

Appendix XIX

LAZARET 3 AND THE ORIGINS OF COMPASSION

par
Jeremy M. DeSilva¹

Hominin fossils are extraordinarily rare gifts, providing those of us lucky enough to find them and work with them the opportunity to contribute to the first evidence-based human origin story. Every one of these precious fossils has a story to tell. And every one of these fossils, whether a fragmentary parietal, or a deciduous canine, deserves to have its story told. We owe it to our ancestors and extinct relatives to squeeze every bit of information we can out of the remains they left us. But, this can take decades of exploration, painstaking scraping and sifting of ancient soils, careful analysis, and ultimately, in this case, the production of a nearly 900-page book. *Les Restes Humains Fossiles de la Grotte du Lazaret* is a fitting testament to the dedicated work of Marie-Antoinette de Lumley and Henry de Lumley in their journey to understand the Pleistocene inhabitants of Lazaret Cave. But, in these rich pages, there was one fossil that grabbed my attention more than the others. Perhaps it is because I am interested in juvenile brain growth, or perhaps it is simply because I have young children, and constantly worry about them. Whatever the reason, Lazaret 3, the right parietal of a ~9 year-old, is a wonderful example of the behavioral complexity of our predecessors, and the stories that old bones tell.

The biparietal diameter of Lazaret 3 (132 mm) precisely matches that found in La Quina 18, a ~7 years-old Neandertal with a brain estimate of 1266 cc (Holloway *et al.*, 2004). This value is consistent with the Holloway *et al.* (2004) brain volume estimate of between 1200-1300 for Lazaret 3. Given that full, or nearly full, brain volume is reached in humans before the age of 9 years-old, it is likely that Lazaret 3 had stopped growing its brain. At this size, it would be similar in size to that found in Gibraltar 1, Tabun, and Saccopastore 1, regarded by many (e.g. Wolpoff, 1999) to be females. It is reasonable, therefore, to hypothesize that Lazaret 3 was a young female. Additionally, and the real reason I was drawn to this fossil, is that she preserves evidence for a healed parietal fracture (de Lumley *et al.*, 2018). Some traumatic event detached the outer table of the cranial bone of her right parietal. The endocranial surface preserves evidence for increased vascularization; while the exocra-

nial surface remodeled and developed a callus. Obviously, the child died at a young age; but, she did not die from this wound. She healed, and temporarily survived.

Once as a young child, I chased my dog around the house, fearlessly leaped at her, and flew headfirst into the cast iron radiator. I stood up, quite dazed, and began crying not because of the pain, but because of the shrieks of horror coming from the mouths of my siblings. Blood was pouring down my face. A few stitches later and I was fine. But, parents of energetic young kids know that head wounds bleed. A lot. No matter how it happened, Lazaret 3 would have bled considerably, and likely would have been vulnerable to infection. Stitches were not an option, making it increasingly likely that someone took care of her, and her injuries, until she recovered.

While still controversial to some, I find the evidence for compassion, empathy, and conspecific care in our hominin ancestors and extinct relatives more and more compelling. Most are well aware of Shanidar 1, whose disfigured arm, arthritic body, blind eye, and compromised hearing helped jumpstart a still on-going transformation of the Neandertal from violent brute to compassionate human (Solecki, 1971). A pre-Neandertal juvenile from Sima de los Huesos had craniosynostosis, a premature closing of the cranial sutures that often results in mental impairment. Yet, this child continued to live for several years with what would have been a quite obvious developmental disorder (Gracia *et al.*, 2009). It is hard to imagine how this could have happened without constant devotion from a caretaker. KNM-ER 1808, an African *Homo erectus* from ~1.53 million years-ago, may have suffered from the bacterial infection yaws (Rotschild *et al.*, 1995). This infection most often inflicts children, yet the 1808 individual grew into adulthood. Perhaps he did this on his own, but more likely he benefitted from the help of others. The question of whether *Homo erectus* exhibited conspecific care received additional support recently in the form of an edentulous skull from Dmanisi, Georgia. D3444 is an elderly individual who had lost all of his teeth and did not have the ability to chew his food for several years (Lordkipanidze *et al.*, 2005). Yet, he continued to live. In the absence of fire (or blenders) it is difficult to conceive of how D3444 survived without others collecting, and chewing his food for him.

But, it does not stop there. In even earlier hominins, evidence for empathy, compassion, and care for the injured is not found in the craniodental remains, but in fossilized postcranial bones.

1. Professeur Jeremy M. DeSilva, Dartmouth College, Department of Anthropology, Hanover New Hampshire, 03755, 3547 6047, Silsby Hall (603) 646-1849, U.K.
Mail: Jeremy.m.desilva@dartmouth.edu

Bipedalism has its benefits—humans are energetically efficient and have freed their hands from the responsibilities of travel. But, it also has its costs. Humans are slow animals, vulnerable to predation, and are inherently unstable, navigating on two rather than four supports. An injured quadruped can limp along on 3 supports and have a chance at survival; a severely injured biped is presumably as good as dead without assistance. And, for many, that was indeed the outcome; the many carnivore tooth impressions found on Plio-Pleistocene hominin fossils demonstrate our vulnerabilities. However, many of our injured hominin predecessors healed, and survived. The lower leg of OH 35 recovered from a high ankle sprain (Susman, 2008) that would have kept her immobile for days, if not weeks. KNM-ER 738 is an early hominin femur that preserves evidence for a healed fracture (Walker, 1973)—one that takes ~4-6 months to repair in modern humans. Somehow this hominin survived long enough with a broken femur for it to heal. I cannot fathom how this could have happened without assistance. Others show evidence for slow, degenerative diseases that would have benefitted from group help: OH 8, the foot of an elderly individual with osteoarthritic growths along the lateral side of the foot and the ankle joint (Weiss, 2012); and a 1.7 million-year-old foot bone from Swartkrans, South Africa which shows the earliest evidence for an aggressive bone cancer (Odes *et al.*, 2016).

How far back does this go? Lucy has a back pathology similar to Scheuermann's disease (Cook *et al.*, 1983) that would have compromised her posture and possibly her walking mechanics. A 3.6 million-year-old *Australopithecus* skeleton nicknamed Kadanuumuu possesses osteophytic growths along the rim of his distal tibia, which are evidence of a healed ankle fracture (Haile-Selassie *et al.*, 2010). Similar evidence for a healed fibular fracture can be found in an early Pleistocene fossil KNM-ER 2596 from Kenya (DeSilva and Papakyrikos, 2011). These bones, preserving evidence for healed wounds, injuries, and congenital abnormalities are no longer just interesting footnotes, but instead implore us to recognize that throughout the Plio-Pleistocene, hominins were able to help members of the group recover from their injuries because we are, and have long been, a compassionate ape.

Having written that, evidence for interpersonal violence in hominins (Sala *et al.*, 2015), including perhaps even in Lazaret 3, divulge our darker tendencies, the importance of which continue to be debated (see recent exchanges between Sapolsky, 2017 and Wrangham, 2017). But, as Carl Sagan so poignantly wrote, "You're an interesting species. An interesting mix. You're capable of such beautiful dreams, and such horrible nightmares" (Sagan, 1985). One cannot focus solely on interpersonal violence, without considering the evidence for compassion and conspecific care. And vice versa. Thus, Lazaret 3 joins a long and celebrated list of hominin predecessors who preserve evidence for — in the face of interpersonal violence — empathy, care, and compassion. She provides evidence for the healed scars of our past, and perhaps even a glimmer of hope for the future of this flawed, but caring and compassionate, ape.

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