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The book focuses on the conservation of iron and copper objects that mostly belong to the Iron Age sites of K2 and Mapungubwe (AD 825-1290), the two most prominent archaeological settlements in the middle Limpopo valley area of northern South Africa. For the purpose of conservation three main objectives were considered: revealing the material and methods of fabrication; evaluating physical and chemical stability; and preservation. Chapter 1 provides a short introduction to the study and presents its objectives. Chapter 2 then sets out the analytical methods and principles used in gathering and managing the data obtained. Next, Chapters 3 and 4 discuss the methods of manufacture of the selected artefacts as well as their physical stability. In these chapters the artefacts were respectively studied by the use of non-destructive methods such as neutron tomography and microscopy. Here, a new quantitative technique for estimating the corrosion percentage by using neutron tomograms and IMAGEJ software was introduced. Some of the objects with ambiguities as to their fabrication, were sampled destructively for metallographical examination and further chemical analyses. The native objects were manufactured by hot forging or cold working followed by annealing only in the case of copper, strip twisting and casting of molten copper in one piece mould. Meanwhile, new light was shed regarding signs of a new technique used in the production of some types of round wire on Mapungubwe Hill (strip-drawing). Chapter 5 examines the chemical stability of the artefacts and the deterioration processes affecting them, considering both the composition of corrosion products and the effects of environmental conditions on their formation. This information was gathered using analytical techniques such as Raman spectroscopy, XRD and SEM-EDS. Chapter 6 then presents suitable and practical conservation methods for the objects in question. These methods consist of both interventive and preventive conservation. The thesis concludes (in Chapter 7) with a summary of the results obtained.

This thesis focuses on the conservation of iron and copper objects that mostly belong to the Iron-Age sites of K2 and Mapungubwe (825-1290 AD), the two most prominent archaeological settlements in the middle Limpopo valley area of northern South Africa. For the purpose of

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Conservation three main objectives were considered during this study which consisted of revealing the material and methods of fabrication, evaluating physical and chemical stability, and preservation. The selected objects were in four main categories, namely round wire, strip, plate and implements, and were in various states of preservation, from heavily to low corroded. This thesis consists of seven chapters that are based on these objectives. Chapter 1, introduction, provides a short introduction to the study, presents the study objectives, a brief history of the investigation of the sites, some archaeological interpretations and a discussion on the metallurgy of the objects made by the inhabitants. Chapter 2, methodology, contains analytical methods and principles which were used in gathering and management of the data. Chapters 3 and 4 present a discussion of the methods of manufacture of the selected artefacts as well as their physical stability. In these chapters the iron and copper artefacts were respectively studied by the use of non-destructive methods such as neutron tomography and microscopy. Here, a new quantitative technique in estimating the corrosion percentage by utilizing neutron tomograms and IMAGEJ software was introduced. Some of the objects with ambiguity in their fabrication, such as iron hoes or copper bangles with a central longitudinal void, were sampled destructively for metallography examination and further chemical analyses. In the case of the manufacture of native objects the outcomes confirmed the results of previous researches. Meanwhile new light was shed regarding signs of a new technique used in the production of some type of round wire on Mapungubwe Hill (strip-drawing). In the case of the round wires that were used in the manufacture of the bangles finding the definite method of manufacture was problematic. In Chapter 5 the chemical stability and the deterioration process of the artefacts were studied with consideration of both the corrosion composition as well as the effects of environmental conditions on their formation. It indicated hydroxyl (OH⁻) was the prominent ions in the corrosion of iron although a high amount of soluble chloride ions were detected in the burial environment in K2. In the case of copper artefacts, both chloride and hydroxyl ions were effective in corrosion and the objects were mostly subjected to severe bronze disease. This information was gathered using analytical techniques such as Raman spectroscopy, XRD and SEM-EDS. In Chapter 6 the suitable and practical conservation methods were presented. These methods consisted of both interventive and preventive conservation and were designed on the basis of the chemical and physical stability of the objects and environmental condition in the museum and in the storage facility. In chapter 7 (conclusion) a summary and the results of the study was presented which formed the final part of the thesis.

The Mapungubwe Cultural Landscape is one of the profound treasures of southern Africa's social and archaeological history, appropriately declared a World Heritage Site by the United Nations Educational, Scientific and Cultural Organisation (Unesco) in 2003. Contained within this landscape is indispensable information on precolonial state formation, social hierarchies, architecture of stone-walled towns, mineral processing and intercontinental trade. And yet, the Mapungubwe state rose, towered over its environs, and then declined – long before European colonial incursions. *Mapungubwe Reconsidered: A Living Legacy* contributes to the body of knowledge about Mapungubwe, straddling such issues as the relationships between humans and the environment, management of mineral endowments and the form and impact of southern Africa's global intercourse in this historical period.

Africa has the longest and arguably the most diverse archaeological record of any of the continents. It is where the human lineage first evolved and from where *Homo sapiens* spread across the rest of the world. Later, it witnessed novel experiments in food-production and

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Unique trajectories to urbanism and the organisation of large communities that were not always structured along strictly hierarchical lines. Millennia of engagement with societies in other parts of the world confirm Africa's active participation in the construction of the modern world, while the richness of its history, ethnography, and linguistics provide unusually powerful opportunities for constructing interdisciplinary narratives of Africa's past. This Handbook provides a comprehensive and up-to-date synthesis of African archaeology, covering the entirety of the continent's past from the beginnings of human evolution to the archaeological legacy of European colonialism. As well as covering almost all periods and regions of the continent, it includes a mixture of key methodological and theoretical issues and debates, and situates the subject's contemporary practice within the discipline's history and the infrastructural challenges now facing its practitioners. Bringing together essays on all these themes from over seventy contributors, many of them living and working in Africa, it offers a highly accessible, contemporary account of the subject for use by scholars and students of not only archaeology, but also history, anthropology, and other disciplines.

This book traces the history of innovations from precolonial times and examines precolonial settlements in southern Africa such as Mapungubwe in Limpopo Province, Bokoni in Mpumalanga Province and Msuluzi in KwaZulu-Natal Province from the perspective of their indigenous technological efforts to harness nature for communal benefit. It is informed by the understanding that national systems of innovation evolve and take shape against the backdrop of regional, continental and global macrosocial dynamics, including corresponding systems of innovation.

Foragers were present in the Limpopo Valley (South Africa) before the arrival of farmers and not only witnessed but also participated in local systems leading to the appearance of a complex society. Despite numerous studies in the valley, forager involvement in socio-political developments has been, until now, largely ignored.

This collection derives from a conference held in Pretoria, South Africa, and discusses issues of indigenous knowledge systems (IKS) and the arts. It presents ideas about how to promote a deeper understanding of IKS within the arts, the development of IKS-arts research methodologies, and the protection and promotion of IKS in the arts. Knowledge, embedded in song, dance, folklore, design, architecture, theatre, and attire, and the visual arts can promote innovation and entrepreneurship, and it can improve communication. IKS, however, exists in a post-millennium, modernizing Africa. It is then the concept of post-Africanism that would induce one to think along the lines of a globalized, cosmopolitan and essentially modernized Africa. The book captures leading trends and ideas that could help to protect, promote, develop and affirm indigenous knowledge and systems, whilst also making room for ideas that do not necessarily oppose IKS, but encourage the modernization (not Westernization) of Africa.

An illustrated book about a 1000 year old civilization Between AD 900 and 1300, the Shashe-Limpopo basin in Limpopo Province witnessed the development of an ancient civilization. Like civilizations everywhere, it consisted of a complex social organization supported by intensive agriculture and long-distance trade. The Mapungubwe Cultural Landscape, as it is now known, was the forerunner of the famous town of Great Zimbabwe, situated about 200 kilometers to the north, and its cultural connection to Great Zimbabwe and the Venda people allows archaeologists to reconstruct its evolution. This generously illustrated book tells the story of an African civilization that began more than 1000 years ago. It is the first in a series of accessible

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books written by specialists for visitors to South Africa's World Heritage Sites. 2653

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