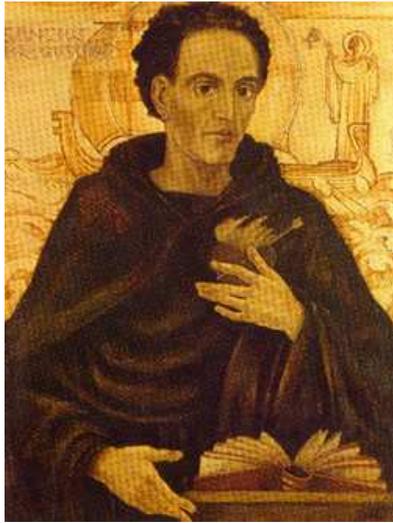
(Sanctus) Aurelius Augustinus (354-430)
doctor ecclesiae
Follower of Manicheism for nine years (375-384 AD) before rejecting these teachings under the influence of Ambrose.

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)

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.)

  - *homoousios* 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 meta-physics, 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 Ganilo ("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 Silvester 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 XIIth century.* Peter Abelard (1079-1142). John of Salisbury (c.1110-1180). The birth of the European University.

The Education System (3): A continuum?

Gerbert of Reims
(c.945-1003)

Fulbert of Chartres
(c.955-1028)

Berengar of Tours
(d.1088)

Lanfranc
(c.1005-1089)

Anselm of Canterbury
(1033-1109)

Anselm of Laon
(c.1050-1117)

Jean Roscelin
(c.1045-c.1120)

William of Champeaux
(c.1070-1121)

Peter Abelard
(1079–1142)

John of Salisbury
(c.1110-1180)
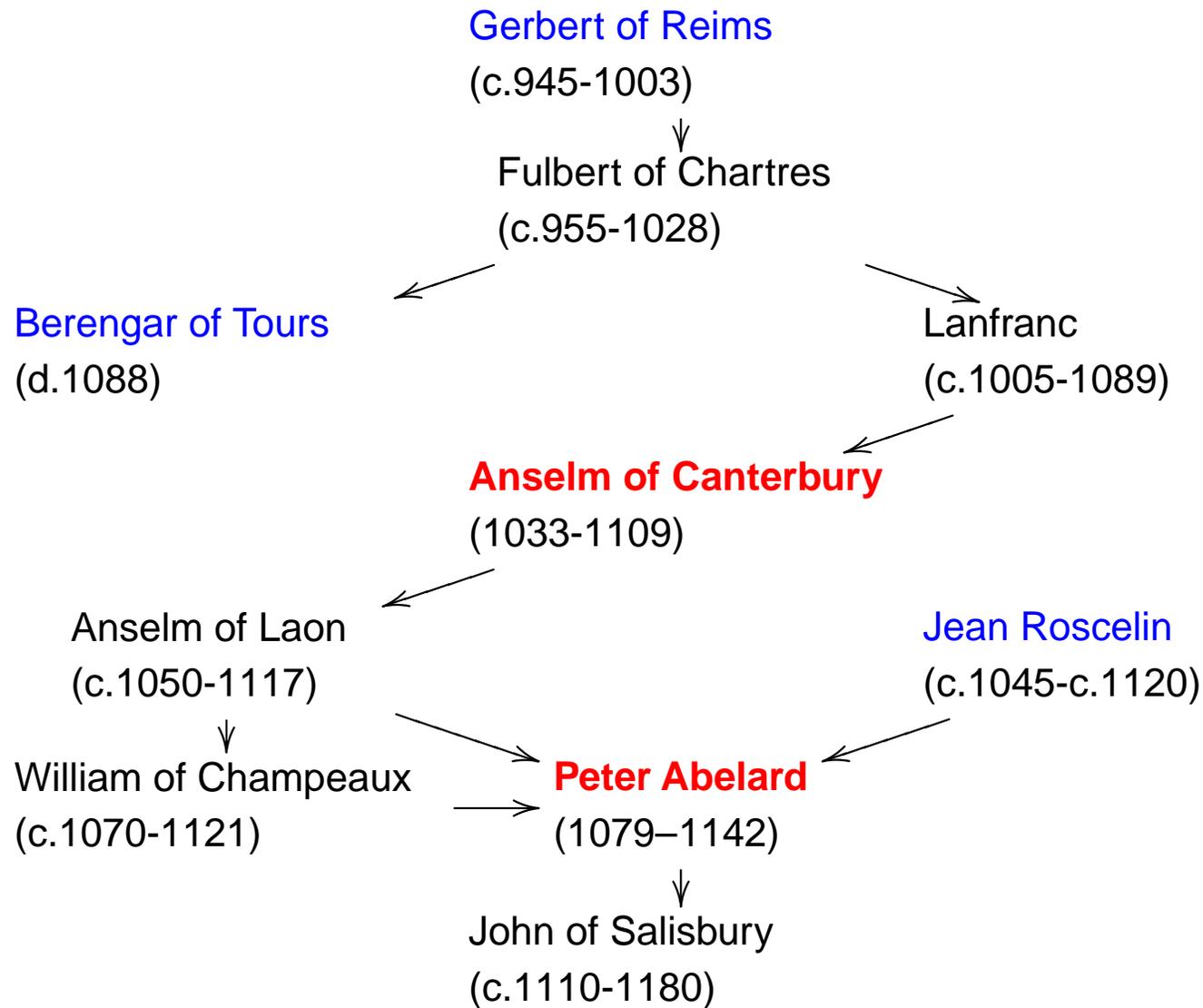
Realism & Nominalism.

- Was not a issue in the XIth century (Garland the Computist).

- Roscelin; Abelard (XIIth century).

- Aristotelian distinction:
  - Universal substances: **Animal**, **Human**.
  - Particular substances: **Socrates**, **Plato**, **Aristotle**.

Realists.   Universals exists independent of the particulars.

Problem. What is the ontological status of these universals?

Nominalists.   Universals exist only through the particulars.

Problem. Is it intuitively plausible that the concept 'tree' changes every time a tree is cut down?

Peter Abelard (1).
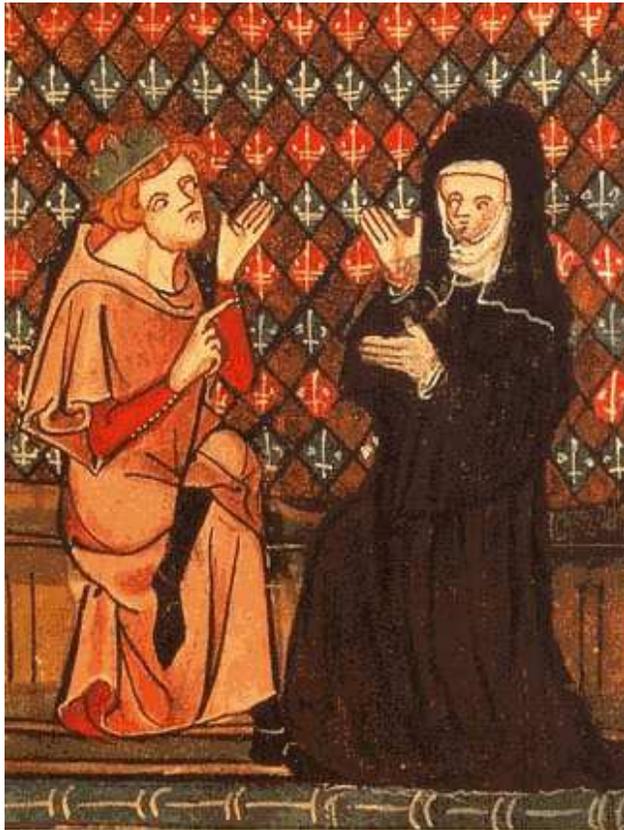
- 1079-1142.

- 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 Héloise (1100-1163). They have a child, Astrolabe, and marry.

- 1118. Héloise's uncle Fulbert hires thugs who castrate Abelard. Abelard becomes monk at St.Denis, Héloise 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).

Abelard's Logic.

- **The Square of Oppositions.** Discussion of the existential content of universal statements: Does *"Omnis homo est albus"* imply that there is a man?

- **Modal Logic.** Distinction of modal statements into *de re* and *de dicto*.

- **Temporal Logic.** Isolation of the concept of "true at a time".

- **Propositional Logic.** Theory of conditionals.

Martin M. **Tweedale**, Abelard and the culmination of the old logic, *in:* N. Kretzmann, A. Kenny, J. Pinborg (*eds.*), The Cambridge History of Later Medieval Philosophy, Cambridge 1982, p. 143-158

Abelard: *quidam non* vs *non omnis*.

Abelard notices that the Aristotelian square of oppositions includes "existential import":

"Every B is A" implies "Some B is A",

so he reads "*omnis homo est albus*" as "there are men and all of them are white".

Therefore, Abelard distinguishes between "*Non omnis homo est albus*" ("either there are no men or there are non-white men") and "*Quidam homo non est albus*" ("there is a non-white man").

Abelard: *de re* vs *de dicto*.

Abelard notices the modal logic distinction *de re* versus *de dicto*. ("*expositio per divisionem*" and "*expositio per compositionem*"), thereby developing a way to understand the Aristotelian "two Barbaras" problem.
However, he claims that *de dicto* modalities are not real modalities.
(This changes in Thomas Aquinas, *De Modalibus*.)

Abelard: true at time t.

Confusion in the Master Argument about tense and time. Not all statements in past tense are necessarily true: "Socrates did not talk to Plato." One attempt of a solution is to introduce a semantics of tense sentences that allows **truth at a time**. One step in the direction of modern temporal logics.

Abelard: Conditionals.

A new (intensional) view of propositional logic:
"*Si non est A est B.*" is equivalent to "*Aut est A aut est B.*"

$$\neg A \to B \leftrightarrow A \lor B?$$

Abelard reads "*Si est A est B*" as "necessarily, A implies B", and thus has a different reading of the disjunction as "necessarily, $\neg A$ implies B".