

History of the Idea of Change Through Time Before Darwin

Although Darwin has been associated with the idea of “change through time”, such ideas were around long before his work

1. Aristotle (384 – 322 BC)

saw evidence of “design and purpose” in nature
arranged all organisms into a “Scale of Nature” from simplest to most complex
saw a movement toward a “more perfect state” → implied at least some kind of directed change

2. Leonardo da Vinci (15th century)

interpreted fossils as remains of organisms that had become extinct → not just “sports of nature”
he doubted the flood story of the Bible

3. James Ussher (1581-1656) & John Lightfoot (1602-1675)

made assumption that the Bible was the only reliable source of chronological information for the time covered in biblical writings
arrived at the calculation that the earth was created on Sunday, October 24, 4004 BC
Lightfoot, making additional assumptions put the time at 9:00 am

4. Leibnitz, 1690

concluded that the earth was originally a hot liquid; then cooled off forming a hard crust

→ by 1700's most scientists believe that fossils were of organic origin
but most were explained in terms of the Biblical flood

5. Maupertuis (1698-1759)

studied families with hereditary trait of 6 fingers and arrived at some basic rules of genetics
hinted at the concept of mutations and their ability to produce new species

6. Comte de Buffon (1707-1788) “Histoire Naturelle”, 1749

had to deal with dominant religious ideas: “this is what one might think if one did not know what genesis says”
believed he could get an estimate of the age of the earth based on the rate of heat loss
then he calculated the age of the earth as 74,832 yrs and the origin of life at 40,000 yrs
he recognized 6 geological periods

7. Jean Baptiste de Lamarck (1809)

he believed that all organisms were endowed with a “**vital force**” that drove them to evolve toward greater complexity
Lamarck was 1st to offer a “**mechanism**” for this change: he was the only biologist before Darwin to offer a well developed *natural theory* of how living forms might evolved
→ inheritance of **acquired characteristics** or evolution by “**use and disuse of parts**”
when scientists discovered the mechanisms of heredity his theories were discredited

8. Chambers, 1844

concluded that life could originate from inorganic substances and electricity