

**EAST**                      **WEST**

**THEN**                      **WEST**



↓



**NOW**

## The Flip Centuries

When and How  
the West  
surpassed  
the East



No Contemporary Pictures Available

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## What Kept the Middle East Back? - 1

- While the rise of the West may be explained by the weakening of the feudal structure, we are left with the question of what kept the East back.

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## What Kept the Middle East Back? - 2

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- One answer is the dominance of the **Ottoman Empire** that (eventually) came to control, besides what we call Middle East, parts of Southern Europe and Northern Africa.
- In 1326 the Ottomans captured Bursa from the Romans (Byzantines) and made it the capital of their state and for close to 600 years were the dominant force in the region.

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## What Kept the Middle East Back? - 3

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- Another answer is that the gap between East and West is not due so much to the East's falling behind, as to the unprecedented fast pace of progress in the West.
- Therefore, a better question to ask is why the West moved so fast.

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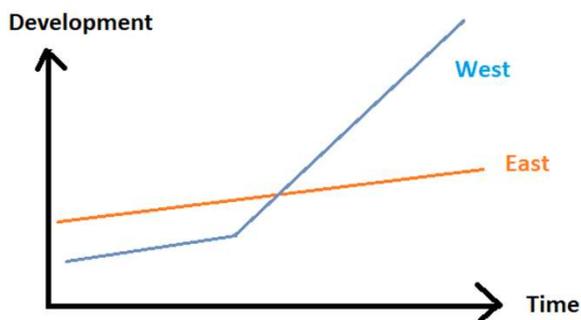
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## The Explosive Development of the West

- What is remarkable about Western Development is its fast pace.
- In four centuries (1300 – 1700) there was not only an artistic revolution, but also a religious revolution and a scientific revolution. Nothing like that has ever happened elsewhere in the world.
- The Greek language civilization lasted almost 1000 years (from 500 BCE to 400 CE), the Arab Golden Age about 700 years (700 CE to 1400 CE), thus had plenty of time to advance but they did not.

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An  
Oversimplified  
Version of What  
Happened.

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## Sources for the next 18 slides

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- Jared Diamond, *Guns, Germs, and Steel*, Norton, 1997-2005.
- Jared Diamond, *Collapse*, Viking, 2005.
- Niall Ferguson, *Civilization: The West and the Rest*, Penguin, 2011.
- Bernard Lewis, *The Middle East, A brief History of the last 2000 years*, 1995.
- Heath W. Lowry, *The Nature of the Early Ottoman State*, 2003.
- Ian Morris, *Why the West Rules - For Now*, 2010.

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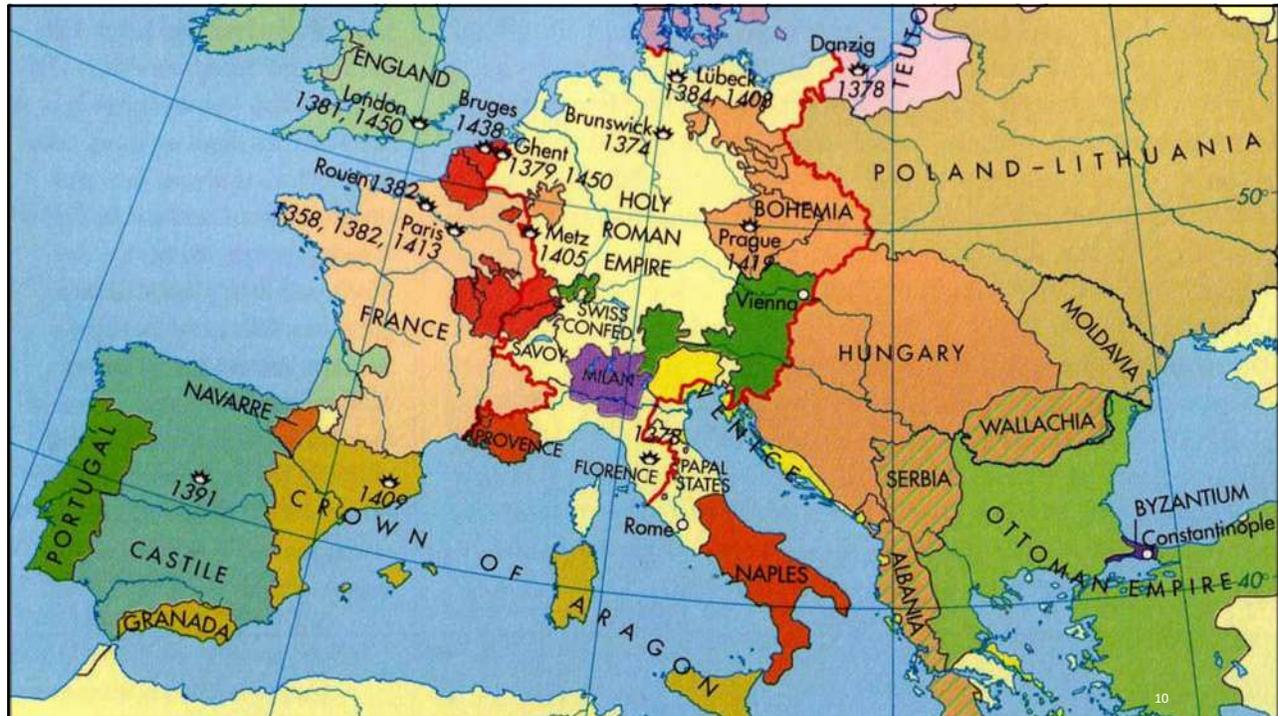
## Is Geography Destiny?

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- A major difference between Western Europe and the rest of the world in the late Middle Ages was that Western Europe consisted of many states, often at war with each other.
- Several historians attribute that to the mountainous terrain of Europe where mountain ranges can serve as borders.
- Whatever the reason, Europe was a collection of small states at the 14<sup>th</sup> century.

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## Geography is not always Destiny

- The geographical argument is weak, because there have been periods (for example, the Roman Empire era) where western Europe was one large state.
- Another example: For several centuries Italy consisted of small city-states until its unification in the 19<sup>th</sup> century.
- Thus, politics rather than geography may determine the number and size of independent states in a region.

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## Key Argument

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- **Small states are more likely to support change than big states are.**
- **Indeed, the Renaissance started in Italy which at the time was subdivided into several small states.**

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## Attitudes toward Change - 1

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- **In general rulers do not like any change because it may undermine their authority. Thus, an autocratic state is likely to be conservative.**
- **However, a state may embrace change if that change is going to give it an edge over another, hostile, state. It is essentially a trade-off between defeating external enemies (using the products of change) and encouraging internal enemies (as a result of the change).**

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## Attitudes toward Change - 2

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- **In the Middle East, the mighty Ottoman empire faced no external threats until late in the 17th century, thus it paid for its rulers to be conservative.**
- **By the time the Ottoman rulers thought of importing new ways from the West the course had been set and it was difficult to alter it.**

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## Attitudes toward Commerce

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- **Absolute rulers discourage activities such as manufacture and commerce because they may enrich some of their subjects who then may pose a challenge to the rulers.**
- **In the Ottoman empire commerce was in the hands of religious minorities rather than Muslims. Wealthy Christians or Jews were posing less of a threat to the sultan than wealthy Muslims because the former were handicapped by their "infidel" status.**

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## A quick review of the Renaissance - 1

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- **Dante Alighieri (1265-1321)** wrote *Divine Comedy*.
- **Petrarch [Francesco Petrarca] (1304-1374)** coined term “Dark Ages.” Discovered and translated Livy’s “History of Rome.”
- **Johannes Gutenberg (1398-1468)**. Around 1439 he invented printing with movable type (the Chinese used fixed type) that had enormous impact by making books available to the broad public. It was not until half a millennium later that the *World Wide Web* had a similar impact on the dissemination of information.

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## A quick review of the Renaissance - 2

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- **Artists: Leonardo da Vinci (1452 –1519), Michelangelo (1475 – 1564), Raphael (1483 – 1520).**
- **Martin Luther (1483-1546):** Religious Reform (1517).
- **Astronomers + : Nicolaus Copernicus (1473 –1543):** Heliocentric system; **Johannes Kepler (1571-1630):** Laws of planetary motions that set the foundations for Newton’s work; **Galileo Galilei (1564-1642):** In 1589 his observations on falling bodies revolutionized the experimental method. In 1610 he discovered the moons of Jupiter using the newly invented telescope (1608).

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## A quick review of the Renaissance - 3

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**Pierre de Fermat (1601-1665)** contributed to probability and number theory

**Blaise Pascal (1623 – 1662)** designed and built the first mechanical calculator. He also set the foundations of probability theory and projective geometry (used in modern computer graphics)

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## A quick review of the Renaissance - 4

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- **Isaac Newton (1642-1726)** set the foundations of modern science by providing the laws of motion and universal gravitation. His theory stayed unchallenged until Einstein's theory of relativity, 300 years later. For objects moving well below the speed of light, Einstein's theory reduces to Newton's. Therefore, all engineering design is based on Newton's theory.
- Newton also invented calculus, independently of **Gottfried Leibniz (1646 – 1716)**.
- Leibniz improved Pascal's calculator. He also refined the binary number system that eventually became the foundation of the digital computer.

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Is the Printing Press the main cause of the rapid Western progress?

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**All the significant advances in Science came after Gutenberg's invention!**

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## The Printing Press in the Middle East

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- It was **banned** in the Ottoman Empire by a decree issued by sultan (Ottoman Emperor) Bayezid II in 1485. Why? Because religious leaders decreed that printing of Arabic characters was considered sacrilegious.
- However, a Jewish press was approved around 1500 on the condition it prints only texts in the Hebrew alphabet. An Armenian press was approved in 1567 and a Greek one in 1627, each limited to the respective alphabets.
- It was only in 1727, almost 300 years after the invention of the printing press, that printing in Turkish with Arabic characters was allowed.

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## Unintended Consequences

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The Ottoman conquest of the Roman capital Constantinople in 1453 closed the road to India for Western Europe.

The search for another road to India led to the first voyage of **Christopher Columbus (1451-1506)** in 1492.

It also motivated the first voyage of **Vasco da Gama (1460-1524)** who circumnavigated Africa in 1497.

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## Postscript - 1

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- A drastically different view of what triggered the Renaissance has been offered by **Maria Rosa Menocal** in her book *Ornament of the World* [2002] :
  - The Arabs of Al-Andalus (Spain) had libraries and translations (in Arabic) of the Greek philosophers. During the "Reconquest" (722-1252) Northern European Christians came across such works and had them translated into Latin. That started a revival of secular learning in Europe.
  - This may have been a contributing factor, but it does explain the major cultural changes of the Renaissance.

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## Postscript - 2

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- **There were two Mongol Invasions of the Turkish Lands.**
- **The first was around 1250 (led by Genghis Khan and his successors). They were eventually defeated, but in the meantime, they stormed Baghdad, looted and burned the city, and put an end to the Abbasid caliphate.**
- **The elimination of the caliphate led to increased power for the various Turkish rulers who could now claim for themselves some of the powers of the caliph.**

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## Postscript - 3

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- **The second Mongol invasion was around 1400 (led by Tamerlane). They caused a lot of destruction but were eventually defeated by the Ottomans.**
- **Some scholars blame the first Mongol invasion for the end of the Arab Golden Age. The historian Bernard Lewis disputes that view because Egypt was never conquered by the Mongols and Syria suffered only raids. He refers to considerable intellectual activity in Persia after the Mongol conquest.**

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## Conclusions

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- **A bit less government leads to increased entrepreneurial activities and the invention of the printing press.**
- **The availability of books fueled a scientific expansion in Western Europe, while in the Middle East books were banned.**

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## It takes a fool

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- **A Problem is open because people think that it is too hard to solve.**
- **Only fools would waste their time to try to solve such problems.**
- **But now and then a fool hits a home run!**
- **Innovation has been slow in China because the young do not want to waste their time.**

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