

# **Strategic and Economic Value of Minerals Through History**

## **by Steve Grimsley**

The first major use of stone tools began in the Paleolithic, or Old Stone Age Era. This era ended at the close of the geologic period known as the Pleistocene that was marked by the end of the last Ice Age about 12,000 years before the present. The Neolithic period, New Stone Age, followed characterized by the first settlements and agriculture. During the Neolithic, to 2000 BC, metallurgy was developed. The first widely used metal was copper and this period became known as the Copper Age (Chalcolithic) where copper was cast and formed into tools and weapons with points and cutting edges. Pure copper was disadvantaged by being soft and it wasn't until metallurgy was advanced with the use of alloys that better tools and weapons began to displace copper. These early historic periods were named after the critical materials that were in use during those times. The Copper Age was followed by the Bronze Age, the Iron Age, and then a number of names for subsequent periods of history where major technological advancements occurred. In each of these named historical periods the availability of a resource supplying critical material or fuel was key.

This presentation will discuss the minerals that were the major ores sourcing the metals used, in elemental form or as alloys, in the production of materials of major strategic and economic value. A large section of this talk will also give insight into the methods for finding and extracting the fossil fuels that have powered nations since the beginning of the Industrial Revolution. With each significant economic transition new technologies required the use of different elements to make the machines of the period possible. Hand samples of the minerals that supply the metals and fuels and their source locations, will be included in the talk. Please be ready for questions and comments as the discussion will be interactive.

Hand specimens of minerals to be available:

Prehistoric stone points, ores for copper, tin, gold, iron, zinc, titanium, mercury, platinum, nickel, and lithium. Fuels — coal, oil, and condensates.