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industrial nations with new territories and indigenous populations." Those with an interest in colonial history will find this book useful for there are obvious underlying similarities to the events in the north that can be readily compared with Mead's, Said's and other scholars' exotic warm locals. Analytical comparisons of centre and periphery, indigenous peoples and Europeans, gender and the production of knowledge are just a sample of the themes that are developed in this compilation. A significant theme found in many of the chapters is the close connection between science and religion, a relationship generally divorced after the halcyon days of science, and science education at the turn of the century. For those with little knowledge of the history of Nordic regions, this book is accessible and interesting. For those with little knowledge of the history of science this book will be a welcome introduction. For those studying the environmental history of the north, the book is well worthy of others that are beginning to be produced on different regions in the north, such as Lyle Dick's (2001) *Muskox Land*.

Readers of *Études/Inuit/Studies* will think long and hard on forgetting and remembering, thought and practice, while reading *Narrating the Arctic*. For those of us living and working in different parts of the circumpolar world, a comparative history of Nordic science is most welcome. The north, whether it is Greenland or Norway, serves as sites for the interrogation of ideas about how the now has become. For example, discussing the origins of Saami reindeer husbandry, Sorlin (p. 78) notes the contentious theory about the influence of taxation. This collection of essays reflects a comparison that entertains not only histories about explorer/hero scientists, which is important, but to also interrogate the many forces that shape both a national and circumpolar understanding of these men and their practices. In this regard, the critical self-awareness of arctic science is a long overdue exercise.

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BUCHWALD, Vagn Fabritius

2001 *Ancient Iron and Slags in Greenland*, Meddelelser om Grønland: Man & Society, 26, 92 pages. Illustrated.

Metallurgist Vagn Fabritius Buchwald has published extensively on the subject of ancient iron production as it relates (or does not) to the Inuit and Norse settlement of Greenland. In so doing, he has enlarged our understanding of the sources of available iron, the scope of metal use and the impact of these cultural groups on each other. In a previous monograph, he and co-author Gert Mosdal (1985) presented a method for differentiating between meteoritic iron (from the Cape York meteor shower in northwest Greenland), telluric iron (from iron-rich basalt outcrops local to Disco Bay in west Greenland) and smelted, or wrought, iron (of European origin), based on relative nickel content and degree of structural homogeneity. "At that time," he states in his

current monograph, "it could only be speculated from where the enigmatic wrought iron could come..." (p. 65). Subsequently, Buchwald and Wivel (1998) developed the slag-analytical technique to describe and identify smelted iron.

In his current volume, Buchwald applies this method to the study of 76 iron objects from Greenlandic archaeological deposits related to Norse, Inuit and 18^{th} and 19^{th} century European occupations. By analyzing the chemical composition of both slag inclusions in iron artifacts and slag waste products and comparing them to iron objects from known Scandinavian contexts, Buchwald provides archaeometallurgists with an invaluable means of identifying the methods of smelted iron production, the geological and, hence, cultural, sources of the iron ore and even the stage of iron production within a particular method — all with or without the presence of the finished tools themselves.

The resulting monograph is a highly technical presentation that is directed principally to archaeometallurgists, although the implications for culture contact research, especially in the Arctic, with respect to the origins of iron and the possibility of technological transfer are significant. My comments largely concern these implications. A critical review of the metallurgical science lies outside of my area of expertise.

The author's central argument that iron was not produced in Greenland either from local bog ore or from European ore sources, seems gratuitous since archaeologists now concede this point, citing the lack of adequate supplies of charcoal and the absence of related archaeological features. Buchwald's contribution lies in his convincing metallurgical evidence.

The monograph begins with a description of the "bloomery iron production method," known elsewhere in the literature as the "direct reduction process." This is the first point of confusion; the second relates to the method's period of use. Although Buchwald indicates (p. 5) that this is a medieval method of iron production, in fact, the *only* method in use during the Viking age and early medieval period (p. 8), and therefore presumably an important index marker for a Norse presence in Greenland, he subsequently contradicts this designation. On page 12, he states that the technique was in use in Denmark from 200 B.C. to 1600 A.D., a period considerably longer than the Viking-medieval time frame. On page 36 he presents evidence (in the form of a piece of Swedish fined iron) for a different process, the indirect, or blast furnace, method, which was developed ca. 1150 A.D. Buchwald states that the blast furnace method replaced the bloomery method in the 16th century but according to an earlier publication (Buchwald and Wivel 1998) both methods were in use from 1200 to 1850 A.D. The reader is left wondering why Buchwald has linked (only) the bloomery process (only) with Norse culture in this current study.

Nevertheless, the process is very well summarized in Table 1, which presents the products and the waste material formed as well as the associated equipment and archaeological features for each of the four stages, or phases, of production: initial roasting of the ore to prepare it; production (reduction), which reduces the iron oxides

to metal; purification, a secondary process to further expel slag; and manufacture, the actual making of iron tools. The value of this table lies in the archaeological signatures it provides for each phase of production.

Buchwald characterizes the types of slags produced from each of the final three stages based on their overall appearance, specific gravity and chemical composition but, here, his presentation is difficult to follow. Instead of clearly itemizing the essential features of each slag type (perhaps in a table), their descriptions are scattered over several pages. I found myself rereading sections to pick out the information. The tables that are included, which detail the chemical composition of samples representing each manufacturing stage (Tables 2-4), are not adequately interpreted. My understanding of the process would have been considerably enlarged had a glossary been included. Furthermore, the illustrations are inadequate. Although scanning electron micrographs (SEM) of thin-sections of each of the three slag types are included, only the purification slags are represented by a photograph of a complete specimen. If archaeologists are to recover these slag types in the field, there is a greater chance that they will do so if they have a means of identifying them. Alternatively, if slag types can be differentiated only by SEM, then this should be indicated. In addition, it is not always apparent what the reader is meant to observe in each image.

Buchwald emphasizes that the production phases did not necessarily take place at a single location. Iron ore, smelted elsewhere, was sometimes transported to Greenland in the form of blooms (the product of the second phase) which, due to their weight, may have served as ships' ballast. These blooms were subsequently purified in Norse settlements and manufactured into minor items. In this way, purification slags, the waste from the third phase of production, "may be found on sites where [primary] iron production never took place" (p. 12). Buchwald has made an important contribution to our understanding of Norse metal production in this respect. Early claims of iron production in Greenland's Norse settlements based on the presence of slags can now be discounted as a result of his identification of the samples as purification, rather than production, slags.

The bulk of the volume consists of a detailed metallurgical analysis of 54 smelted iron and slag pieces, 20 meteoritic fragments and two items manufactured from meteoritic iron. Buchwald corrects and extends his previous descriptions and identifications of iron samples using the slag-analytic technique. The samples are summarized in Table 5 by catalogue number, artifact type, dimensions and so forth but not, surprisingly, by their ore source or method of production. The number of coldworked objects listed in the table is far fewer than the total indicated within the written analysis. As the author, himself, acknowledges, the study is somewhat limited by the lack of a large comparative sample of iron, especially from Iceland. Buchwald has deposited a comparative collection of metallographic sections with the Danish National Museum and encourages scholars to volunteer samples of known provenience to augment it

The author has determined that most of the iron found in the Norse settlements came to Greenland in the form of ready-made tools manufactured from Norwegian ores, although Iceland remains an alternative potential source until Icelandic iron objects become available for comparison. His analysis of iron samples from the Danish settlement of Haabetz Colonie (1721-1728) indicates that at least by the 18th century, if not earlier, both the source and the method of production had changed. These samples originated in the Walloon district, where iron was produced by the indirect (blast-furnace) process as early as 1500 A.D. and subsequently transported by Dutch and Belgian ship outfitters to Norway. We do not learn that the Walloon district is in Belgium, rather than in the Netherlands as Buchwald implies on page 63, until the final page of the monograph. A map of northern Europe showing the source locations and transportation routes of the ores would have clarified the discussion.

Buchwald identifies a third type of iron production, known as puddled iron, in the manufacture of nails recovered from a 19th century expedition base camp. Puddled iron, a more efficient version of the indirect process, was introduced in 1800 and was primarily associated with British, French and American producers. Unfortunately, the author does not indicate how to distinguish this form of iron production from other methods nor whether puddled iron can be sourced.

One of Buchwald's most interesting conclusions concerns the source of smelted iron objects recovered from Inuit sites. Archaeologists have traditionally assumed that these items were medieval in age, acquired by scavenging abandoned Norse sites. Buchwald has determined that ten of the twelve pieces are Walloon iron (post-1500 A.D.), likely obtained by contact with whalers and explorers who visited Greenland from the late 16th century. He identifies the other two pieces as Norse and 19th century Swedish fined iron (p. 65, 71), although he later contradicts himself (p. 85) by stating that no Norse iron was identified from Inuit sites in this study.

Buchwald addresses the topic of contact between Inuit and the Norse settlers and later European whalers in a disappointingly brief (two-page) treatment towards the end of the volume. His limited listing of Norse items found in Inuit sites incorporates the common misconception that certain articles (by their nature?), such as chess pieces, bronze fragments and combs, must represent direct contact. It is equally plausible that such items were acquired through indirect contact by scavenging Norse sites or via indigenous exchange networks. A short discussion of the nature of post-16th century contact follows. This section on culture contact should either have been deleted or. alternatively, considerably expanded to incorporate a discussion of the author's results. For example, the fact that many smelted iron objects from both Norse and Inuit contexts were found to have been subsequently locally worked by coldhammering is, indeed, "[p]erhaps... the most unique characteristic of all Greenland [sic] iron items" (p. 87) and surely warrants discussion. Coldhammering is a technique associated with Inuit working of meteoritic and telluric iron. If, as Buchwald states, "[t]he Norse blacksmith would not be familiar with coldhammering practice" (p. 84), what, then, are the implications for our understanding of technological transfer and for differentiating direct and indirect contact in the archaeological record?

While these points detract from the final product, Buchwald has still made a notable contribution to Arctic archaeology, archaeometallurgy and culture contact

research. He has provided a much-needed method for distinguishing among types of smelted iron in terms of production technology, phase of production, source location and product quality. The slag analytical method will allow archaeologists to address an essential gap in their knowledge of Inuit and Norse metal use, production and acquisition. The identifications of non-Scandinavian smelted iron in the Danish colonial period, of non-Norse smelted iron in Inuit sites and of cold-hammered smelted iron exemplify both the complex, entangled nature of Inuit-European interaction and the challenge of interpreting it from the archaeological record. As well, Buchwald has offered us both a means to study the little understood impact of the post-16 th century whaling and exploratory expeditions on the Greenlandic Inuit and a challenge to identify the source of iron from pre-19th century Inuit sites elsewhere in the Arctic.

References:

BUCHWALD, Vagn Fabritius and Gert MOSDAL

1985 Meteoritic iron, telluric iron and wrought iron in Greenland, *Meddelelser om Grønland: Man & Society*, 9: 1-49.

BUCHWALD, Vagn Fabritius and Helle WIVEL

1998 Slag analysis as a method for the characterization and provenancing of ancient iron objects, *Materials Characterization*, 40: 73-96.

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FITZHUGH, William W., Stephen LORING and Daniel ODESS (eds)

2002 Honouring Our Elders. A History of Eastern Arctic Archaeology, Washington, Smithsonian Institution, National Museum of Natural History, Arctic Studies Center, Contributions to Circumpolar Anthropology, 2, 319 pages.

This book is a compilation of papers that were presented ten years ago (Spring 1993) at a conference honouring Elmer Harp Jr., and other pioneers in Arctic archaeology. The sub-title is certainly misleading since it is not "A History of Eastern Arctic Archaeology," but, according to the editors, it is a series of building blocks that should initiate a reflection in this direction, and some of the articles included do have a direct bearing on the history of the discipline. The gap between the moment these papers were given and today has been partly alleviated by updates, but all authors kept the core of their original text intact. In this sense, the book itself becomes a part of the history it wants to build.

The book is a collection of 21 articles, not all of which were actually presented at the Dartmouth Conference. To give some organization to this important number of