

# **The Development of Copper Metallurgy During the Early Bronze Age of the Southern Levant: Evidence from the Faynan Region, Southern Jordan**

*Russell Bertram Adams*

Thesis submitted to the Department of Prehistory and Archaeology, The University of Sheffield, in fulfilment of the requirements for the degree of Doctor of Philosophy, June 1999

## **Abstract**

This thesis examines the development of copper metallurgy in the southern Levant during the Early Bronze Age (3500—1900 BC), a period which sees the transition of metallurgy from a small-scale craft to an ‘industrialised’ levels of production. This analysis is undertaken by examining evidence available from one of the principle mining zones of the period, at Faynan in southern Jordan. The evidence is reviewed in both the context of our current understanding of the major cultural developments during the Early Bronze Age, as well as through an examination of contemporary views on the development of copper metallurgy in the Levant.

In particular the thesis utilises the results of both archaeological and archaeometallurgical investigations in the Faynan region, which have been undertaken over the last 15 years. The archaeometallurgical evidence for this development is examined first, and this is followed by an examination of three excavated sites in the region which fall into the three principle phases of the Early Bronze Age: Wadi Fidan 4, *Barqa el-Hatiye* 1, and *Khirbet Hamra Ifdan*. The results from these excavations, and in particular the finds from these sites is used to show changes in both the technology of copper production, and also of the changing social developments in this region.

In particular this study suggests that the development of copper metallurgy during the Early Bronze Age at Faynan was largely influenced by both increasing trends towards ‘specialisation’ and ‘urbanisation’ which take place at the end of the Early Bronze Age I. It also proposes that changes in both the technology and scale of production were responses to the changing patterns of the consumption of copper by expanding ‘urban’ sites of the southern Levant, and also from the emerging Egyptian ‘state’. These changes in the patterns of production and consumption of copper, increased at the time of the unification of the Egypt at Dynasty I (Early Bronze Age II) and continued throughout the remainder of the third millennium BC, and even into the period of ‘urban decline’ in the terminal phase of the Early Bronze Age IV.