

Unearthing The Periodic Table over the last 7000 years

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Hunger, war, trade, and greed have cast a long shadow on inorganic chemistry. The major divisions of human prehistory have first been given the names of tools, then the names of the metals used for manufacturing tools and weapons. The Chalcolithic (or Copper Age) was followed by the Bronze Age and then by the Iron Age. The exact timing of each transition varies from one geographic region to another. Copper smelting and cupellation preceded tin extraction, which in turn allowed bronze to become the most sought-after alloy around the eastern Mediterranean for over 2000 years. Steel with a carbon content of 0.3-1.2 wt.% ushered in iron as the most prized metal from the 13th century BCE onward. Lead was known very early on but only found a purpose with the cupellation of gold and silver. These two precious but useless metals were mined since the Bronze Age to serve as a store of value, a link that would fluidify trade immensely. Silver, 'the gift of Plate Tectonics to the Mediterranean', shaped its seaside economies. The number of shipwrecks at the bottom of the Mediterranean correlates with evidence of lead pollution in Greenland ice, which demonstrates that silver was the trade facilitator par excellence. The drainage of Roman silver to the Indian Ocean and Northern Europe precipitated the advent of the Middle Ages. People around the ancient Mediterranean did not know the modern concept of elements, a.k.a. The Periodic Table. In the Middle Ages, alchemists considered metals as combinations of the so-called Four Elements of Matter, earth water, air, and fire. The flurry of metals discovered in the last half of the 18th century (H, Cl, Co, Ni, Mn, Mo, W) and the advent of electrolysis changed this perception and led Antoine Lavoisier to write the first modern list of 33 chemical elements for which he also reformulated the definition still in use today.