



The Scientific Revolution: Its Classical and Christian History with Dr. Ted Davis

Lecture 10: East Meets West: The Universities and Greek Natural Philosophy in the High Middle Ages

Outline:

East Meets West: The Universities and Greek Natural Philosophy in the High Middle Ages

- “The philosophical and scientific culture of western Europe in the twelfth to fifteenth centuries was not created out of its own limited resources, but resulted from the reintroduction of Greek learning (with Islamic additions and modifications) into a Christian theological tradition that had flourished for a thousand years with only a minimum of outside interference.” (David C. Lindberg, *Science in the Middle Ages*, p. 52)
- Ever since Muslims entered Spain from North Africa in 711, Spain had been a melting pot of three cultures and religions: Christians, Jews, and Muslims. Many scholars in Spain were bilingual or even tri-lingual.
- Even before the Christian “re-conquest” of Spain that finally ended in 1492, some Christian scholars from other parts of Europe managed to get access to some Greek works in Arabic. Some of them began the great work of translating Greek works from Arabic into Latin; others helped to spread Greek ideas they learned from Muslims, by teaching about them in the cathedral schools.
 - Gerbert of Aurillac (ca. 945 – 1003), a Frenchman who later became Pope Sylvester II (999 – 1003), went to Catalonia to study math and music. He was not a translator, but he helped to awaken interest in science in Europe by teaching the liberal arts at the cathedral school of Rheims.
 - The “liberal arts” was a Roman concept—the kind of education appropriate for the “free” person, as opposed to the manual arts that were appropriate for slaves to learn. In the 5th century, **Martianus Capella had defined the liberal arts as grammar, logic, rhetoric, geometry, arithmetic, astronomy, and music.**
 - Gerbert was especially fond of logic; according to Edward Grant, an expert on medieval universities, “he may have been the first to focus attention on the numerous treatises that comprised Boethius’ old logic.” —Edward Grant, *Science and Religion*, 400 B.C. – A.D. 1550, p. 149



- His students spread his love of logic & learning throughout northern Europe. Logic became a standard topic at the cathedral schools –and then spread to the new universities in the 12th and 13th centuries.
- The Islamic city of Toledo fell to Christian forces in 1085. This further opened Spain to Christian scholars from other parts of Europe. Sicily fell to the Normans in 1091, with a similar result.
 - The great bulk of translation activity took place in Spain and Sicily, from 1125-1250. Often this involved a very indirect route, linguistically: from Greek to Syriac to Arabic (in Baghdad) to Hebrew or Spanish to Latin (in Spain).
 - Only centuries later, after the fall of Byzantium in 1453, did large quantities of original Greek manuscripts enter the Latin West directly, without intermediate steps involving other languages.
- In Sicily and Southern Italy, a key person was **Constantine the African** (fl. 1065 – 1085), “a shadowy figure” (says Edward Grant) who spent several years at the monastery of Monte Cassino near Salerno.
 - There he translated medical treatises by Greek and Arabic authors from Arabic into Latin. His work became the basis for the great medical school at Salerno.
- One result of the revival of Greek learning and the introduction of Islamic learning in the West was the **establishment of the university (from the Latin universitas, meaning a corporate body or community of scholars)**, a guild-like organization of scholars devoted to the study of texts. This was a new kind of institution, unlike any previous type of school in any part of the world. It was the direct ancestor of our universities today. They were corporations chartered by clerical or secular authorities, yet functioned largely independently of those authorities. As Edward Grant has stressed, their relative independence was a key feature: it gave natural philosophers freedom to explore issues with little or no interference.
 - Latin was the language of the universities.
 - The first universities appeared around 1200 at Bologna, Paris and Oxford, followed by Salamanca, Padua, and Naples. The first university in central Europe was Charles University in Prague (1347).
 - **The undergraduate curriculum in liberal arts was formally divided into the trivium (grammar, rhetoric, logic) and the quadrivium (arithmetic, geometry, music, astronomy).** Instruction in the arts also gave a great deal of attention to the natural philosophy of Aristotle, whose works had only recently been brought into western Christendom from Arabic sources. In other words, all students studied a significant amount of what we now call “science.”
 - A student could earn a doctorate in one of just three graduate curricula: **law** (canon and civil), **medicine**, or **theology**. In all of these disciplines, undergraduate and graduate alike, the same method was used: **learn the classic texts and commentaries on them. Earn the**



doctorate by proposing and defending a new interpretation of such texts.

- Paris had the most important theology faculty in all of Christendom. Some of the most learned people in the world taught there at various times during the 13th century, including Albertus Magnus, Thomas Aquinas, and Bonaventure. In the next talk, we survey the interaction between natural philosophy and theology at Paris.