# Megarians and Stoics.

**Socrates** (469-399 BC)

Euclides (c.430-c.360 BC)

**Plato** (c.427-347 BC)

Eubulides (IVth century)

Stilpo (c.380-c.300 BC)

Apollonius Cronus

Zeno of Citium (c.335-263 BC)

Diodorus Cronus (IVth century)

Cleanthes of Assos (301-232 BC)

Chrysippus of Soli (c.280-207 BC)
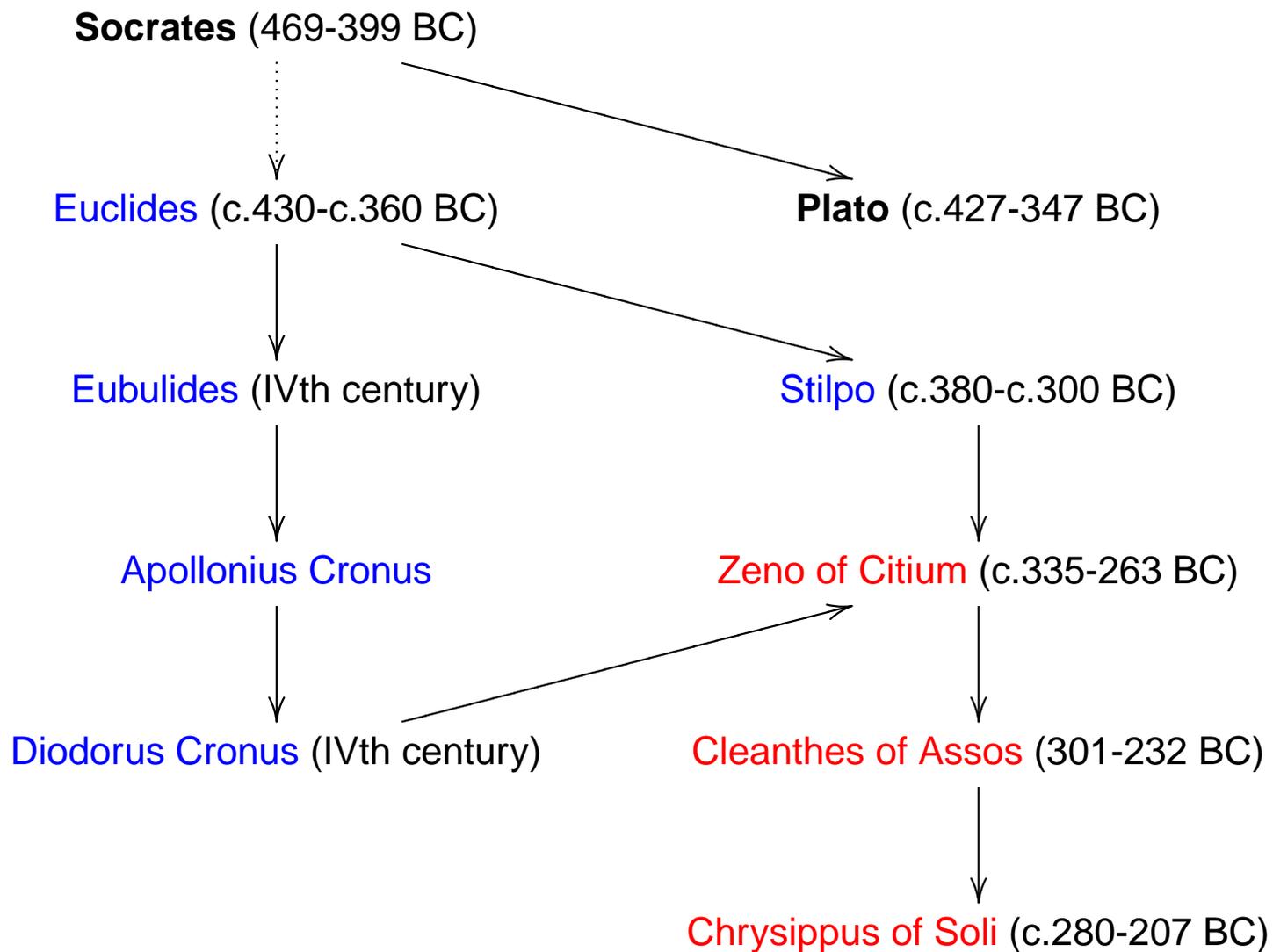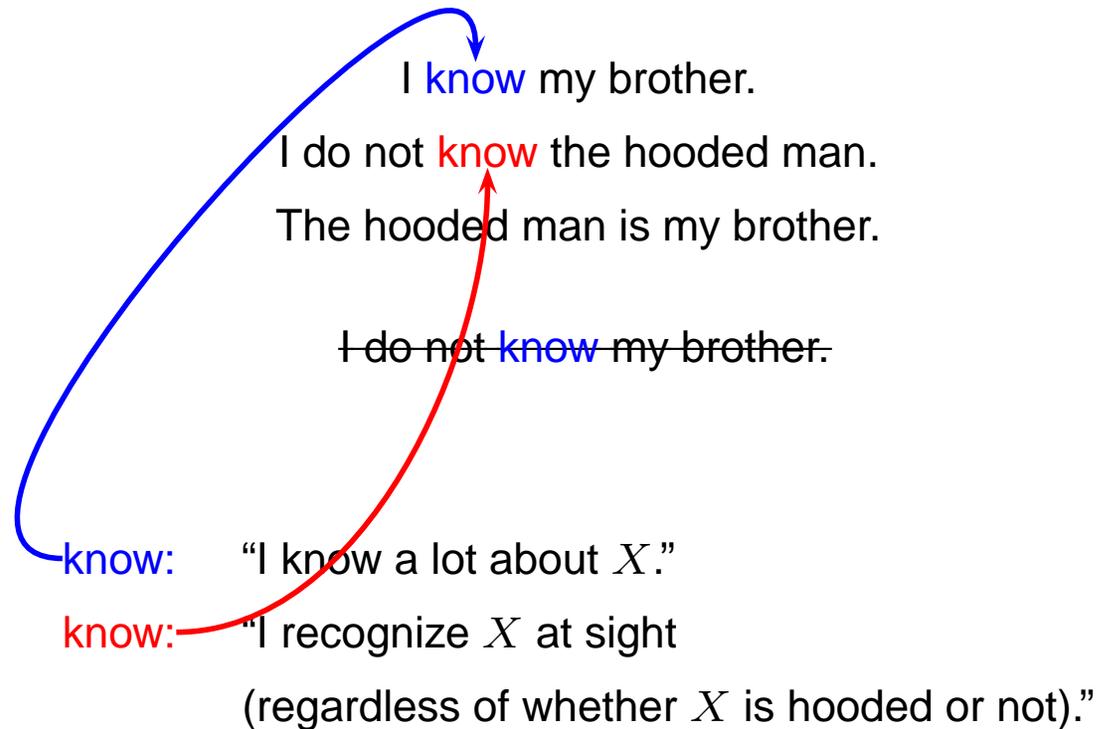
# Eubulides.

- Strongly opposed to Aristotle.

- Source of the "seven Megarian paradoxes", among them the *Liar*.

  - *The Liar* is attributed to Epimenides the Cretan (VIIth century BC); (*Titus 1:12*).
  - **Aulus Gellius**, *Noctes Atticae*.
    Alessandro **Garcea**, Paradoxes in Aulus Gellius, **Argumentation** 17 (2003), p. 87-98

- Graham **Priest**, The Hooded Man, **Journal of Philosophical Logic** 31 (2002), p. 445-467

# The seven Megarian paradoxes.

- *The Liar.* "Is the man a liar who says that he tells lies?"

- *The concealed man.* "Do you know this man who is concealed? If you do not, you do not know your own father; for he it is who is concealed."

- *The hooded man.* "You say that you know your brother. Yet that man who just came in with his head covered is your brother and you did not know him."

- *Electra.* "Electra sees Orestes : she knows that Orestes is her brother, but does not know that the man she sees is Orestes; therefore she does know, and does not know, her brother at the same time."

- *The Sorites / the heap.* "One grain of wheat does not make a heap. Adding one grain of wheat doesn't make a heap."

- *The bald one.* "Pulling one hair out of a man's head will not make him bald, nor two, nor three, and so on till every hair in his head is pulled out."

- *The horned one.* You have what you have not lost. You have not lost horns, therefore you have horns.

# *Quarternio terminorum.*

I know my brother.

I do not know the hooded man.

The hooded man is my brother.

~~I do not know my brother.~~

know:    "I know a lot about $X$."

know:    "I recognize $X$ at sight

(regardless of whether $X$ is hooded or not)."

Every metal is a chemical element.

Brass is a metal.

~~Brass is a chemical element.~~

# More shortcomings of syllogistics.

**Syllogistics** is finitary and cannot deal with very simple propositional connectives:
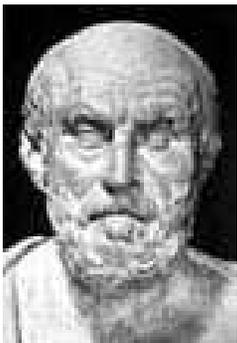
Every human being is a man or a woman.

Every man is mortal.

Every woman is mortal.

*Ergo...* every human being is mortal.

# Stoic Logic.

**Chrysippus of Soli** (c.280-207 BC)

- 118 works on logic,

- seven books on *the Liar*,

- inventor of propositional logic,

- nonstandard view of modal logic ("the impossible can follow from the possible").

  Harry **Ide**, Chrysippus's response to Diodorus's master argument, **History and Philosophy of Logic** 13 (1992), p. 133-148.

# Late antiquity.

- Augustine (354-430)
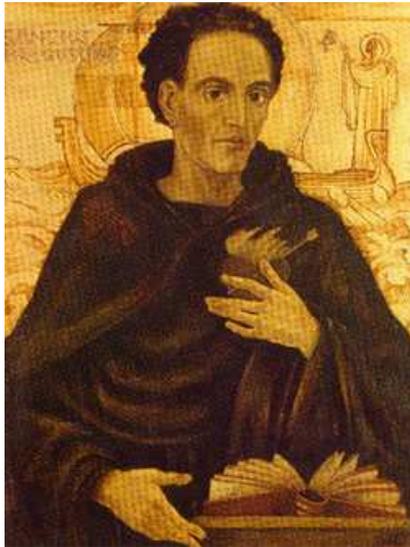


*(Sanctus) Aurelius Augustinus*
*(354-430)*
*doctor ecclesiae*

# Late antiquity.

- Augustine (354-430)

- Boëthius (c.475-524)



*Anicius Manlius Severinus Boëthius*
(c.475-524)

"The last of the Roman philosophers, and the first of the scholastic theologians" (Martin Grabmann)

# Late antiquity.

- Augustine (354-430)

- Boëthius (c.475-524)

- Cassiodorus (c.490-c.585)



*Flavius Magnus Aurelius Cassiodorus Senator*
(c.490-c.585)
**Main work:** *Institutiones*

# Late antiquity.

- Augustine (354-430)

- Boëthius (c.475-524)

- Cassiodorus (c.490-c.585)

- Isidore of Seville (c.560-636)



*(Sanctus) Isidorus Hispalensis* (c.560-636)
**Main work:** *Etymologiae*

Patron Saint of the Internet

# 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*.)

- Logic as central to important questions of philosophy, metaphysics and theology.

# Theological Questions.

Theological questions connected with the set-up of logic.

- The Existence of Evil.

- The Eucharist.

- The Trinity and the ontological status of Father, Son and Holy Spirit.

- Free will and responsibility for one's actions.

# Platonic dualism (1).

- Matter-form (body-mind) dualism in Plato. (*Phaedo.*)

- 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).
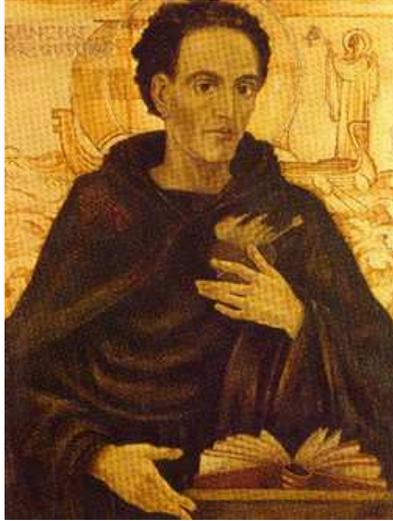


*(Sanctus) Aurelius Augustinus*
(354-430)
*doctor ecclesiae*
Follower of Manicheism for nine years (375-384 AD) before rejecting these teachings under the influence of Ambrose.

**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)

# 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.

# 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).

# 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).