

# **Science, technology and design in Medieval Islam**

# What is Islam?

- A religion that began with the prophet **Muhammad** in the 7th century
- Muhammad believed he was a **messenger sent by God**
- Muslims follow the teachings of the holy book, the **Qur'an**
- Muslims pray in the direction of **Mecca**, the centre for Islamic worship
- Islam spread rapidly throughout the Middle East and beyond

# Mecca



Photograph courtesy of SacredSites.com

# The “Golden Age” of Medieval Islam

- Islam spread rapidly with the conquests of the first caliphs, or Muslim rulers
- 750-1050 AD was a “golden age” for the Islamic world
- Arabia was at the crossroads of trade between Asia, Africa and Europe
- Trade and conquest led to cultural exchange and the spread of knowledge
- Cities like Baghdad and Alexandria became great centres of scholarship



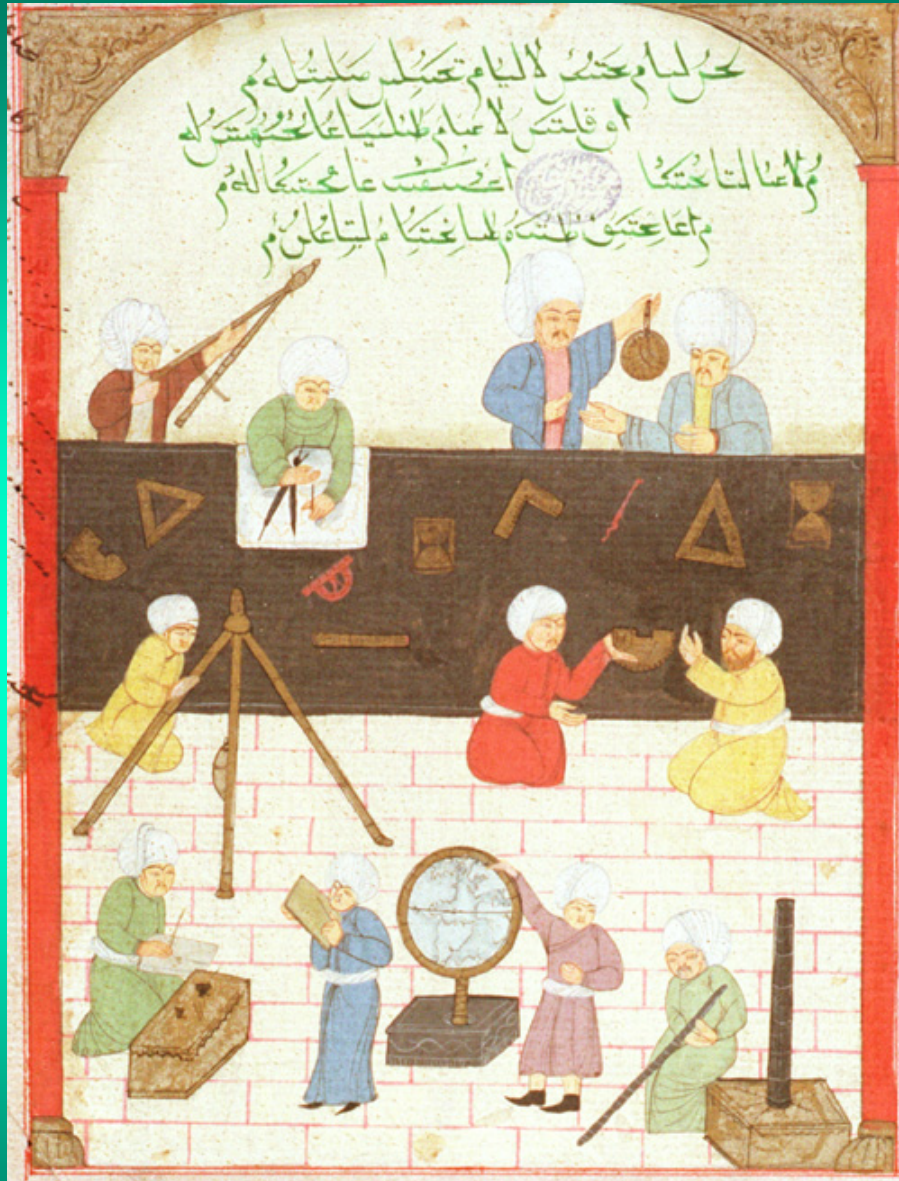
<http://www.iris-bg.org/publications/geopolitical.htm>

# Science and Learning in Medieval Islam

- Early Islamic teaching encouraged the **pursuit of all knowledge** that helped to improve people's lives
- **Arabic** became the international language of scholarship
- Muslims **translated important works** from ancient Greece and Egypt
- **Huge libraries** were established in big cities like Baghdad, Cairo and Damascus

# Astronomy

- Astronomy was important to Muslims for **practical reasons**
- Astronomy contributed to **navigation**
- Observations of the sun and moon were used to **determine prayer times and an accurate calendar**
- Large **observatories** were established and **new instruments** such as the **astrolabe** were developed



Islamic observatory



# Chemistry and Alchemy

- Chemistry was not seen as a separate science, but was an important part of other industries and crafts
- Islamic scientists developed new experimental techniques and methods such as distillation
- Alchemy was important as a science of the cosmos and the soul

صفحة اربعة على صق واحد منهم اثنين طول ومختلف لوز طويل  
 بعد شبه صورة خفية ثم حوزة واكتب معه صق اسك  
 شعر من واسه وقتنا الاثباتي يخرجها هو الحكمة بعينها من بعد  
 الحقاير يوش وارنيا يوش وتري يوش الملتحج و بر الحكمة لسا  
 علم او كذلك ان يجعل الواسط المصعد على الحر سفله في ان  
 عمل مالمو قته شبه ...  
 فاعلم انك وهلك صفه ثلثة اشخاص احدهم احمر والو سطا في  
 اخضر والآخر اصفر وقد امهم شخص ذلك صفه لها وجد له  
 ابن ادم وهو يثير سيد اني ذلك الثلاثة والي ما تحب



العلم المشهور باسمها  
 التي بها نوع صفات طابع باعيا لها  
 يغسله وهي الطبعة العليا واسمائها فاعلم ذلك

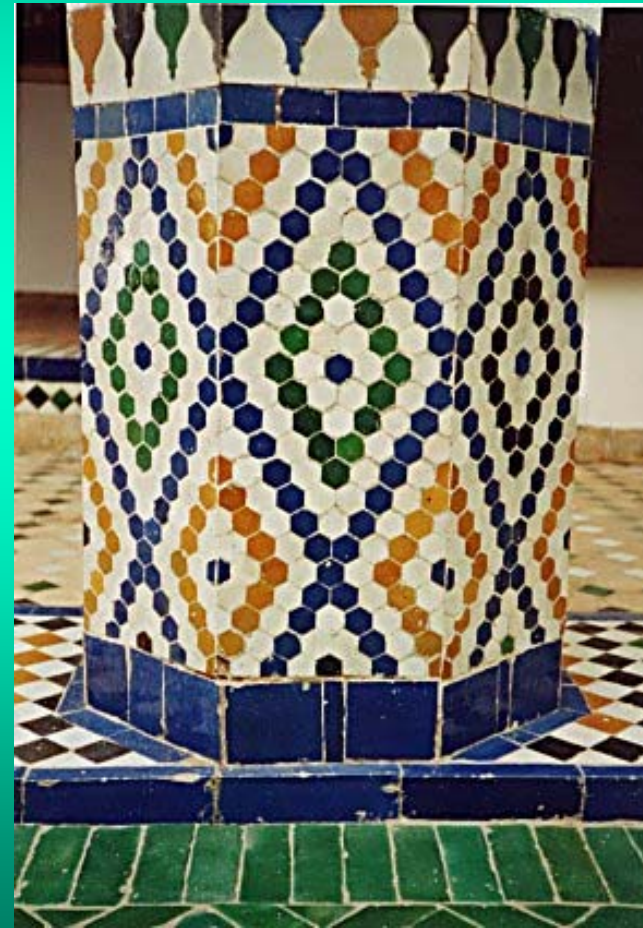
Fig. 10. FIGURES OF ALCHEMICAL PROCESSES IN ARABIC MANUSCRIPT

Figures of some Alchemical Processes in Arabic Manuscript

# Mathematics

- Islamic mathematicians built on the work of Greek, Indian, Persian and Chinese mathematicians
- Islamic mathematicians were interested in different number systems
- Developed algebra and geometry which was important in architecture and other technologies

Islamic tile patterns used  
to decorate buildings



# Medicine and surgery

- Islamic medicine was based on the Greek model of the four elements and 'humours'
- Disease was thought of as an imbalance of 'humours'
- Pharmacy, combining herbal medicine and alchemy, was important
- Islamic law forbade dissections

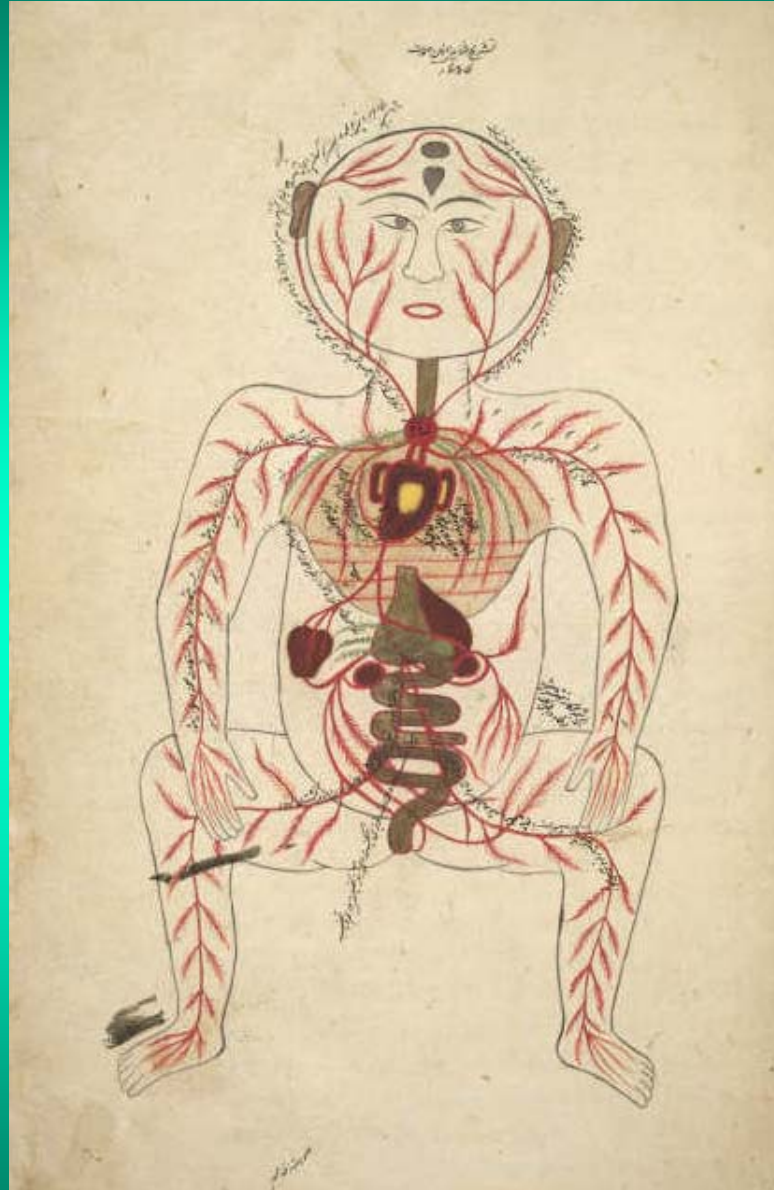
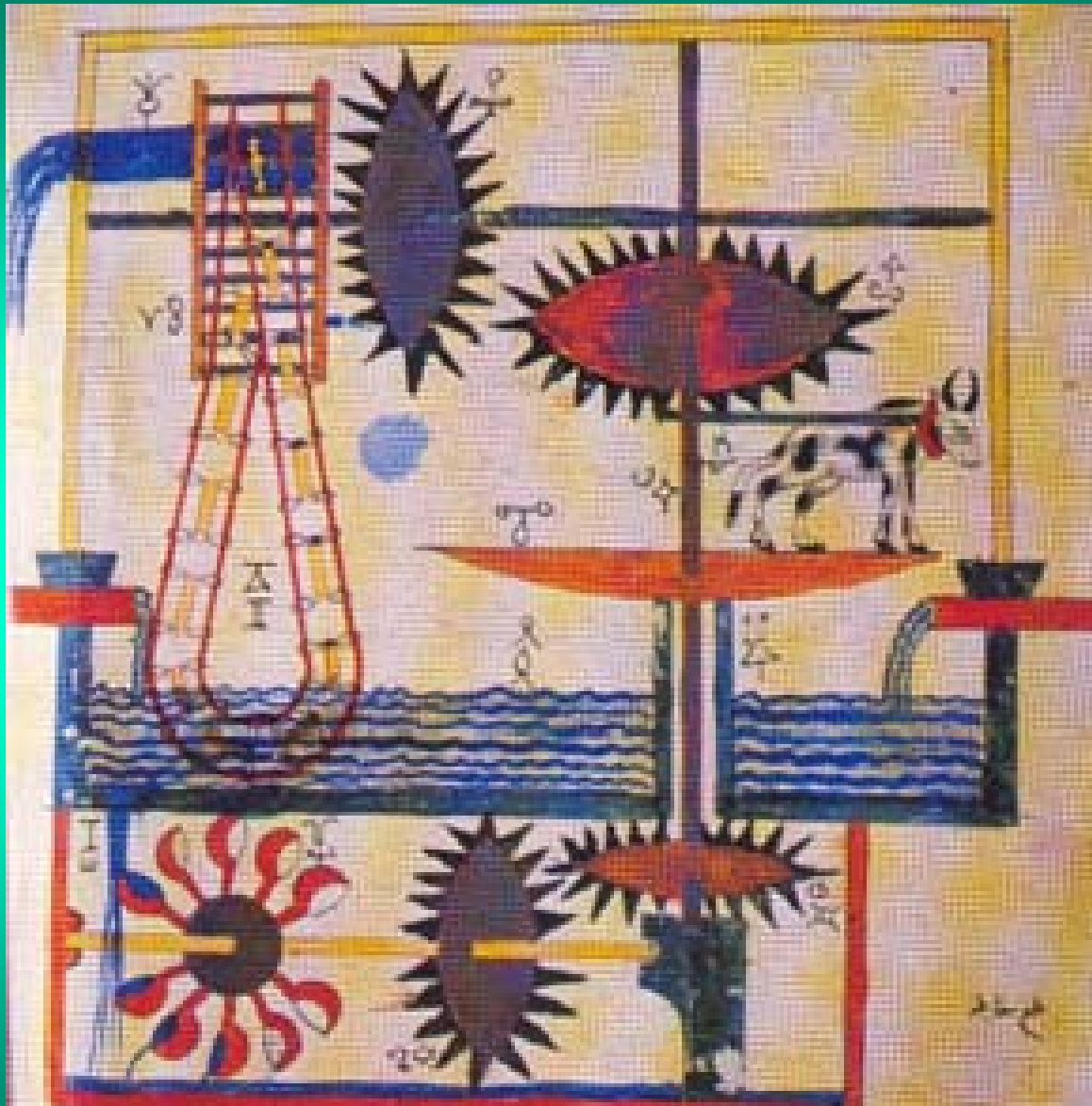


Illustration from a  
Persian  
anatomical work

# Technology

- Arab lands were often dry and harsh environments
- Improvements in water technology were important for agriculture
- Other industries included manufacture of paper, machinery and scientific instruments



Water raising machine from Al-Jazari manuscript



# Why did the “Golden Age” come to an end?

- Religious divisions caused problems by the end of the 11th century
- Conservative theologians imposed a return to orthodox beliefs and rejected ‘foreign sciences’
- The European crusades and attacks by the Mongols weakened the empire



Crusaders  
besieging  
Damascus