

Older Burial Disturbance: Postfunerary Manipulation of Graves and Corpses in Precontact Northeastern Brazil

Ana Solari , Sergio F. S. M da Silva, Anne Marie Pessis, Gabriela Martin, and Niede Guidon

At times funerary practices do not end with the deposition of the corpses in their final resting place, because occasionally these supposedly definitive burials are disturbed later. When we can confirm that people were mainly responsible for these disturbances, even when other natural taphonomic factors are present, then we have a situation of anthropic postfunerary manipulation of bodies and graves. Some precontact sites in northeastern Brazil have mortuary contexts with “anomalies” in the deposition of bodies into their graves. Applying a taphonomy-based approach, we analyze these cases and compare them to other burials with similar characteristics from central-eastern Brazil in our discussion of the “alternative” phenomenon of postburial manipulation. The evidence suggests that the anthropic disturbance of older burials and corpses should be understood not as a random event, but as an integral and meaningful part of the mortuary practices of ancient inhabitants from across different regions of Brazil throughout the Holocene. With this work we highlight not only unusual mortuary patterns of precontact human groups in Brazil and South America but also the importance of a taphonomic approach to understanding the complexity and variability of funerary and postfunerary actions.

Keywords: burial disturbance, postfunerary manipulation, archaeoethanatology, funerary practices, Brazilian archaeology

Às vezes as práticas funerárias não terminam com a deposição dos cadáveres em seu local de descanso final, porque ocasionalmente esses sepultamentos supostamente definitivos são posteriormente perturbados. Quando podemos confirmar que as pessoas foram as principais responsáveis por esses distúrbios, mesmo quando outros fatores tafonômicos naturais estão presentes, então temos uma situação de manipulação antrópica pós-funerária de corpos e sepulturas. Alguns sítios pré-contato no nordeste do Brasil evidenciam contextos mortuários com “anomalias” na deposição dos corpos em suas sepulturas. Aplicando uma abordagem baseada na tafonomia, analisamos esses casos e os comparamos com outros sepultamentos com características semelhantes do centro-leste do Brasil, para discutir o fenômeno “alternativo” da manipulação pós-funerária. As evidências sugerem que a perturbação antrópica de sepultamentos e corpos mais antigos deve ser entendida não como um evento fortuito, mas potencialmente como parte integrante e significativa das práticas mortuárias dos antigos habitantes de diferentes regiões do Brasil durante todo o Holoceno. Com este trabalho, contribuiremos para somar conhecimentos sobre padrões mortuários incomuns de grupos humanos pré-contato no Brasil e na América do Sul. Além disso, destacamos a importância de uma abordagem tafonômica para compreender a complexidade e variabilidade das ações funerárias e pós-funerárias.

Palabras claves: sepultamentos perturbados, manipulação pós-funerária, arqueotanatologia, práticas funerárias, arqueologia brasileira

Funerary rituals do not always end with depositing the body in its final resting place; these supposedly definitive deposits are sometimes later disturbed. A variety of natural and cultural taphonomic agents or factors may be responsible for such disturbances. It can also be difficult to distinguish among intentionally manipulated remains, natural taphonomic

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alteration, or accidental disturbances of burials. However, when human agency can be verified as the main cause of the disturbance, we are most likely seeing evidence of the anthropic postfunerary manipulation of bodies and graves.

The postfunerary manipulation of bodies and graves may involve the reopening of previous burials; the disturbance, disarticulation, or reduction of the bodies or skeletons; subsequent tomb reuse and modification of older graves, including exhumation and the destruction or loss of bones; and lastly these bones' redeposition at another place as relics, secondary deposits, or offerings (Fahlander 2010, 2018; Gleize 2020; Hoernes et al. 2019). Postburial interventions beyond the funerary cycle do not involve secondary burials because these types of burials can also be subsequently disturbed (Weiss-Krejci 2011).

In northeastern Brazil, to the southwest of the Piauí State, lies the Serra da Capivara and Serra das Confusões National Parks. The region is rich in archaeological remains of ancient precontact populations: more than 1,000 archaeological and paleontological sites have been identified. Over the millennia, first, hunter-gatherer preceramic groups and, later, horticultural-ceramicist sedentary or semi-sedentary groups seem to have adapted favorably to the environmental changes that took place during the Holocene. The extant material culture bears witness to the long human occupation of this region, as seen in the following: numerous representations of rock art in the Nordeste, Agreste, and Geométrica traditions (Pessis 1992) and the pigments used; lithic tools made of various raw materials; structured hearths for functional or ritual purposes; the skeletal remnants of local fauna and plant remains used as food or modified as ornaments; the remains of basketry and ceramics used for utilitarian and ceremonial purposes; and human interments deposited in graves in the ground or within ceramic containers, among many other archaeological materials (Guidon et al. 2009; Martin 2008; Pessis et al. 2014).

At the majority of excavated sites containing human remains, the most widespread funerary practice among both preceramic hunter-gatherers and horticultural-ceramicist semi-sedentary or sedentary groups was primary individual burials, with the bodies deposited within pits in the

ground or inside ceramic urns, with or without occasional grave goods. Moreover, delayed and redeposited secondary burial practices have also been identified, sometimes with more than one individual. These burials contained individuals of all ages and both sexes in a variety of positions, although the majority were lying extended or seated in a hyperflexed position (Cunha 2014; Martin 1994). Dating of these contexts reveals that the funerary use of these sites occurred from the end of the Pleistocene throughout the Holocene, right up until the period of European contact (Martin 1992).

Some of these sites presented burials with anomalies in the deposits of the bodies pertaining to different instances of postdepositional anthropic disturbance, the focus of this article. Using a taphonomy-based approach known as archaeoethnatology, or funerary taphonomy (Duday 2009; Gligor 2014; Knüsel and Robb 2016; Roksandic 2002; Weiss-Krejci 2011), we present evidence of postdepositional disturbance from four sites across northeastern Brazil. We then compare this evidence with data from other sites in central-eastern Brazil that contain burials with similar characteristics to interpret and discuss further the alternative phenomenon of postfunerary burial manipulation. We seek to highlight the complexity and variability in this practice and examine the different strategies adopted for dealing with human remains from older tombs in precontact Brazil. At the same time, we contribute to the global methodological discussion of the postdepositional anthropic manipulation of bodies and graves in postfunerary archaeological contexts.

Toward an Archaeology of Postdepositional Interactions with the Dead

Before presenting the cases from Brazil, we review the main concepts related to disturbed burials in archaeological contexts from different periods around the world. These theoretical-methodological ideas bring us closer to a bioarchaeological approach for the study of grave disturbances and an archaeology of postdepositional interactions with the dead (Aspöck et al. 2020).

The final resting place of bodies in their definitive burials can sometimes be interfered with through intentional or accidental anthropic actions that occur after the funerary cycle ends. As Weiss-Krejci (2011) states, a definitive mortuary deposition may involve the laying out of an untreated articulated body, but it can also be the first deposition of articulated or disarticulated human remains that have been transformed through dehydration, cremation, or active excarnation. Moreover, this last burial can also be a secondary deposition of human remains that have been collected through temporary storage, exhumation, or reburial. Thus, after the funerary cycle ends, this resulting final corpse deposition can itself be subject to diverse postfunerary actions.

According to a number of authors researching burial disturbance (Aspöck 2011; Aspöck et al. 2020; Cauwe 2001; Crangle 2016; Duncan 2005; Fahlander 2010, 2018; Gleize 2020; Hoernes et al. 2019; Nilsson Stutz and Larsson 2016; Weiss-Krejci 2011, 2020; Zielo 2018), these postfunerary actions can include a variety of ritual and nonritual manipulations of the human remains and grave goods, including disturbance of bodies and graves in the original resting place, exhumation and redeposition of bones, curation or loss of bones, comingling of human and animal remains, and the disarticulation and rearticulation of skeletons. The myriad reasons for postburial interventions include grave reuse; ancestral rites of appropriation, veneration, and commemoration; relic cults; tomb visits and tomb renewal rites; accidental superimpositions on disturbed unmarked older graves; and grave robbery, looting, and desecration.

Furthermore, in agreement with Crangle (2016), the term “postdepositional disturbance” refers to the intentional or accidental displacement of an individual or part of that individual within or from their final burial location at some point after their interment by human agents. It includes any movement of fleshed or skeletal human parts from their original context that occurs after the complete decomposition and disarticulation of the corpse. Generally, it ends with the removal and relocation of part or all of the buried individual to another place.

In addition, following Duncan (2005), these disturbances may not have been planned at the

time of the initial or final burial; that is, the partial or total disinterment of bones and skeletons from older burials may have been carried out later accidentally or intentionally. Nevertheless, their disturbance may still have been significant from a sociocultural perspective. Doing something with the rediscovered bones, rather than leaving them undisturbed, could be considered the deliberate result of a variety of symbolic processes ranging from “violation” to “veneration” of the dead.

In turn, Hoernes and colleagues (2019) argue that the different postfunerary manipulations of older deposits or the diverse practices used to deal with preexisting graves, especially reused graves, were often regarded as practical and incidental activities. The reopening, manipulation, and redeposition of the material remains of previous burials, including both bodies and associated goods, would have been full of meaning and social significance. This practice of so-called revisiting the dead can be interpreted socially and symbolically as a way to reinforce connections between the living and the dead, thereby maintaining and prolonging intergenerational ancestor memories. In such cases, complex funerary cycles of deposition, relocation, manipulation, and redeposition of reused older tombs result in what the authors call palimpsest-like assemblages where distinguishing between former and new interments is sometimes problematic.

A bioarchaeological approach to the study of grave disturbances shows that postburial actions involving various means of reopening, reusing, disturbing, and manipulating bodies and body parts (especially skulls) in their graves occurred commonly across different prehistoric and historic periods (Aspöck 2011; Aspöck et al. 2020; Cauwe 2001; Crangle 2016; Duncan 2005; Gleize 2020; Nilsson Stutz and Larsson 2016; Weiss-Krejci 2020; Zielo 2018). Although grave disturbances are found around the world, South America stands out for its examples of body manipulation and disturbed burials. They occurred in various regions of the subcontinent from the Early through the Late Holocene. Practices that involved the postmortem management and treatment of bodies and skeletons involved defleshing or dismemberment by cutting and

fracturing, partial or total removal of certain bones or complete skeletons, recovery of bones from primary burials and reburial of isolated anatomical units, the painting of bones with mineral pigment (generally red ochre), exposure to fire, and mummification (Arriaza et al. 1994; Berón and Luna 2007; Dillehay 1995; Martínez et al. 2012; Millaire 2004; Santoro et al. 2005; Strauss et al. 2015, 2016).

Material and Methods

We selected four archaeological funerary sites with “anomalous” burials located in northeastern Brazil—Toca do Enoque, a preceramic site in the Serra das Confusões National Park, and the ceramic sites of Toca do Gongo I, Toca do Gongo III, and Toca da Baixa dos Caboclos in the Serra da Capivara National Park, in Piauí State—for reanalysis using an archaeoethanatology approach to the collated field and laboratory data. Doing so enabled us to determine the actions of the natural and cultural taphonomic agents that affected the mortuary deposits and then to interpret the causes of the anomalies observed in the burials and on the bodies.

Additionally, we undertook a critical assessment of four archaeological sites in another region of Brazil, focusing on cases that presented similar anomalies in their mortuary contexts and were potentially comparable with our northeastern funerary contexts. These four sites are Lapa das Boieiras, Lapa do Malhador, Santana do Riacho, and Lapa do Santo, all in the state of Minas Gerais. Figure 1 shows the location of all the Brazilian archaeological sites discussed in this text.

The methodology that we used to analyze potentially disturbed funerary bone assemblages is known as archaeoethanatology, or funerary taphonomy (Duday 2009; Gligor 2014; Knüsel and Robb 2016; Roksandic 2002; Weiss-Krejci 2011). Its aim is to reconstruct and interpret funerary practices through the study of human skeletal remains and their associated contexts using contextual taphonomic evidence. Ultimately, it seeks to understand the thinking and attitudes of ancient populations toward their dead and how they

manifested through actions related to the treatment and handling of corpses from the death of the person to their final deposit as part of the funeral cycle and, also beyond, in any extra- and postfunerary processes.

This methodology uses two types of data, one collected in the field and another set observed in the laboratory. In combination, these two datasets allow us to reconstruct the deposit formation process and its history after final deposition. This method permits us to recognize and classify bone assemblages; quantify the number of individuals or estimate the minimum number of individuals (MNI); observe second-order relationships between bones, which refers to the pairing of bones belonging to the same individual in cases of mixed or fragmented bones; and discern the types of taphonomic modifications to which the bones were subjected by natural or cultural agents or forces, including fracture patterns or evidence of burning (Botella et al. 2000; Duday 2009; Gligor 2014; Knüsel and Robb 2016).

Moreover, this approach is very useful in the study of bone deposits containing mixed, disarticulated, dispersed, or fragmented human and sometimes animal remains; such deposits are found commonly at archaeological sites (Adams and Byrd 2008; Ubelaker 2002). They may be the result of different burial practices and natural taphonomic processes, such as catastrophic events that produce mass burials or pits, collective ossuaries, secondary deposits, long-term accidental accumulations in caves or sinkholes, and postdepositional disturbances (Knüsel and Robb 2016). Occasionally, some of these mixed contexts may contain burned remains that require careful excavation, systematic removal, and the use of appropriate methods for an accurate skeletal analysis (Naji et al. 2014; Schmidt and Symes 2008). A detailed analysis of burned bones enables taxonomic separation, quantification of the MNI, and identification of the biological profile of individuals, of natural and cultural taphonomic agents and processes, and of the types of bone modification and destruction that determine the taphonomic history of bone assemblage composition and formation. This analysis can also identify the process and method of the

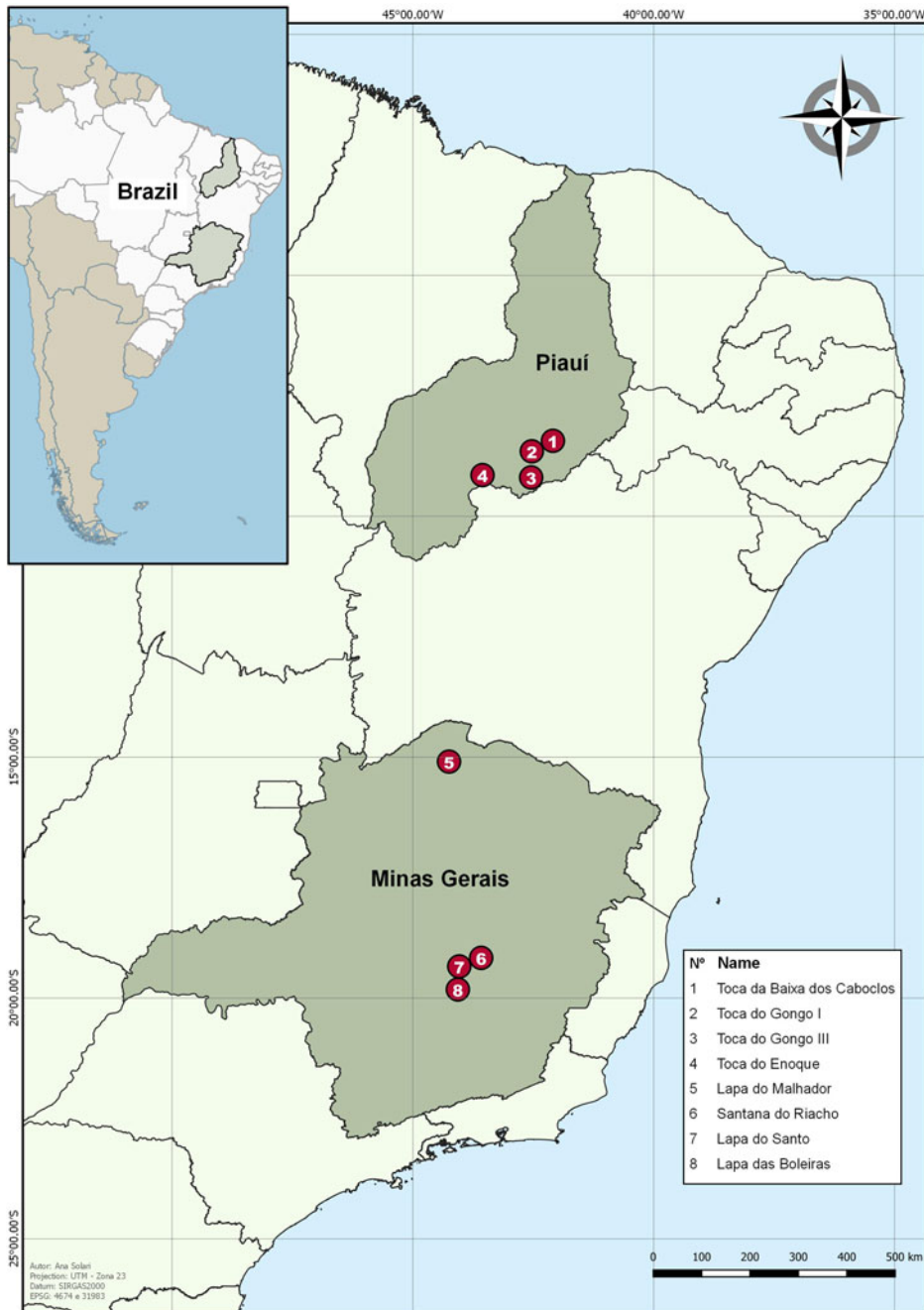


Figure 1. Geographical location of the archaeological sites from northeastern and east-central Brazil mentioned in the text: (1) Toca da Baixa dos Caboclos; (2) Toca do Gongo I; (3) Toca do Gongo III; (4) Toca do Enoque, Piauí State, northeastern Brazil; (5) Lapa do Malhador; (6) Santana do Riacho; (7) Lapa do Santo, and (8) Lapa das Boleiras, Minas Gerais State, central-eastern Brazil.

combustion of burned bones, including temperature reached, duration of exposure to fire, and the type of combustion environment

involving oxidation and reduction reactions. Finally, the initial pre-burned status of the remains must be clarified, especially if they

are fresh bones (with or without soft tissue) or dry bones.

Results: Evidence of Disturbed Burials in Brazil

Reanalysis of Four Sites in Northeastern Brazil

In this section, we present the results recorded for the four reanalyzed sites from northeastern Brazil and then compare them with four other sites from central-eastern Brazil, for which previous publications suggested potentially comparable disturbed burial practices. Based on the taphonomy-based approach that we used, some burials presented types of anomalies associated with the deposit of the bodies and graves that differed from traditional funerary behaviors known for the regions and periods. Both the contextual observations made in the field of the osteological assemblages and our subsequent reanalysis in the laboratory made it possible to reconstruct and interpret the anomalies of each disturbed burial. Taken together, it was then possible to assess the postdepositional interactions with the dead in each grave.

Toca do Enoque (Guidon and Luz 2009) was a funerary site occupied by preceramic hunter-gatherer groups during the Middle to Late Holocene, from 6620 ± 50 BP to 3430 ± 40 BP (Solari, Pessis, Martin, Barbosa, and Monteiro da Silva 2020:4). At the site, three human burials were found that contained a total of 12 individuals. Burials 1 and 3 were primary and individual, whereas Burial 2 contained several individuals and complex characteristics associated with continuous use, including various reopenings through time (Solari, Pessis, Martin, and Guidon 2020). Burial 3 also presented some anomalies, which we interpreted as signs of intentional postmortem disturbance or postfunerary anthropic manipulation.

Burial 3 was characterized as a primary interment of an adult male whose body's original position and orientation were unknown, given the postdepositional cultural and natural taphonomic disturbances of the site. At the time of excavation, the burial appeared as an oval-shaped grave pit with stone blocks. The pit contained dark sediment, a product of the abundant plant remains (leaves, seeds, wood) that were part of

the burial. Within the funerary structure were the incomplete remains of an adult male individual; this partial skeleton was disarticulated, lacked anatomical connection, and was scattered and disorganized.

In parts of the burial pit, we observed burned areas, the remains of bonfires, and abundant coals and ashes along with some partially burned human bones, as well as large stone blocks among the skeletal remains. There was also a termite nest within the burial area. Although we observed partial termite damage on the bones of this individual, these natural agents were neither the main nor the only taphonomic agent responsible for the state of the body (Solari, Pessis, Martin, Barbosa, and Monteiro da Silva 2020): the slightly burned condition of some bones (mandible and left ulna) and the absence of several other bones were better explained by deliberate postfunerary anthropic action.

Consequently, we consider one explanation for the state of Burial 3 to be the premeditated disturbance of the burial, which was done to remove bones and acquire relics for reuse in other burials. This idea gains credibility by the presence of redeposited isolated adult human bones, interpreted as "corporeal relics" (Walsham 2010), among the funerary offerings of one of the subadults (Individual 9) from the multiple and complex Burial 2 at the same site (Solari, da Silva, Pessis, Martin, and Guidon 2020). Although these extra bones (an adult ulna and two patellas) did not correspond to any of the individuals buried in the three burials at the site, they are evidence for the practice of bone exhumation from ancient tombs for redeposition within other tombs.

Toca do Gongo III (Solari et al. 2018) was a burial site occupied by horticultural-ceramic groups during the more recent Late Holocene, from 580 ± 30 BP to 400 ± 30 BP (Solari et al. 2018:176). Here, 11 individual human burials and a double burial were discovered that included corpses deposited in either grave pits or ceramic urns. Additionally, some of these funerary contexts were mixed types—with bodies in grave pits but the heads in ceramic urns. Among the interments, Burial 3 stood out as a primary individual deposited within a grave pit, but with signs of postfunerary anthropic

disturbance suggesting that it was originally a mixed-type burial.

Burial 3 was of a three-year-old subadult individual of unknown sex, deposited in an extended dorsal position. A semi-articulated complete postcranial skeleton was found partially disturbed, with the skull and mandible not present. Not even a single fragment of the cranial bones or teeth was recovered. Even though the main natural taphonomic agents that damaged the bone tissue of various skeletons at the site were the soil's acidity and root action, the presence of all segments of the postcranial skeleton of Burial 3 makes the complete absence of the head bones best explainable through the action of human agents.

To understand and provide a plausible explanation for the disturbance of Burial 3, we referred to undisturbed Burial 1 at the same site. Burial 1, an example of a mixed burial type, was an undisturbed, primary individual interment of a subadult of unknown sex. The body was deposited in an extended dorsal position within a grave pit, but with the particularity of having its head contained in a ceramic urn. This mixed-type mode of deposit led us to focus on the original context of Burial 3 before its subsequent disruption. As such, we propose that the complete absence of the skull and mandible, including all teeth, in Burial 3 was potentially due to its head having been exhumed while being contained within a ceramic urn, as in Burial 1.

Toca do Gongo I is another funerary site used by horticultural-ceramic groups during the Late Holocene, with a single date of 2090 ± 110 BP (Cook and Mendonça de Souza 2012:32; Maranca 1976, 1987). During excavation at the site, six burials were identified. Among them were direct deposits of bodies in grave pits and indirect deposits of bodies within ceramic urns, including adults of both sexes and subadult individuals. The individuals were found in a fetal position, lateral or seated. There was also one mixed burial type, with the body in the grave pit and the head in a ceramic urn, as in Burials 1 and 3 at Toca do Gongo III. Furthermore, disarticulated bones and bones in unnatural anatomical positions were also observed in some of the burials.

A previous bioarchaeological analysis of Toca do Gongo I, made by Cook and Mendonça

de Souza (2012), revealed a total of 18 individuals. This was considered a high MNI in relation to the number of burials. Of the 18 individuals, only six were complete or partially complete skeletons with anatomical connection. The other 12 were represented by a few loose bones or teeth. Along with the high number of individuals represented per burial, there was also significant variation in bone preservation among the individuals found within each funeral structure. Those characteristics led Cook and Mendonça de Souza (2012) to infer that the exhumation of corpses occurred after these ancient burials. After exhumation, some bones seem to have been left in their original burial place, either accidentally or intentionally, with the same location then being reused for new burials. Another interpretation was that some bones from other burials, including from another site, may have been deliberately removed and placed here to accompany the new burials. Our reanalysis of the field and laboratory data supports the results and interpretations of Cook and Mendonça de Souza (2012), indicating that there was accidental mixing of the bones through the reuse of the same burial structures and the intended placement of old bones within new burials, possibly as relics or offerings.

Toca da Baixa dos Caboclos (Guidon et al. 1998) was a funerary site occupied by horticultural-ceramic groups during the more recent Late Holocene, from 371 ± 40 BP to 230 ± 50 BP (Mendonça de Souza et al. 2002:88). The site contained nine burials, in which eight of the corpses were deposited indirectly into ceramic funerary urns and the other was deposited directly in a grave pit (Burial 6). These were all primary individual burials of both adults and subadults; most were seated in a fetal position inside the ceramic urns. In some burials both natural and cultural postdepositional taphonomic disturbances were observed. This was especially apparent in Urns 4 and 5, in which the skeletons were found to be highly fragmented, with very few human bone remains (less than 10% of each skeleton, MNI: 2) intermixed with other material (bones and ceramic) from the two nearby mortuary contexts. Yet in this site, the most unusual case was Burial 6: the only direct burial in a grave pit, it contained an

almost complete skeleton of an adult male, semi-articulated in the lateral fetal position and partially disturbed, with some bones not present. The absent bones were the skull, mandible, and other postcranial bones (three vertebrae, six ribs, one clavicle, one humerus, and both patellas).

Even taking into consideration the effects of natural taphonomic agents—termite damage was observed during our reanalysis of Burial 6—our review of the site data led us to conclude that human agents were the main cause of the postdepositional disturbances found within this burial. Human action would explain the complete absence of certain bones and the existence of fracture marks in some bones. These fracture marks had not been registered during the previous analysis of this assemblage. Intentional fractures were observed on the distal extremities of some long bones (right radius and ulna), several ribs, and the right scapula; these fractures represented blows on fresh bone, meaning they were perimortem fractures in bones with collagen content (Botella et al. 2000).

Comparative Evidence of Disturbed Burials from Central-Eastern Brazil

A literature review of analogous archaeological sites showed that some burials in the east-central region of Brazil in the state of Minas Gerais, principally in Lagoa Santa, also involved the postdepositional deliberate manipulation of bodies; they included many examples of complex secondary burials alongside more traditional primary burials. These sites date from the Early to the Late Holocene and are mainly associated with hunter-gatherer preceramic groups (Strauss 2010).

Lapa das Boleiras dates to the Early Holocene, between about 8000 and 9000 yr BP (Neves et al. 2002:84). During the first excavations in 1956, two primary burials were discovered, which contained five individuals in total with cut marks on two of them. The cut marks observed on the diaphyses of the tibias and femurs were carried out to remove the epiphyses. Re-excavation of the site in 2001 uncovered three new burials, all containing parts of disarticulated skeletons. One was clearly a secondary burial (Burial 3); the authors do not rule out bioturbation as a possible explanation for the

disorganized configuration of the other two burials. Secondary Burial 3 contained several arm and leg long bones of a young individual, arranged parallel to each other to form a bundle that was placed inside a skullcap or cranial vault. The bones were painted with red ochre. The proximal epiphysis of the left ulna was removed, evidenced by cuts similar to that observed in the burials from the 1956 excavations. Thus, the reopening of the tomb and anthropic manipulation of the skeleton were required to create this arrangement.

At the site of Lapa do Malhadador, three primary individual burials were recovered, of which Burial 1, an interment of an adult female individual, evidenced striking intentional human manipulation (Prous and Schlobach 1997). This partially articulated skeleton was in an anatomical position but was missing skeletal segments, including long bones, the feet, and many ribs. The individual had cut marks around the wrist and along the distal extremities of both diaphyses of the left radius and ulna; the rest of the bones of the forearm and arm—the left radius, ulna, and humerus—were absent. On this basis, they concluded that the skeleton was manipulated during the digging of a new grave after this burial. Although no direct dating results were obtained due to the absence of collagen, the authors considered this grave to be from a preceramic level belonging to the Middle Holocene, from about 7000 to 4500 years BP (Prous and Schlobach 1997:3).

The Santana do Riacho rockshelter (Prous 1992–1993), included two occupations associated with human burials: occupation Santana do Riacho 1 was dated to the Early Holocene between about 11,900 and 8400 yr BP, and the more recent occupation, Santana do Riacho 3, dated to the Late Holocene between about 3000 and 2500 yr BP (Strauss 2010:56). The second occupation did not have any human burials; however, in occupations 1 and 3 were burials that had bones in nonanatomical connection and skeletons with missing body parts. The authors inferred that these anomalies could have been the result of postdepositional taphonomic natural processes or agents, accidental anthropic disturbances made in subsequent burials, or the intentional manipulation of the corpses during the

funerary process as ritual behavior involving a certain degree of body reduction.

According to Strauss (2010), at Santana do Riacho 1, 28 funerary structures were recovered, mostly of primary and individual, nondisturbed burials. There were exceptions: Burial 10 had an almost complete skeleton that was missing the bones of its feet, and Burials 21 and 23 consisted solely of foot bones. At Santana do Riacho 3, some primary and undisturbed burials were discovered, as well as a secondary one (Burial 7) with the long bones deliberately manipulated and arranged on top of each other. Burials 1, 2, 3, and 6 contained partially articulated skeletons with missing long bones. In addition to these burials, a unique funerary deposit containing only human teeth from various individuals was recovered.

Finally, it is important to highlight the Early Holocene Lapa do Santo site, given its elaborate mortuary rituals where the bodies of the deceased were used as symbols (Strauss 2010, 2016). The site contained 26 human burials characterized by a great variability in funerary practices, from simple articulated primary burials to complex secondary ones. Several of the burial patterns involved postdepositional manipulation of the bodies and graves. Burial Pattern 2 dated to 9400–9600 cal BP (Strauss 2016:243) and had three subpatterns: 2A were burials that included articulated skeletons that were missing anatomical parts removed during perimortem manipulation; 2B consisted of disarticulated bones of more than one individual and a selection of anatomical parts, sometimes with burn marks, cut marks, or ochre application; and 2C comprised isolated bones with cut or burn marks. Another manipulated context was Burial Pattern 3, dated to 8200–8600 cal BP, comprising shallow circular pits, with each pit including the disarticulated and disordered complete skeleton of a single individual (Strauss 2016:243); the long bones of these individuals had perimortem fractures on fresh bone. Burial Pattern 4, dated to 8798–9029 cal BP, was a context of articulated skeletons with missing limbs (Strauss 2016:266). Other secondary burial patterns included a cremation, red pigmented bones, and an isolated set of human teeth. The diversity of the skeletal manipulations recorded in the burials

of Lapa do Santo shows the remarkable complexity in funerary behavior of the inhabitants of central-eastern Brazil from as long ago as the Early Holocene.

Discussion

The selected Brazilian cases presented here cover a wide temporal and spatial range, encompassing the northeastern and central-eastern regions of Brazil through millennia from the Early to the Late Holocene. These mortuary contexts exhibit different types of postburial interventions with corpses and tombs, most of them involving manipulation of human remains from previous (primary and secondary) burials. A taphonomic approach reveals that even in cases where the action of natural taphonomic agents or factors was noted, the anomalies in the skeletons and graves were better explained by anthropic, intentional, or accidental postdepositional actions. Table 1 summarizes the principal characteristics from the surveyed sites, demonstrating the degree of postburial disturbance occurring during different Holocene periods in Brazil.

All four northeastern sites exhibited indications of ancient tomb reopening of primary individual burials—and every reopened burial had evidence of partial disarticulation or reduction of skeletons and the exhumation of bones—mainly of heads at Toca do Enoque, Toca do Gongo III, and Toca da Baixa dos Caboclos; yet other postcranial bones were also removed, and nearly complete skeletons were exhumed at Toca do Gongo I. Although postdepositional bone or skeletal disinterment occurred at every site, it seems that Toca do Gongo I was the only site at which there was systematic grave reuse for the interment of new bodies through time. For the other three sites, a plausible explanation for the removal of bones was to reuse these body parts for subsequent redeposition as “corporeal relics” in other graves (Walsham 2010). This was suggested by the case of Individual 9 in Burial at Toca do Enoque, even if other motives cannot yet be ruled out.

Almost all burial sites in the central-eastern region also showed evidence for intentional postburial manipulation of secondary burials. Indeed, some of the types of disturbance

Table 1. Synthesis of the Sites with Atypical Burials.

Site	Region	Period	Atypical Burial(s)	Description of Burial(s)	Number of Individuals	Principally Anthropic Manipulations	References
Toca do Enoque	Northeastern	Middle to Late Holocene	Burial 3	Individual primary disturbed burial	One individual	Disarticulated incomplete skeleton with removal of several bones	Guidon and Luz 2009; Solari, Pessis, Martin, Barbosa, and Monteiro da Silva 2020; Solari, Pessis, Martin, and Guidon 2020
Toca do Gongo III	Northeastern	Recent Late Holocene	Burial 3	Individual primary disturbed burial	One individual	Semi-articulated skeleton with removal of cranial bones	Solari et al. 2018
Toca do Gongo I	Northeastern	Late Holocene	Burial 1 to 6	Consecutive reuse of primary individual burials	18 individuals	Six complete articulated skeletons and extra isolated bones from several other individuals	Cook and Mendonça de Souza 2012; Maranca 1976, 1987
Toca da Baixa dos Caboclos	Northeastern	Recent Late Holocene	Burial 6	Disturbed individual primary burial	One individual	Semi-articulated skeleton with removal of several bones and perimortem fractures from blow marks	Guidon et al. 1998; Mendonça de Souza et al. 2002
Lapa das Boleiras	Central-eastern	Early Holocene	Burial 3	Disturbed individual secondary burial	One individual	Disarticulated skeleton with red ochre and cut marks for removal of epiphysis of certain long bones	Neves et al. 2002; Strauss 2010
Lapa do Malhador	Central-eastern	Middle Holocene	Burial 1	Disturbed individual primary burial	One individual	Semi-articulated skeleton with cut marks for removal of several bones	Prous and Schlobach 1997; Strauss 2010
Santana do Riacho	Central-eastern	Early and Late Holocene	Several burials from Occupation 1 and 3	Disturbed primary and secondary burials	Several individuals	Semi-articulated skeletons with removal of several bones, and isolated human bones	Prous 1992–1993; Strauss 2010
Lapa do Santo	Central-eastern	Early Holocene	Several burials from Patterns 2, 3, and 4	Disturbed primary and secondary burials	Several individuals	Semi-articulated skeletons with removal of several selected bones, isolated human bones, disarticulated skeletons, perimortem cut marks and fractures.	Strauss 2010, 2016

recorded there have no analogue in the north-eastern region; nevertheless, there were also comparable cases of primary postdepositional disturbance. Individual primary burials were observed with almost complete articulated skeletons, evidencing the exhumation of selected bones or bone segments, some of which had perimortem cut marks related to their removal. These trauma marks were due to perimortem fractures on fresh bone, as in Toca da Baixa dos Caboclos. In addition, for some burials in the northeast region we have evidence for skeletal reduction, including the removal of bones, without knowing what their final destination was, whereas in the central-eastern region we have the opposite: bone relocation in secondary burial contexts but without knowing the origin of these bones. Noticeably, interactions with the dead in both regions were shown to be highly varied and complex.

Considering that all these types of postdepositional disturbances were socially and culturally meaningful, how should we understand these “alternative” attitudes toward previously buried individuals? Fahlander (2016) and Fahlander and Oestigaard (2008) have stated that one of the fundamental aspects of death is its materiality. To begin to answer this question, we must focus on the materiality of death, bodies, burials, and the beliefs of each society. And to understand these material aspects of death we should adopt an approach that aims to address the totality and complexity of relations between the dead and the living. At the same time, the materiality of the body as a whole and its parts—both as metaphorical and real objects—can help us comprehend the practice of burial disturbance. According to Sofaer (2006), the body is used as a symbol to represent social and political hierarchies, beliefs, and values, including a sense of belonging and the social identity of both individuals and communities. Consequently, it can be argued that the body and body parts, when expressed as material culture, act as a symbol in the framework of postfunerary activities; that is, the handling of the body and body parts, especially in the context of manipulated and disturbed burials, guaranteed the symbolic effectiveness of the postburial interventions (ritual or not) with the dead. Thus, the postburial actions on older graves, seen across the different

Brazilian mortuary contexts presented here, can be considered as alternative ways of relating to the materiality of the dead by precontact societies in the past.

Certainly, more archaeological sites from other regions of Brazil should be reanalyzed to expand this initial study, because many burials classified as disturbed or even secondary might well be primary or secondary burials affected by different types of postfunerary anthropic manipulations. It is probable that many of those anomalous contexts were not correctly observed, reconstructed, or interpreted for lack of an adequate archaeoethanological approach (as presented here) to understand postdepositional interactions with the dead.

We discussed the presence of supposedly definitive graves (primary burials and sometimes secondary ones) that had anomalous signals, thereby identifying some less well-known patterns of disturbed postfunerary burials. The results obtained from archaeological sites in northeastern Brazil, when compared to similar contexts from central-eastern Brazil, make it clear that even final tombs (primary or secondary) were affected by postdepositional anthropic disturbance. A knowledge of traditional Brazilian funerary patterns suggests that primary and secondary burials were not solely graves for the last disposal of the dead but rather dynamic mortuary contexts that encapsulated life and the afterlife, leading occasionally to the living revisiting the dead, including effecting transformations of these previous burials. Here, our focus on disturbed burials allowed us to suggest alternative dimensions to the mortuary patterns of precontact human groups in Brazil.

Conclusion

A bioarchaeological study centered on burial disturbance and postdepositional interactions with the dead can be a valuable source of data. Comprehensive analysis of the archaeological and taphonomic record left after the reopening and manipulation of older graves allows for a better understanding of postburial actions and increases our knowledge of the potential meanings and motivations behind these practices of intentional or accidental postburial disturbance.

The data presented here reveal that these “alternative” mortuary practices of postfunerary manipulation of older funerary deposits were probably more systematically widespread—both spatially and diachronically—than previously thought. We therefore suggest that the disturbance of previous burials and corpses should be understood not as a haphazard event but as an integral and meaningful part of the mortuary practices of the ancient inhabitants across many regions of Brazil throughout the Holocene.

Cultural and ideological attitudes toward death, the afterlife, or between the living and the dead persisted well beyond the final inhumation of a body, be it primary or secondary; these beliefs were manifested in the intervention in supposedly final deposits and other postburial activities. Significant human disturbance of older graves and the exhumations and redeposition of bodies and body parts are but some of the manifestations in the materiality of death of past populations in South America and elsewhere.

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Data Availability Statement. Data from northeastern Brazilian sites, including unpublished photographs from disturbed burials and manipulated human remains, are available for consultation at the Fundação Museu do Homem Americano (FUMDHAM) by contacting the institutional e-mail (fumdam@fumdam.org.br) or through the corresponding author. No original data were presented in this article for the central-eastern Brazilian sites.

Competing Interests. The authors declare none.

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