

31 Andalusian Spain and the Transfer of Philosophical Thought

In 200 AD, the land of Spain was occupied and controlled by Rome. When Rome began to decline in 400 AD, the Huns, in the steppes of Mongolia into Europe, and the peoples there in Germany, known as the Alans, the Sueves and the Vandals, began to migrate south into France and Spain (I'm using modern names for these places; they were not named that at the time).

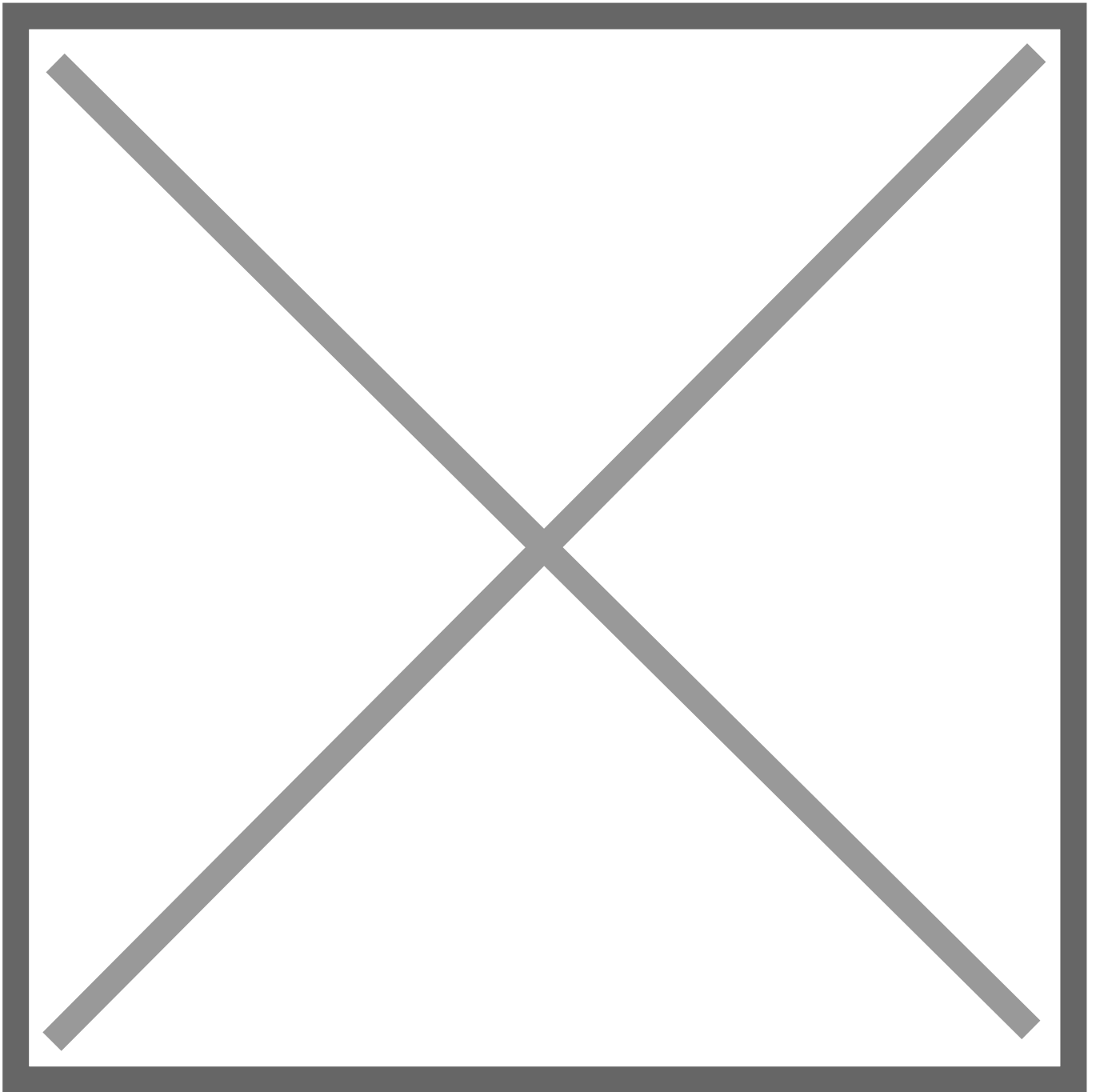
As the year 400 AD approached, the Visigoths began to move southwest from their homes north of the Black sea across Europe, and by 450 had reached Spain and stopped there. Rome was unable to control or expel them, so they stayed there. The Christian Spanish, who were there, learned to get along because they were too weak to expel any of the invaders, even though the invaders were less than 2% of the population.

In 630 AD the Muslim expansion began into northern Africa, and into Europe. They took Jerusalem, which the Christians didn't like, and the Crusades were born. They took most of Turkey, which the Byzantine Orthodox Church didn't like and they fought their land back. They dashed through Egypt, through the Vandals who had moved across the Strait of Gibraltar into northern Africa, and by 711 AD the Muslims had begun to cross the Strait into Spain. By 732 AD the Muslims were mostly in charge of Spain, which they called Al-Andalus. The Umayyad caliph Uthman wanted Constantinople, and fighting for it directly didn't work, so this was his next-best plan. [If you recall the family tree of Khalid, he was of a different family branch of the same family].

By 750 there was a Muslim civil war under way for power and land, mostly between the Umayyad and the Abbasid caliphates. The Abbasids invited all the Umayyads to a feast in 750 and murdered all but one prince, Abd al-Rahman. He fled to northern Africa, to the Berber people of his mother, but wasn't safe there. He crossed the Strait and soon became the ruler of the Muslims in Al-Andalus.

For the original inhabitants it was a tough place to live. They had built beautiful cathedrals, which the Visigoths "borrowed" for their own worship, then the Muslims came in and turned them into mosques. Once the Emirate of Cordoba was established (under the caliphate of Baghdad), it wasn't run like the other caliphates. They welcomed intellectuals, books, Jewish and Christian scholars. "Kingdom of Light" was one name for the emirate (given to themselves, no doubt). The emirate was stable until about 929 AD when the Fatimids of northern Africa, one of the more extreme groups of Muslims, visited and were appalled when they saw the Emir being friendly with other religions, dining well, and drinking alcohol. To defend against them the Emir at the time, Abd al-Rahman, declared himself Caliph and the Caliphate of Cordoba was born. And it was now at war with the Fatimids. The scholars fled it north, to the more peaceful Christian areas at the

north extremes of Spain. The little civil war to the south diminished the power of the Muslims immensely, and over the next 150 years the Muslim rule shrunk to one city in the south, Granada.



Alhambra, in Granada, begun in 1238, home of the Caliphate of Cordoba.

About this time, the Christians, buoyed by money for the Crusades, built an army under El Cid and began to wage the crusades at home to drive the rest of the Muslims out. The Muslims were gone by 1492, and with the spare money, the Queen of Spain funded the journey of Columbus to find more trade routes, the old Muslim routes now being closed to them.

It is the exodus of the scholars that interest us here. They went north with their books. These are the Arabic translations of the Greek works the Muslims had found in the great libraries. When the

Bishop of Toledo saw the books coming up from the south he set up a school of translators in Toledo. This school drew in Arabic and Latin translators, often working across from each other, to translate all the best books they could find. Many were the Arabic translations of the original Greek philosophical works, like Plato, Aristotle, Pythagoreas. And others were the alchemical works developed at Alexandria, and added to by the Arabic alchemists.

Robert of Clement (in Britain) was one of the greatest translators at the School. He began translating in 1140. He translated many alchemical works, and also some important mathematical ones (by Al-Khwarizmi) that go on to influence the development of mathematics in Europe, especially for Descartes.

Another great translator is Adelard of Bath, comments on what he's learned from translating the Arabic:

“ I learned from my Arabian masters under the leading of reason; you, however, captivated by the appearance of authority, follow your halter. Since what else should authority be called than a halter? For just as brutes are led where one wills by a halter, so the authority of past writers leads not a few of you into danger, held and bound as you are by bestial credulity. Consequently some, usurping to themselves the name of authority, have used excessive license in writing, so that they have not hesitated to teach bestial men falsehood in place of truth. For why shouldn't you fill rolls of parchment and write on both sides, when in this age you generally have auditors who demand no rational judgement but trust simply in the mention of an old title? ... Wherefore, if you want to hear anything more from me, give and take reason. For I'm not the sort of man that can be fed on the picture of a beefsteak.

Holmyard, E. J.. Alchemy (Dover Books on Engineering) (pp. 107-108). Dover Publications. Kindle Edition.

Gerard of Cremona was the best of them. He translated 76 books, and he was able after a time to translate masterfully from Arabic into Latin, unaided, when neither was his native tongue.

“ Beholding the abundance of books in every field in Arabic [translates Lynn Thorndike] and the poverty of the Latins in this respect, he devoted his life to the labour of translation, scorning the desires of the flesh, although he was rich in wordly goods, and adhering to the things of the spirit alone. He toiled for the advantage of all both present and future, not unmindful of the injunction of Ptolemy to work good increasingly as you near your end. Now, that his name may not be hidden in silence and darkness, and that no alien name may be inscribed by presumptuous thievery in his translations, the more so since he (like Galen) never signed his own name to any of them, they have drawn up a

list of all the works translated by him whether in dialectic or geometry, in astrology or philosophy, in medicine or in the other sciences.

Holmyard, E. J.. *Alchemy* (Dover Books on Engineering) (p. 109). Dover Publications. Kindle Edition.

Gerard translated Avicenna, Jabir, Al Razi, Aristotle's *Meteorology*, and the *Amalgahest* of Ptolemy (the book on astronomy and astronomical calculations).

As these texts moved into Europe, they sparked the Renaissance, the return to the golden age of Greece. The renaissance would not fully develop until 1453 when Constantinople finally falls to Muslim conquest, and the scholars there flee to Italy with their original Greek texts.

There was great interest in Europe when these Greek texts from Spain were known to exist. A large number of people wanted to read them to hear about them, to study them, and the the Universities begin to form, first informally where students bargain with their teachers for tuition, then later when the administration takes care of that. It is in the University of Paris that the next chapter of alchemy plays out.

It is more or less here that a few pages of the dictionary enter the Latin (and subsequent) language:

“ Abicum (anbiq), alembic
Abric (al-kibrit), sulphur
Alcalai (al-qali), alkali
Alchemy (al-kimia), alchemy
Alcazdir (al-qasdir), tin; cf. cassiterite
Alchitram (al-qitran), pitch
Alcohol (al-kuhl), kohl or black eye-paint
Almagest (al-majisti), almagest
Almizadir (al-nushadhur), sal ammoniac
Anticar (al-tinkar), tincal, borax
Athanor (al-tannur), furnace
Azarnet (al-zarnikh), arsenic [sulphides]
Azoth (al-zauq), mercury
Carboy (qarabah), carboy
Elixir (al-iksir), elixir
Heautarit (utarid), mercury
Jargon (jargun), jargon, a kind of zircon
Luban (luban), gum, resin; luban jawai, or Javanese resin, was corrupted into benzoin, whence our word benzene
Mattress (matrah), heap, cushion
Naphtha (naft), naphtha

Natron (natrun), natron, whence our symbol Na for sodium
Noas (nuhas), copper
Ocob (uqab), eagle, sal ammoniac
Tutty (tutiya), tutty, zinc oxide
Zaibar (zaibaq), mercury
Ziniar (zinjar), verdigris.

Holmyard, E. J.. Alchemy (Dover Books on Engineering) (pp. 110-111). Dover Publications. Kindle Edition.

Also entering into English, jiberish, after the unreadable (to most eyes) Arabic texts of the then-popular Jabir.

Some of the earliest European alchemists were reading these newly-translated texts and commenting on them, or just retelling what they learned from them. Bartholomew the Englishman in 1230 was lecturing at the University of Paris when he was called by his Order (he was a monk) to teach from his book, *On the Properties of Things*, a summary of the new alchemy. He relies largely on Avicenna as his source, and doesn't seem to be doing any lab work to confirm the properties of which he speaks. Speaking of mercury and glass,

“ Quicksilver is a watery substance medlied strongly with subtle earthly things, and may not be dissolved and that is for great dryness of earth that melteth not on a plain thing. Therefore it cleaveth not to the thing that it toucheth, as doth the thing that is watery. The substance thereof is white: and that is for clearness of clear water, and for the whiteness of subtle earth that is well digested. Also it hath whiteness of medlying of air with the aforesaid things. Also quicksilver hath the property that it curdeth not by itself kindly without brimstone: but with brimstone, and with substance of lead it is congealed and fastened together. And therefore it is said, that quicksilver and brimstone is the element, that is to wit matter, of which all melting metal is made. Quicksilver is matter of all metal, and therefore in respect of them it is a simple element. Isidore saith it is fleeting, for it runneth and is specially found in silver forges as it were drops of silver molten. And it is oft found in old dirt of sinks, and in slime of pits. And also it is made of minium [cinnabar] done in caverns [retorts] of iron, and a patent or a shell done thereunder; and the vessel that is annointed therewith, shall be beclipped with burning coals, and then the quicksilver shall drop. Without this silver nor gold nor latten [brass] nor copper may be over-gilt. And it is of so great virtue and strength, that though thou do a stone of an hundred pound weight upon quicksilver of the weight of two pounds, the quicksilver anon withstandeth the weight. And if thou doest thereon a scruple of gold, it ravisheth unto itself the lightness thereof. And so it appeareth it is not weight, but nature to which it obeyeth. It is best kept in glass vessels, for it pierceth, boreth, and

fretteth other matters.

Holmyard, E. J.. *Alchemy* (Dover Books on Engineering) (pp. 112-113). Dover Publications. Kindle Edition.

These properties are pretty accurate. When I was young, when there was a mercury spill in school, they didn't close the school and redo the interior as they do now. They just spread sulfur over the spill and brushed it around until all the mercury had be "curdled" by the sulfur and the result swept up.

But when speaking of glass, Bartholemew displays a sort of alchemical gullibility, believing anything he has heard:

“ Glass, as Avicen saith, is among stones as a fool among men, for it taketh all manner of colour and painting. Glass was first found beside Ptolomeida in the cliff beside the river that is called Vellus, that springeth out of the foot of Mount Carmel, at which shipmen arrived. For upon the gravel of that river shipmen made fire of clods medlied with bright gravel, and thereof ran streams of new liquor, that was the beginning of glass. It is so pliant that it taketh anon divers and contrary shapes by blast of the glazier, and is sometimes beaten, and sometimes graven as silver. And no matter is more apt to make mirrors than is glass, or to receive painting; and if it be broken it may not be amended without melting again. But long time past, there was one that made glass pliant, which might be amended and wrought with an hammer, and brought a vial made of such glass before Tiberius the Emperor, and threw it down on the ground, and it was not broken but bent and folded. And he made it right and amended it with a hammer. Then the Emperor commanded to smite off his head anon, lest that his craft were known. For then gold should be no better than fen [clay], and all other metal should be of little worth, for certain if glass vessels were not brittle, they should be accounted of more value than vessels of gold.

Holmyard, E. J.. *Alchemy* (Dover Books on Engineering) (p. 113). Dover Publications. Kindle Edition.

Vincent of Beauvais (1190 - 1264) is more alchemical than Bartholomew. Bright and energetic, he was the tutor to King Louis IX's two sons, as well as the King's librarian and chaplain. But like Bartholomew, he is quoting and not doing alchemy. He is rewriting Avicenna, Razi, Averroes, and someone named Al-Bitruji. Like Bartholomew, not an original thinker.

Original thought comes from the University of Paris in the form of a German and an Englishman.