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This book is dedicated to the following people:

To Mary Leakey, whose dedication to the field and attention to detail at Olduvai Gorge created a truly impressive wealth of archaeological data, without which the present work would never be possible. MDR dedicates this book to Mary, for her unlimited patience, support, and help. With love. CPE dedicates this book to his family and to Amy, the love of his life. RB dedicates this book to her father, Juan Carlos, who was not able to witness the final product.
## Contents

**Contributors** ix  
**Acknowledgements** xi  
**Preface** xiii  

1. The “home base” debate  
   *M. Domínguez-Rodrigo, C.P. Egeland, and R. Barba*  
   1  

2. The Hunting-versus-scavenging debate  
   *M. Domínguez-Rodrigo, C.P. Egeland, and R. Barba*  
   11  

3. The “physical attribute” taphonomic approach  
   *M. Domínguez-Rodrigo, C.P. Egeland, and R. Barba*  
   23  

4. Geological and paleoecological overview of Olduvai Gorge  
   *C.P. Egeland, M. Domínguez-Rodrigo, and R. Barba*  
   33  

5. New estimates of tooth-mark and percussion-mark frequencies at the FLK Zinjanthropus level: the carnivore-hominid-carnivore hypothesis falsified (I)  
   *M. Domínguez-Rodrigo and R. Barba*  
   39  

6. The behavioral meaning of cut marks at the FLK Zinj level: the carnivore-hominid-carnivore hypothesis falsified (II)  
   *M. Domínguez-Rodrigo and R. Barba*  
   75  

7. A cautionary tale about early archaeological sites: a reanalysis of FLK North 6  
   *M. Domínguez-Rodrigo, R. Barba, I. De la Torre, and R. Mora*  
   101  

8. A palimpsest at FLK North 1–2: independent carnivore- and hominid-made bone accumulations  
   *M. Domínguez-Rodrigo and R. Barba*  
   127  

9. A taphonomic study of FLK North 3 and 4: a felid–hyaenid and hominid palimpsest  
   *M. Domínguez-Rodrigo, R. Barba, and E. Organista*  
   165  

10. Zooarchaeology and taphonomy of FLK North 5  
    *C.P. Egeland*  
    191
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Plio-Pleistocene sites are a rare occurrence in the archaeological record. When they are uncovered, the faunal materials so crucial to unlocking their behavioral meaning are often poorly preserved. For example, at Koobi Fora, Kenya, a prolific region that preserves several classic Plio-Pleistocene sites, many bones are affected by poor cortical surface preservation (Isaac, 1997). Such taphonomic vagaries limit the range of questions that can be addressed with these assemblages. In other instances, access to materials can be limited due to local politics or rivalries between individual research teams. As a result, many important assemblages either remain unstudied or have been interpreted without the advantage of a fully developed taphonomic framework, a situation that all but guarantees stagnant interpretations.

After more than half a century of systematic archaeological work in East Africa, most of what is known about hominid behavior during the Plio-Pleistocene still comes from the archaeological sites from Olduvai Gorge in Tanzania. The preeminent role of Olduvai Gorge in discussions of early hominid behavior stems from three major factors: (i) a long tradition of archaeological research spanning nearly five decades; (ii) the low-energy, largely undisturbed contexts in which the faunal remains are preserved, often with pristine cortical surface preservation; and (iii) the accessibility of the materials, which has allowed several researchers to examine the same sites. This combination of factors is unique in East African Plio-Pleistocene archaeology and has stimulated much debate over the socioeconomic function of early sites. Influential models of early hominid behavior in the late 1960s and early 1970s were based exclusively on information from Olduvai Gorge (Leakey, 1971). Although Isaac’s (e.g., 1978) work at Koobi Fora expanded their application, the subsequent critiques, modifications, and reformulations of these models were based almost solely on studies from Olduvai (Binford, 1981, 1984; Bunn, 1981; Potts, 1982, 1988; Bunn and Kroll, 1986; Blumenschine, 1995; Rose and Marshall, 1996; Domínguez-Rodrigo, 1997a, 2002; Plummer, 2004). Having said that, it is also clear that continued work at Koobi Fora and recent research at sites like Kanjera, also in Kenya, promise to expand our knowledge of early hominid behavior well beyond Olduvai (Plummer, 2004).

Some of these studies have made a major academic impact and, given the importance of these issues for understanding human evolution, have been further popularized through books and TV documentaries. However, it is important to realize that the most debated issues, including the existence of a passive scavenging stage in the Plio-Pleistocene (as opposed to hunting or confrontational scavenging), the socioeconomic characterization of early sites (e.g., “Central Places” or “Stone Caches”) and the behavioral complexity of
early hominids relative to extant apes, rest on the assumption that the Olduvai sites, especially those from Bed I, are largely the result of hominid activity. Leakey’s (1971) well-known interpretation of the Bed I assemblages as hominid campsites is a clear example. These interpretations were made when taphonomic applications in archaeology were still in their infancy, and researchers like Bunn (1982), Shipman (1986), and especially Potts (1982, 1988) undertook hands-on investigations of several Bed I sites to test the models of Leakey (1971) and Isaac (1978). Rose and Marshall’s (1996) paper, which drew upon many of these seminal taphonomic studies, summarized the consensus view that hominids were the primary agents in the formation of these sites. (Binford’s [1981] contention – based on outdated secondary data and comparisons with human and nonhuman bone accumulations – that hominids were marginal scavengers and contributed little if at all to site formation, appeared to have been safely refuted by the early 1990s.)

This volume provides a fresh look at this issue, and our analyses present a more complicated picture of site formation during Bed I times at Olduvai Gorge. Our major aim, therefore, is to demonstrate the importance of rigorous taphonomic analyses to the interpretation of archaeological sites. These investigations demonstrate that only the assemblage from Level 22 at the FLK locality (the Zinjanthropus Floor) is almost solely anthropogenic. The other Bed I sites from Olduvai represent exclusively carnivore-collected bone accumulations (FLK North North Levels 1–3), background scatters created in death arenas that favored bone accumulation (FLK North Level 6), or palimpsests in which carnivores and, to a much lesser extent, hominids, contributed to the accumulations (FLK North Levels 1–5 and DK Levels 1–3).

Given that FLK 22 (alternately termed FLK Zinj) is the only Bed I site that is largely the result of hominid activity, its role in understanding Plio-Pleistocene subsistence behavior is more important than ever. Although our study of this assemblage agrees with other analyses that argue for a significant hominid signal, it is also evident that previous estimates of carnivore involvement have been greatly overestimated because natural biochemical marks prevalent on many FLK 22 specimens have been misinterpreted as carnivore tooth marks. Our reexamination also shows that the frequencies and distribution of cut marks are consistent with the processing of completely fleshed carcasses. The systematic nature of these data also suggest that hominids were skilled butchers, indicating that these activities (disarticulating, defleshing, and demarrowing) were an integral part of hominid subsistence behavior during Bed I times. Although the data are not fully conclusive, we feel the possibility that hominids were actively hunting and accumulating carcasses at FLK 22 should again be seriously considered.

Many of these ideas will contradict the current paradigm, which assumes that many Bed I sites are hominid accumulations, that the central tenets of the home base hypothesis have been refuted and that passive scavenging was the major carcass acquisition strategy during the Plio-Pleistocene. However, like the previous Darwinian vision of early hominids as dominant hunters (Darwin, 1871) living in forager-like camps, the current paradigm cannot be reconciled with the latest archaeological and taphonomic data.

Many researchers would argue that archaeological knowledge accumulates gradually, following a continuous progression. This Popperian outlook runs counter to the more pragmatic vision of academia as a circle of power. Both Kuhn (1962) and Lakatos (1978) have argued that academia is often a slave to its paradigms and thus reluctant to modify them. Archaeology is no different. The European tradition, which pioneered the study of early humans, upheld the hunting hypothesis without any real empirical support until the North
American processual tradition introduced new methodologies that questioned this interpretation. Largely through the control of Citation Index journals, this new paradigm was globally incorporated in a relatively short period of time. As mentioned, this volume will both challenge and build upon the ideas espoused by the processual critique of the hunting hypothesis.

It was clear from the beginning that the research conducted on the Bed I archaeofaunas needed to be presented in book form. Given that each site provided a unique taphonomic problem, the analyses are presented independently. When studying multiple sites, it has become customary to combine all sites together in the final analysis. The philosophy behind this approach is that taphonomic processes may affect sites similarly, and if they do not, a uniform analytical approach (which necessarily limits the number of variables used) can detect the differences. However, we advocate a different approach. Each site is the result of a unique depositional history. The collective analysis of a group of sites may use the same set of variables and even the same referential frameworks; however, the uniqueness of any given site is only understood if it is studied as an individual entity. Only in this way can all its defining characteristics (e.g., lithology, postdepositional winnowing, biotic impacts, exposure) be studied together. This is specifically true of the Olduvai sites: despite the similarities among them, each site is distinct from the others in terms of taphonomic history. Previous analyses, which lumped these sites together, produced ambiguous or incorrect interpretations of these sites as natural death and/or carnivore-made assemblages with specific signs of carnivore-hominid interaction (Binford, 1981) or, alternatively, hominid-created stone caches (Potts, 1988). The individual treatment of each site in the chapters which follow has helped differentiate the taphonomic history of one site from another, which in turn has yielded individual site interpretations.

We emphasize the individual nature of site analyses also because each of them is very useful to address specific and different hypotheses: for instance, interdependent or independent multiple agents in site formation (Chapter 8, Chapter 12, Chapter 15), scavenging from leopard kills (Chapter 9), natural death arenas (Chapter 7, Chapter 15), carnivore dens (Chapter 13), and linking carnivore ravaging to paleoecology (Chapter 11). Given the diverse nature of these problems, each chapter could not be homogenized to the exact same format. However, the structure is the same throughout: introduction (describing the problem to be analyzed), results (divided by several sections including, in this order, skeletal part representation, bone breakage, and bone surface modifications), discussion, and conclusion. That is, a similar structure to a paper but without the methods, which are described in Chapter 3.

Chapters 1 and 2 provide the history of research on site formation and hominid behavior during the Plio-Pleistocene in order to place the current analyses into a theoretical and methodological context. This summary is organized around two general issues: (i) the socioeconomic function of early archaeological sites (the home base debate) and (ii) the carcass acquisition strategies employed by hominids (the hunting-versus-scavenging debate). Chapter 3 summarizes various approaches to tackling taphonomic problems, and introduces the methodological underpinnings of our own research, which we refer to as the “physical attribute” approach to taphonomic analysis. The following chapters apply this approach site by site. As the most anthropogenic of the Bed I sites, an in-depth treatment of FLK Zinj is provided. We conclude by discussing the implications of our findings for characterizing the ecological role of hominids within the broader context of Plio-Pleistocene carnivore guild dynamics, at both the site and landscape level.
This project began after a reanalysis of the FLK Zinj fauna (carried out by MDR and RB in November, 2004) revealed significant incongruities with previous research. Advances in taphonomic methods subsequent to the last comprehensive treatment of many Bed I sites demanded analysis of all the Bed I assemblages, and CPE joined the project during the summer of 2005. Each site was analyzed separately under the direction of one of the three authors using specific techniques appropriate to each assemblage. Nevertheless, each analysis is united by the same overarching methodology, and the authors consulted each other and exchanged (sometimes opposing!) opinions at all stages of analysis. It is noteworthy that much of the Bed I equid material reported by previous research was not available to us during our stay at the National Museums of Kenya in 2004–2006, as it is currently on international loan.

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