11. COIN OF THE REALM

In 2001, the United Nations Educational, Scientific and Cultural Organization (UNESCO) adopted a Convention on the Protection of the Underwater Cultural Heritage, intended to protect underwater archaeological finds from looters. A key passage in the convention reads "Underwater cultural heritage shall not be commercially exploited for trade or speculation nor shall it be irretrievably dispersed." Among the most common pieces of underwater cultural heritage are shipwrecks.

Sometime between 80 and 50 BCE, a Roman cargo vessel carrying over 1,000 lead ingots that were apparently destined to be turned into slingshot shot, sank off the coast of Sardinia. The shipwreck was discovered in 1988 and the ingots were removed for study a few years later. Archaeologists often learn a great deal about the technology and culture of the ancient Romans by preserving and studying such lead artifacts.

Lead provides an excellent insulation from radioactivity, but, when mined, it is slightly radioactive because it contains an unstable isotope, lead-120, with a half-life of 22 years. The Roman lead, however, having been mined over 2,000 years ago, is virtually free of radioactivity. This makes it ideal for use as a shield for certain highly sensitive detectors such as the one used in CUORE (Cryogenic Underground Observatory for Rare Events).

Archaeologists didn't want the Roman lead dispersed, but agreed to partner with the National Institute for Nuclear Physics (INFN) in Italy, which helped fund the recovery of the lead in exchange for 120 of the ingots. Researchers melted down these ingots and made a three-centimeter shield around the detector.

Other researchers have uses for non-radioactive lead, such as for Minnesota University's Cryogenic Dark Matter Search. This puts them at odds with archaeologists and the UNESCO convention designed to protect artifacts retrieved from underwater. With advances in physics research, the demand for Roman lead is only likely to grow. Archaeologists and physicists alike worry that the UNESCO convention may not resolve such disputes between competing branches of the scientific community in the future.

Case from the 2015 Intercollegiate Ethics Bowl National Competition