Steel in the Derwent valley: but enlightenment?

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ABSTRACT: The author's 1980s excavation and research at Derwentcote are reviewed in the light of new information, and new ideas in archaeology more generally. The development of steelmaking in north-east England is seen as centered on the grafting of German and perhaps Swedish expertise on to the pre-existing English technology of cementation by William Bertram. The successful marketing of this product as 'German' steel involved an element of mystique and even deception as well as genuine innovation, and Derwentcote furnace can be seen as a projection of both sides of Bertram's character; its date may be slightly earlier than previously thought. A model of 'technological packages' for the development of steelmaking, with similarities to the 'punctuated equilibria' model of biological evolution, is briefly outlined.

Introduction

This paper presents a summary of the historical and archaeological research at Derwentcote steel furnace, Co Durham (Fig 1), in the late 1980s (Cranstone 1997). The discussion of the 1980s project is derived from that report, and from Barraclough (1984, 60-9), unless otherwise referenced. The conclusions are re-assessed in the light of new evidence, of the questions posed by Chris Evans in the Introduction to this issue and of more general developments in archaeology in the last 20 years, suggesting new directions for the historical archaeology of the iron and steel industries.

The 1980s project

My work at Derwentcote was carried out on behalf of English Heritage, who had taken the ruinous furnace into guardianship, and were conserving it for public display. The programme consisted of excavation, recording of the standing structures, historical research, a degree of landscape survey (by the then Royal Commission on Historical Monuments of England), and archaeo-metallurgical examination of slags and other process residues, broadly in that order. The excavation concentrated on the furnace, ancillary buildings, and their immediate exterior, with no investigation of the forge area, or of the slopes between the furnace and the forge which formed the main dumping areas for process residues, building debris, and artefact assemblages from the use of the furnace. In part this reflected the display purpose of the project—but it also reflected my own tight focus (and that of many historical metallurgists at the time) on technology and on functionalist interpretations.

The historical record

Medieval bloomery ironmaking was widespread in County Durham, using both the (phosphoric) Coal Measures ironstones of the central zone of the county and the (often non-phosphoric) replacement orebodies of the Weardale area to the west (Linsley and Hetherington 1978, 1-2). Within the Derwent valley there was a bloomery forge at Gibside (about three miles downstream from Derwentcote) by 1533; a new lease in 1613 gave permission for construction of a blast furnace, although there is no evidence that this was actually done (DRO: D/St/DS/1/66, /70). There was also a mid-16th-century blast furnace at Wheelbirks, just outside the Derwent catchment but only six miles west of Derwentcote (Linsley 1981-2). Intriguingly, there was a 17th-century attempt at