

# Landscapes of Violence

An Interdisciplinary Journal Devoted to the Study of Violence, Conflict, and Trauma

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Volume 2

Number 2 *Bioarchaeological Perspectives on Violence*

Article 14

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May 2012

## Violence, taphonomy and cannibalism in Chaco Canyon: Discerning taphonomic changes from human action in the archaeological record

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### Recommended Citation

Marden, Kerriann (2012) "Violence, taphonomy and cannibalism in Chaco Canyon: Discerning taphonomic changes from human action in the archaeological record," *Landscapes of Violence*: Vol. 2: No. 2, Article 14.

Available at: <http://scholarworks.umass.edu/lov/vol2/iss2/14>

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# Violence, taphonomy and cannibalism in Chaco Canyon: Discerning taphonomic changes from human action in the archaeological record



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This research was funded by the generous support of two Smithsonian Predoctoral Fellowships, 2007-2008 and 2008-2009.

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The controversial tome on Southwestern cannibalism, *Man Corn*, makes the assertion that “cannibalism was practiced for almost four centuries, beginning about A.D. 900.... especially among people living in Chaco Canyon and in or near outlying Chacoan great houses” (Turner and Turner 1999:2). At the core of the conceptual framework for the identification of cannibalism in the archaeological record is a “minimal taphonomic signature” of cannibal activity, emphasizing that these six features “need to appear in tandem for that interpretation [of cannibalism] to be warranted” (*Ibid*:44). These are: 1) breakage 2) cut marks 3) anvil abrasions 4) burning 5) many missing vertebrae 6) pot-polishing (*Ibid*: 24). These authors maintain that, “although it is theoretically possible that some unknown form of natural, nonhuman taphonomic agency could produce an assemblage of human skeletal remains with these six features, it is unreasonable to believe that such a thing ever happened” (*Ibid*:24). Logical weaknesses in the argument for cannibalism in Chaco have been addressed in detail elsewhere (e.g. Martin 2000; Bustard 2008; McGuire and Van Dyke 2008) and the problematic nature of the interpretation of cannibalism in archaeological human remains has been argued extensively (e.g., Pickering 1989, 1999; Bullock 1991, 1992; White 1992; Arens 1998; Darling 1999; Dongoske *et al.* 2000; Martin 2000; Rautman and Fenton 2005). Yet even the most critical analyses of this theory have argued against it by using the same set of criteria, essentially stipulating the legitimacy of the criteria themselves. This poster focuses on revisiting the taphonomic analysis in order to weigh the validity and reliability of the criteria upon which claims of cannibalism in the Southwest have been based.

## Breakage and anvil abrasion

Breakage is the most common form of damage observed in putatively cannibalized assemblages, with the argument that bones were broken with a hammer and anvil for the alimentary purpose of marrow extraction. Therefore, these two features cannot be separated in the analysis, as both are required in order to discern marrow extraction from any other form of breakage. However, in many of the assemblages Turner and Turner attribute to cannibal activity, the bones that are broken are not, in fact, marrow-bearing elements. For example, in the image below, the Turners demonstrate anvil abrasion on the proximal end of a scapula. This thin, irregular bone would not yield marrow, and therefore does not fit a pattern of distribution for breakage and anvil damage consistent with cannibalism. Rather, this example suggests either that these marks could be caused by another taphonomic agent or that there is another reason for breakage with a hammer and anvil.



It is also important to acknowledge that the extant forensic literature on bone breakage clearly indicates that none of the forms of fracture attributed to cannibalism can be attributed exclusively to human action. Rather, butterfly breaks, spiral fractures, and longitudinal splintering are all common forms of bone damage resulting from numerous and varied agents. Therefore, “modifications such as spiral fractures with impact scars can be difficult to interpret,” requiring “taphonomic models of animal modification and careful scene reconstructions” (Ubelaker 1997:78).

## Cut marks

Distinguishing cut marks from marks caused by other taphonomic agents can be difficult (Potts and Shipman 1981; Behrensmeyer, Gordon and Yanagi 1986). However, Turner and Turner seem to have scored all linear marks on bone as cut marks without discerning these from a host of taphonomic mimics. The image below shows one example of a cut mark provided by the Turners in a putatively cannibalized assemblage. However, the mark is in fact simply a postdepositional scrape, cutting through the patina on the bone and revealing fresh bone surface. This raises questions about the validity of the Turners’ assessment of cut marks, especially in archaeological assemblages excavated in the 19<sup>th</sup>- and early 20<sup>th</sup> century that show a tremendous amount of excavation damage. These authors also do not demonstrate a consistent pattern of widespread distribution of cut marks as has been documented in butchered faunal remains.



## Burning

A distinction must be made between different forms of heat modification and their implications for human intent. Burning exhibits three distinct stages: scorched (superficial burning), charred (blackened, towards charcoal), and calcined (blue-white, loss of all organic material, plastically deformed). These different levels of heat treatment are each suggestive of different practices, as burnt, powdered, or calcined bone indicates far greater heat exposure (in time, temperature, or both) than is required to roast an edible meal. Turner and Turner have treated all suspected heat damage to bone as equivalent, when in fact calcination is more indicative of non-culinary processes. The fact that the remains of two adults were burned in situ within one of the rooms at the small house site Bc 59 indicates that other cultural processes involving heat damage to bone were occurring at Chaco, and that any taphonomic analysis must make an argument discerning between cooking and other processes that involve burning.

## Missing Vertebrae

The criterion of missing vertebrae is among most problematic of the cannibalism traits. Turner and Turner have deduced that the absence of vertebrae is proof that cannibals boiled or crushed, then consumed, their victims’ spinal columns in the form of bone meal. However, taphonomic analysis suggests an alternate explanation for missing vertebrae. Bodies that were well documented in anatomical position in situ often show significant degradation of the axial skeleton, especially those that were placed in a supine position. For example, Skeleton #10 from Room 330 of Pueblo Bonito, pictured below, was mostly in anatomical position in situ but has marked degradation of the thoracic and lumbar vertebrae. Since the condition of many of the collections the Turners examined were affected by selective archaeological collection practices (Hurlbut n.d.), the possibility that severely degraded elements were simply not retained must be considered. Scavenging may also explain some of the missing vertebrae. Actualistic experiments involving natural taphonomic agents have shown that vertebral elements often remains articulated and can therefore be carried off in large anatomical units (Binford 1981; Gifford 1981; Hill 1983; Andrews and Cook 1985; Galloway 1997; Rhine and Dawson 1998). In any event, human cannibal activity is by no means the only possible explanation for the absence of vertebrae in an assemblage.



## Pot polish

Pot polish is the proposed explanation for beveling and/or rounding of projecting parts of broken bones. This is proposed to occur through their circulation in cooking vessels, with results reproduced in actualistic experiments after three hours of constant boiling and stirring (White 1992:122). However, other studies have demonstrated that other taphonomic agents such as wind and water abrasion, application of weight, or sedimentary abrasion are just as likely to have caused identical end-beveling and rounding (Bromage 1984; Shipman and Rose 1984; Shipman 1988). White himself acknowledged that estimates of pot polish must be very conservative, as “there is a chance for superficially similar damage to occur as a result of recovery and transport” (White 1992:124), and that this form of modification has never been observed as a result of cooking alone, but requires constant stirring (*Ibid*:122). Although White’s type case for pot polish at Mancos displayed the modification on only 6% of bones, the Turners found an astounding 41.3% of all bone fragments to bear pot polish in one human assemblage (Turner and Turner 1999:30), suggesting that the Turners may have over-diagnosed this feature in their data. This is supported by images of pot polish from their volume, in which all edges of the bone are smoothed (below, left). This is inconsistent with the theory that projecting parts are smoothed by constant rubbing against the pot. Also, re-examination of the skeletal remains in which Turner and Turner identified as pot polish shows that although some of the bones that they marked show polish on broken ends, the putatively polished projections are often adjacent to unpolished, equally projecting ends (below, right).



The Turners’ research on cannibalism caused a tremendous amount of controversy and has highlighted the potential harm that can result from examining the “body as artifact” (Rautman and Fenton 2005:338), divorced from its cultural context and meaning. However, the present study demonstrates the need for more, rather than less, osteological research. Rather than throwing “the baby out with the bathwater,” (McGuire and Van Dyke 2008), the Turners’ work demonstrates the need for increased osteological research of ancient human remains. Re-examination of skeletal collections generates new perspectives that enrich the extant data, allowing broader interpretations and more nuanced understanding of these remains when considered within their archaeological and cultural contexts.