in die Diskussion einbezogen. Er ist nunmehr sowohl hinsichtlich des Befundes wie auch des Fundgutes adäquat zu bewerten. Verf. lässt sich nicht zu ausschweifenden Spekulationen verführen und leistet einen gelungenen Beitrag zum weiteren Verständnis der alpinen Brandopferplätze.

A-9021 Klagenfurt a. W.
Museumgasse 2
E-Mail: paul.gleirscher@landesmuseum.ktn.gv.at

Paul Gleirscher
Landesmuseum für Kärnten

Ute Luise Dietz / Albrecht Jockenhövel (Hrsg.), Bronzen im Spannungsfeld zwischen praktischer Nutzung und symbolischer Bedeutung. Beiträge zum internationalen Kolloquium am 9. und 10. Oktober 2008 in Münster. Prähistorische Bronzefunde Abt. XX Band 13. Franz Steiner Verlag, Stuttgart 2011. € 98,–. ISBN 978-3-515-09918-9. X, 324 Seiten mit 148 s/w und 15 farbigen Abbildungen.

The series "Prähistorische Bronzefunde" (Prehistoric Bronze Finds) (PBF) was inaugurated in 1965. Since then, more than one hundred sixty-five volumes presenting archaeological material have been published. This impressive series of blue-bound volumes has opened up to scholars a massive inventory of bronze finds, which for the most part were no longer possible to survey. This is particularly true for find groups such as swords, axes, pins, bracelets or razors that were treated in a number of doctoral dissertations written in Frankfurt / Main under the supervision of Hermann Müller-Karpe. They systematized the find-inventory on the basis of the authors' own observations and many of these published dissertations are still valid today. The PBF project made enormous gains by making finds available that researchers usually could not access during the Cold War. To give just one example: in 1951 the work "Hortfunde Südosteuropas", compiled from Friedrich Holste's sketchbooks, was published; in it, the Transylvanian hoards were represented only by a small selection from the museums at Oradea and Cluj. Other hoards were well known from the literature, but the PBF volume by Mircea Petrescu-Dîmboviţa "Die Sicheln in Rumänien mit Corpus der jung- und spätbronzezeitlichen Horte Rumäniens" (München 1978) (The Sickles in Romania with Corpus of the Younger and Late Bronze Age Hoards of Romania [Munich, Germany 1978]), was a breakthrough in that it suddenly allowed the enormous wealth of the Transylvanian hoards to be recorded. This laid the foundation for many other studies that dealt with various aspects of these finds and especially with their interpretation. Without the PBF volumes, supra-regional studies of these bronze finds would have been possible only on a very limited basis; they are absolutely essential publications and will continue to be so in the future. Of course, during the past sixty years, research questions related to the bronze finds have changed and expanded. Digital photography and digital printing technology have opened new horizons for the documentation of production techniques and of wear traces, which allow readers a close view of the objects.

With the present volume, the editors Ute Luise Dietz and Albrecht Jockenhövel initiate the discussion of the bronzes' function. Their general aim is "to define the appropriate criteria and attributes that shed light on the function of metal objects, whether made of copper, bronze or precious metals, in the field of tension between practical utility and symbolic meaning" (p. V). How can practical application and symbolic utilisation as ceremonial and prestige object or cult object and votive offering be proven? With that question, we enter a field of tension between two difficult-to-separate poles, since the St. Christopher medal that dangles from a taxi's rear view mirror may have, from the perspective of the driver, just as much practical utility as a working set of brakes. Where the practical utility of an automobile ends and where its symbolic significance begins differs accord-

ing to the emic perspective of its user. Objects are always open to multiple interpretations, and one and the same individual can almost always generate multiple 'readings' of one and the same object.

In his introductory paper (p. 1 ff.) Albrecht Jockenhövel specifies that the aim of the discussion is the "interweaving of production, form, function and the context of 'things', metal objects in particular", thus linking the discussion to recent material culture studies. Jochenhövel here mainly refers to the composition of metals, arguing that alloys of bronze exist that are based on the requirements of the product itself, such as bronze sickles that are deliberately poor in tin. Furthermore, he suggests a "symbolic meaning" for objects that are "deliberately non-functional," such as the thin-walled socketed axes of the Geistingen type, ceremonial axes, as well as the Hajdúsámon-Apa axes. Miniature and over-sized objects are also included in this category. The difficulty of progressing with clear 'definitions' is shown in the author's remark that "many things" fluctuate between the poles of "practical utility" and "symbolic significance" and that a "wide transitional field" exists.

From the ethnographic perspective, as explained by Hans Peter Hahn (p. 107 ff.), ambiguity is not a deficit of material culture. Instead, the polyvalence of things may also be a specific strength, supporting the creation of connections between otherwise separate contexts.

While works in the tradition of Arjun Appadurai have sought to capture the symbolic dimension of objects in addition to their functional aspects, it is currently said, under the catchword "materiality", that in the course of human interaction with objects, a dialogue develops between them through which the objects gain, in a certain sense, agency (see J. Maran / Ph. Stockhammer [eds.], Materiality and Social Practice. Transformative Capacities of Intercultural Encounters [Oxford 2012]).

Claus-Stephan Holdermann and Frank Trommer (p. 117 ff.) investigate organisation, procedural technologies and expenditure of labour in Late Bronze Age metal craftsmanship. Based on their own casting experiments, they present a *chaîne opératoire* that lists in detail the work expended in each individual step when casting a knife and that demonstrates that considerable working time was invested, even in "smaller" bronzes.

Barbara Armbruster (p. 19 ff.), who presents a concise survey of the western and northern European gold finds of the Bronze Age, also rightly calls for more studies of the technological systems in which the objects are made.

There are a number of ways to transcend traditional typology and connect typology with (invisible) technical parameters. Knut Rassmann (p. 234 ff.) profitably combines the traditional typology of the Early Bronze Age metal-hilted dagger with the kinds of metals known in the second millennium BC and for example, based on metal types, he can demonstrate connections between western France and the Únětice region.

Harry Wüstemann (p. 292 ff.) on the other hand demonstrates the use of radiographic studies in the determination of function in metal-hilted swords. Less well documented, however, is his general statement that the sword was more status symbol than weapon, as this is not supported by the investigations of the blades.

On the basis of the Nordic and northern German flanged axes, Karl-Heinz Willroth (p. 279 ff.) figures out significant differences that simultaneously include form, function, method of production and, presumably, social "meaning." Owing to their sometimes heavy traces of wear, the northern German palstaves are designated as working axes, while the slender, ornately decorated Nordic palstaves are referred to as weapons. This difference is also seen in the casting techniques: the working axes were made in a permanent mould casting process, while the Nordic palstaves were cast using lost wax technique.

Tobias Kienlin treats the earliest phase of metal usage in his article (p. 131 ff.), discussing aspects of the production and social context of Copper Age weapons and tools in the Danube region. He programmatically challenges the reconstruction of hierarchical structures in Copper and Bronze Age Europe ("Beyond Elites").

In his very useful contribution (p. 297 ff.), Thomas Zimmerman assembles those few metal objects that are known from the fifth and fourth millennia BC in Anatolia. The limited find inventory is correctly attributed to the absence of a corresponding votive practice, leading to a presumably quite distorted history of early metallurgy; this should serve as a warning against situating the early phase of metallurgy solely in the Balkan region.

Several articles consider problems in the interpretation of diverse groups of sources. Alexandra Krenn-Leeb pursues a far-reaching approach (p. 163 ff.) in presenting a list of levels of behaviour in Bronze Age depositions and burials, some details of which could certainly be expanded upon.

Following on previous studies, Majolie Lenerz-de Wilde (p. 177 ff.) considers the ring bar hoards of the Early Bronze Age. They are seen as elements in a pre-monetary development, emerging from an ornament type and subsequently replaced by a system of scrap metals. A problem with this theory is still the empirical proof by weight measurements, since a weight system cannot be recognized in the 10-gram incremental display format chosen by the author. If the cuffs cast on to the ring bars or the occasional wire wrappings are actually weight corrections, then clearer weight norms must be substantiated. The same applies, by the way, to the fragments from complex hoard assemblages. Here, it would be worthwhile to compare the Urnfield weight series from hoards with the Aegean weight system recently presented by L. Rahmstorf (Maß für Maß. Indikatoren für Kulturkontakte im 3. Jahrtausend. In: Kykladen. Lebenswelten einer frühgriechischen Kultur [Karlsruhe 2011], p. 144–153).

Frank Falkenstein deals with the "Struktur und Deutung älterurnenfelderzeitlicher Hortfunde im nordalpinen Raum" (Structure and interpretation of Early Urnfield Period hoards in the northern Alpine region) (p. 71 ff.). In this, he falls back on an old differentiation between hoards of 'finished products' and depositions of 'scrap metal' that once defined the hoard analyses of Friedrich Holste or Frauke Stein. Both types of deposition are evaluated in terms of the number of objects, the various functional types and their respective chronology. The hoards composed of finished goods are viewed as 'votive offerings' while the so-called 'scrap metal hoards' are interpreted as metal stock for re-melting. The distribution map of the hoards in southern Germany (Fig. 1) then shows that metal stock depositions occur primarily in the Upper Palatinate and Central Franconia, while votive offerings are especially characteristic along the Main River. I am convinced that it is necessary to question or even discard this terminological legacy. In fact, with the so-called 'scrap metal hoards' we are not dealing with a Bronze Age universality (a stock of metal) but with an innovative model of hoard depositions that was presumably invented in Transdanubia at the end of the Early Bronze Age. In this novel hoard model, the spectrum of deposition-worthy objects was broadened significantly (sickles, fragments). The objects were deliberately fragmented and made unusable; for the first time, the wedging and insertion of smaller fragments into socketed axes and lanceheads can be verified (see O. Dietrich, Learning from 'scrap' about Late Bronze Age hoarding practices: A biographical approach to individual acts of dedication in large metal hoards of the Carpathian Basin. European Journal of Arch. 17, 2014, 468–486). This deposition model marks countless European hoard landscapes from the fourteenth / thirteenth centuries into the ninth century BC (S. Hansen, Über bronzezeitliche Horte in Ungarn – Horte als soziale Praxis. In: B. Horejs u. a. (eds.), Interpretationsraum Bronzezeit. Bernhard Hänsel von seinen Schülern gewidmet [Bonn 2005] 211–230).

Ulrike Wels-Weyrauch (p. 259 ff.) returns again to the topic of Stachelscheiben (pointed or spiked discs). She examines an especially interesting group of three recently discovered hoards containing

spiked discs, connected by the fact that the find spots are all on elevated sites with access to springs. We would very much like to agree with the idea that the magnificent necklaces were the emblems of powerful women.

Dirk Brandherm describes the development of crested helmets and helmets with horns since the fourteenth century BC (p. 39 ff.). He convincingly differentiates earlier helmets with a rounded profile (Biebesheim type) from later pointed helmets (Mainz-Kostheim type). The western European crested helmets are derived from eastern Mediterranean models, for which the most important evidence is the repeatedly cited limestone relief from the King's Gate in Hattuša. The rounded crested helmet forms are dated to the thirteenth / twelfth centuries BC and the helmets of the Mainz-Kostheim type in period Ha B, i.e. to the eleventh and tenth centuries; this, then, presents a chronological re-evaluation of the helmets (see also A. Lippert, Die zweischaligen ostalpinen Kammhelme und verwandte Helmformen der späten Bronze- und frühen Eisenzeit [Salzburg 2011]).

Marion Uckelmann (p. 249 ff.) reports on the results of her investigation into the European shields of the Bronze Age, which meanwhile has been published as a PBF volume. She presents a revised chronology of these shields. Accordingly, the majority of shields in central and western Europe should be assigned to the earlier Urnfield period. Only the Herzsprung shields remain in the younger and late Urnfield period. The chronology of bronze defensive armour is currently in the midst of a fundamental revision, necessitated in general by a new conception of the dynamics of Urnfield weaponry. We anticipate with interest the results of Marianne Mödlinger's production-technological studies of defensive weapons.

Ute Luise Dietz treats the material and function of horse gear (p. 55 ff.). She concludes that it was not until the second half of the second millennium, i.e. from the Late Bronze Age, that the horse was likely to be ridden. From a layman's perspective, however, I can imagine riding as part of the earliest phase of domestication, providing a sporting challenge for the youth. Young women and men practicing bull leaping in Bronze Age Anatolia and Crete would also jump on a horse.

Sabine Pabst provides a brilliant overview of the large-scale distribution of Brillenfibeln (spectacle or double spiral fibulae) during the period of transition from the Bronze Age to the Iron Age (p. 199 ff.). Although the oldest examples date from the earlier Urnfield period in the Carpathian region, they occur in greater numbers in the later Urnfield period (Ha B1). The parallels between the Ha B1-period hoards from Gyermely and Velem St. Vid in western Hungary and the spectacle fibulae of the Metapont type imply a re-dating of the Italian Early Iron Age. Undeniably also other similarities in metal jewellery grave furnishing, beyond the spectacle fibula, can be detected. At the same time, burials equipped with spectacle fibulae occur in large numbers in the northwestern Balkans and in Macedonia (Vergina). The author makes a connection between the distribution of similar fibula types and migratory movements. While this explanation may be correct in individual cases, additional substantiation is needed; it is also clear that spectacle fibulae had a symbolic value, which could be responsible for the fact that these fibulae were in use for more than three hundred years across so large an area.

The papers, of which only a few could be examined in more detail in these pages, illuminate many varied aspects of the functions of bronze objects. The discussion initiated here will surely assume greater scope in future Bronze Age research. The early metallurgy of the fifth to second millennia BC was one of mankind's most significant technical innovations. It opened up new possibilities for the control of nature and altered the dimensions of war. Metals also played a representative role, both in the exchange between humans and that between humans and the imagined powers. The ability to follow this technical (and associated social) process of innovation at such a large scale and over a comparatively long period of time presents a unique situation.

The many and varied aspects of early metal artefacts could not have been treated at the same level without the enterprise of publishing the Prehistoric Bronze Finds volumes up to the present. Above all, the Eurasian dimension of the phenomenon from Sicily to Norway, from the Atlantic to the Urals, would not have been unveiled. The PBF volumes are the quantitative and qualitative starting point for many continuing discussions, and not only those concerning the practical uses and symbolic meaning of bronzes. There are still large gaps in the corpus for many find groups (knives, pins, spears) that absolutely must be closed. If Knut Rassman has counted correctly, more than 150 000 metal objects have already been presented in the PBF volumes published up until now (p. 235). This is a unique database for Bronze Age research that, following a brief period of exhaustion caused by an excess of typology, today actively pursues current socio-archaeological questions. With the advancement of computer technology, this collection of data serves as a firm foundation for future broad-scale research. The PBF corpus provides a solid basis that should be built upon and further extended in future.

Svend Hansen
Eurasien-Abteilung
Deutsches Archäologisches Institut

D–14195 Berlin
Im Dol 2–6
E-Mail: svend.hansen@dainst.de

Fulvia Lo Schiavo, Le Fibule dell'Italia meridionale e della Sicilia dall'età del bronzo recente al VI secolo a. C. Prähistorische Bronzefunde, Abteilung XIV Band 14, Teile 1–3. Franz Steiner Verlag, Stuttgart 2010. € 290,–. ISBN 978-3-515-09823-6. 964 Seiten, 758 Tafeln.

Das monumentale dreibändige Korpuswerk, das Fulvia Lo Schiavo in der Reihe „Prähistorische Bronzefunde" (PBF) vorlegte, beinhaltet den umfangreichen Bestand an Bronzefibeln aus Unteritalien und Sizilien vom Zeitpunkt des ersten Auftretens dieser Gewandhaftenart in der Jungbronzezeit (*Bronzo recente*) bis zum 6. Jh. v. Chr. Es ist der nunmehr 14. Band in der Abteilung XIV (Fibeln) und der zweite Band in der PBF-Reihe, der nach dem 1986 von Patrizia von Eles Masi verfassten Buch zu den Fibeln in Norditalien (P. v. Eles Masi, Le Fibule dell'Italia settentrionale. PBF XIV, 5 [München 1986]) die Bronzefibeln im Gebiet des heutigen Italien zum Gegenstand hat.

Die Publikation besteht aus drei Bänden, von denen Band 1 und 2 (d. h. Teil 1 und 2) in fortlaufender Seitenzählung den Textteil enthalten; Band 3 (d. h. Teil 3) bildet den Tafelteil mit den Fundzeichnungen (Tafel 1–739) und Verbreitungskarten (Tafel 740–758). Der Textteil in den Bänden 1 und 2 gliedert sich in fünf größere Kapitel: zwei einführende und teils auch auswertende Kapitel zur Methodologie und zu den Quellen (S. 1–84), das Materialkapitel mit dem Katalog der Fibelfunde (S. 85–904), ein Kapitel mit vier Appendizes (S. 905–929) und ein letztes Kapitel mit den Literatur-, Orts- und Abkürzungsverzeichnissen (S. 931–964).

Der umfangreiche Katalogteil des Buches umfasst mehr als 8000 Fundstücke (die letzte Katalognummer lautet 8168, welche jedoch nicht die tatsächliche Anzahl der Objekte angibt, da etliche Katalognummern mit nachgestellten Großbuchstaben nachträglich eingefügt wurden). Die Materialaufnahme beschränkte sich im Grunde auf die Fibeln aus Bronze. Reine Eisenfibeln sind im Katalog nicht enthalten. Es wurden jedoch bimetallische Stücke hinzugenommen, wenn sie zum überwiegenden Teil aus Bronze bestehen, wie z. B. bronzene Spiralfibeln mit Eisentutuli oder eiserner Unterkonstruktion (vgl. „Il bimetallismo", S. 25 f.). Alle Objekte sind im Tafelband im Maßstab 2 : 3 in der gewohnten hervorragenden Qualität der PBF-Edition graphisch dargestellt. Die Funddokumentation nahm die Verfasserin überwiegend anhand der Originalobjekte vor. In den Fällen, in denen die Originale nicht zur Verfügung standen, wurden publizierte Vorlagen umgezeichnet. Die