Medieval metalwork: an analytical study of copper-alloy objects

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ABSTRACT: Copper-alloy objects of the medieval and early post-medieval periods were analysed to establish whether there was any pattern to the alloy compositions used, as a function of object type, or date or place of manufacture. Objects from NW Europe, of 12th–17th century date and mostly at least partly utilitarian, showed compositional correlations, to the extent that characteristic compositions were identifiable for some regions for the late medieval and early post-medieval periods. A method is presented of displaying compositions graphically which proved useful in exploring the phenomenon of alloy evolution. The use of scrap metal of unknown pedigree seems not to have been usual; the few instances of such practice can usually be recognised. It has been shown that dating and provenancing (in broad terms) is possible for many object types using alloy compositional data.

Background

Historians of fine art have quite naturally been drawn to the works of painters of the medieval and immediately post-medieval periods when some of the finest examples of artistic achievement were created. This is true also of students of the applied arts such as metalwork, but there has tended to be a concentration on the study of the finest examples, to the detriment of the works of lesser craftsmen. Gold- and silver-smiths executed the commissions of kings and emperors, while workers in copper alloys satisfied the needs of lesser rulers and of the senior church hierarchy. Much of the surviving art-metalwork in copper alloys of the medieval period has a religious context and accordingly some is richly decorated.

In contrast with precious metalwork there is a complete spectrum of copper-alloy metalwork from the finest applied-art pieces, through a wide range of at least partly functional objects to those with little or no decoration. The intermediate part of the spectrum, including such items as candlesticks, ewers and mortars, has received a limited amount of attention; the utilitarian metalwork, including skillets and cauldrons, has received little serious study. The work reviewed here concentrated on the middle and lower parts of the spectrum of sophistication, those parts most in need of consideration.

The study of the works of gold- and silver-smiths (and even those of pewterers) is greatly facilitated by the requirement of their guilds that craftsmen mark their work. Thus, the place and time of manufacture of objects, and in some cases the identity of the maker, can be determined with some certainty. In contrast, very few copper-alloy objects are marked. Until recently art-historians wishing to study the development of style, as a function of time and place of manufacture, have had to rely on the less satisfactory approach of studying documents and paintings. Documents do not commonly describe items in sufficient detail for object-types to be clearly and unambiguously recognised, and paintings by known artists showing items of metal work carry no guarantee that the objects were made locally or recently, relative to the artist’s time and place of painting.

The advent in about 1970 of alloy analysis techniques, which required no or infinitesimally small amounts of metal to be removed, and yet provided data on a wide range of the alloy constituents present, opened up the