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Book Review of *Almost Human, the Astonishing Tale of* Homo naledi *and the Discovery that Changed our Human Story*, by Lee Berger and John Hawks

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Abstract

Lee Berger's 2017 book *Almost Human* is a recount of his lifetime quest to find human ancestors. We review the four main sections of this book starting with his first trip to Tanzania at age 24, his involvement in the *H. floresiensis* controversy, then his finding of *Australopithecus sediba* and his latest discovery in South Africa of *Homo naledi*. It is interesting to read how Berger and his colleagues debated their decision to put *A. sediba* into the genus *Australopithecus* and did not succumb to evolutionary biases and claim the fossils belong to the genus *Homo*.

The main thrust of this book seems to culminate in in the final two sections where Berger describes in detail the discovery process and the difficulties involved in excavation of *H. naledi* from a near inaccessible cave, dubbed the Dinaledi Chamber. His initial reactions to seeing the first bones from the site are most telling, describing in several passages how similar the anatomy of the fossils was to an australopith, and unlike a human. And yet, he eventually concludes that these fossils represented a hominin that was "almost human," classifying it as a member of the genus *Homo*.

Berger also reveals a few facts that were left out of the many papers published on *H. naledi*. First, he relates how he knew about the nearby second cave (Lesedi Chamber) containing similar fossils even while they were excavating the Dinaledi Chamber. He also mentions that neither he nor his primary geologist (P. H. G. M. Dirks) could fit in the Dinaledi Chamber, so all field work had to be accomplished by thin, small statured scientists who could actually fit into the tight crevices of the cave. He also reveals that Dragon's Back Chamber, the immediate preceding chamber in the system, contained countless bones of macrofauna.

Berger also tries to justify his interpretation that living *H. naledi* deliberately disposed of the now randomly oriented, disarticulated bones in the Dinaledi Chamber. Yet, he readily admits that there is an unexplainable lack of grave "goods" and artifacts so commonly associated with human burial sites. Berger also reported that they found no evidence of fire or smoke on the ceilings or any sign of habitability of the caves, making a deliberate disposal interpretation all the more mysterious. Finally, Berger muddles through the convoluted dating of *H. naledi* that took place after the bones were initially described. However, his reported age of between 450,000 and 250,000 years ago is not exactly what was published in a subsequent paper.

We conclude with a review of the biological relevance of *H. naledi* and a brief summary of some of the latest creationist studies. Our final analysis is that *H. naledi* was most likely not a member of the human kind, was not deliberately disposed of, and was merely an extinct ape.

Keywords: *Homo naledi*, *Australopithicus sediba*, Rising Star, Dinaledi Chamber, Dragon's Back Chamber, Lesedi Chamber, hominin, human ancestors, deliberate disposal, South Africa, U-Th dating

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Introduction

Almost Human is an autobiographical tale that describes the discovery of not only the recently discovered hominin fossil *Homo naledi*, which has appeared in the headlines for the past few years, but also about the discovery of his earlier named hominin species, *Australopithecus sediba*, both discovered in South Africa. Although co-authored by John Hawks, it appears he wrote only the epilogue. The basic outline of the book is made up of four parts: how Lee Berger got to South Africa, how he and his team discovered first *A. sediba*, and then afterwards how they discovered *H. naledi*, and finally, how *H. naledi* is interpreted from an evolutionary viewpoint.

The book is very readable, and the end of each chapter sparks interest as to what will happen in the next one. The book also contains a couple dozen or so color images showing the scenery of South Africa as well as the fossils that were discovered of *A. sediba* and *H. naledi*, as well as the parts of the intricate Rising Star cave system where *H. naledi* was actually unearthed.

Going to South Africa

The first section of the book deals with Lee Berger's youth, growing up on a farm in Sylvania, Georgia. His favorite activities included outdoor activities, such as swimming, tennis, as well as digging up Native American artifacts, and later, what would dominate his career—fossils. During his college years he received a naval scholarship, but didn't do well enough academically. After leaving the naval academy, he found the love of his life at college in paleoanthropology. Berger describes how he could talk about different fossils for hours with his professors. In a stroke of seeming serendipity, Donald Johanson, the discoverer of *Australopithecus afarensis* (a.k.a. "Lucy"), and also one of Berger's greatest heroes in modern paleoanthropology was giving a lecture in Savannah at the Georgia Science Teachers Association. At 24 years of age, Johanson invited Berger to become his geology assistant at Olduvai Gorge in Tanzania. However, due to a work permit, Berger could not make it to Tanzania, but instead was able to enroll in a summer program at the Koobi Fora Field School in Kenya to join Richard Leakey's "hominid gang," in the search of fossils.

This was to be the start of Berger's noteworthy career. He arrived in 1990 in South Africa at the University of the Witwatersrand ("white water's edge" in Afrikaans), which would become his permanent base for many years, also known as "Wits" in downtown Johannesburg. There he started a Ph.D. program; his thesis was about the supposed development of the clavicle and shoulder girdle in early hominids.

Berger describes one of his basic views on human evolution, stating that supposed human ancestor's brains, posture, and teeth all evolved in tandem with each other. A change to a more protein-rich diet allowed hominin's brains to enlarge, allowing for an increase in intelligence, which made free hands necessary, followed by a shift towards upright walking. In addition, what is of central importance to the discovery of *H. naledi* is that according to Berger, the place of any fossil in this line of development should reflect its geological age. The older it is, the more like an ape the fossil would be (p. 34). Later we shall see that evolutionary ages caused great problems for Berger in where exactly he could place *H. naledi* on the evolutionary time line in relation to other hominin species.

What is remarkable and quite praiseworthy in Berger's approach to anthropological science is his openness to collaborate with others, and in making his fossil specimens available for inspection by other researchers. This actually got him into conflict with his senior colleagues at Witwatersrand. In general, anthropologists jealously guard their fossil trophies, so as to be able to fully examine and describe their finds before making them public—a process which usually takes many years. Not so with Berger, who made all of his *H. naledi* fossils quasi-public by having them scanned and entered into the online *MorphoSource* database. This was opposed by many who stated that nothing could substitute the examination of the actual fossil itself. He also made the discovery of *H. naledi* deep in the Rising Star Cave public via social media.

During the early years Berger worked at a site rich with fossils called Sterkfontein, also in South Africa, which had quite a number of hominin fossils, including a fossil called "Little Foot," which became a press sensation. Little Foot was a fossil hominin whose large toe stuck out from all of the other toes, indicating a greater capability of climbing than found in living humans.

Berger also was "accidentally" drawn in to an exciting find of the remains of what seemed to be small-sized humans, discovered in 2003. This was *Homo floresiensis*, whimsically called "the hobbit" by the press. These remains were discovered on the island of Flores, isolated from the Asian mainland. They had a tiny brain, around 420 cm^3, and shared characteristics with both *Australopithecus* species as well as species from the genus *Homo*, based on characteristics of the skull, jaw, and teeth. Naturally, a bitter struggle ensued amongst anthropologists to get hold of these remains. Berger had planned a vacation to the island of Palau, not knowing that he had actually come close to a site full of bones resembling those of small-sized humans. Berger immediately wanted to take a look at the fossils, and discovered that they were also diminutive in stature. These remains, though they resembled those of *H. floresiensis*, were not identical. Berger's hypothesis was that this was a case of what he called "island dwarfing," which was also found to be true of several animals living on islands, in that some evolutionary pressure led to smaller body size—presumably because of the limited resources of their island habitat. Berger published these findings in *PLoS One* (Berger et al. 2008).

Berger believed that the remains of the Palau hominins were primitive for the genus *Homo*, possibly near the transition point between humans and their ancestors. This was to become a focus of research for Berger in the years to come, and the discovery of another fossil hominin was just on the horizon.

Finding *sediba*

The second section of the book describes the discovery of *A. sediba* at the site of Malapa in South Africa in a pit dug by miners long ago. Chapter nine quickly cuts to the chase, describing how Berger's son first discovered a part of clavicle, or collarbone sticking out from some rocks. Besides the collarbone, a mandible was also present with a pearly white tooth, indicating that it came from a juvenile individual. Soon after having received a permit to search the area closer, Berger and his team descended on the mining pit to find even more fossils. Berger himself found a shoulder blade and a humerus from another specimen. Later on, he and his team were to find and describe two specimens of *A. sediba* called MH1 and MH2 (MH standing for Malapa Hominid) consisting of many more fossils found at that site (Berger et al. 2010).

In the next chapters of the book, Berger describes the slow process of preparing the fossils from the matrix that surrounded them. Gradually his team tried to make out whether this new species was from the genus *Homo*, or belonged to the supposed ancestors of humans, the genus *Australopithecus*. To them, *A. sediba* seemed to have characteristics from both the genus *Australopithecus* but also *Homo*. The small teeth and flat face suggested that *sediba* was human, as opposed to robust australopiths, yet the small skull size suggested otherwise.

Berger's team got access to the East African hominin fossil material housed in Kenya's Nairobi National Museums. For long days, the team debated back and forth which genus the remains belonged to. What is of note is that the team decided to focus on physical characteristics and abilities, and not common ancestors (p. 96), meaning that in practice, evolutionary relationships aren't relevant in describing living species, but rather design elements. After comparing their material with the fossil record, and after qualifying each physical character from head to foot as either *Australopithecus* or *Homo*, Berger decided that they had discovered another species of australopith. Even though both lists were equal in length, Berger decided on the fossils belonging to the genus *Australopithecus* because based on its limb morphology, it did not seem to be a long-distance walker, but because of its long forelimbs, it was much more adapted to climbing.

Even though Berger would have wanted these fossils to be an early form of *Homo*, it can be credited to him that he didn't fall for this temptation. Yet several years later he was presented with yet another set of fossils from another fossil hominin, rather close to the site where he had discovered *A. sediba*.

Finding *naledi*

The second half of the book begins in August 2013, where Berger is again searching South Africa for more potential fossil sites. As Berger tells the story, his former student Pedro Boshoff randomly appears and asks for funding to search caves in the area for hominin fossils. Pedro even convinces Berger to allow two amateurs, Rick Hunter and Steven Tucker, to tag along.

On September 14, 2013, Berger related how he took a call that Rick and Steven had found something. Berger requested pictures and on October 1, Pedro and Steven delivered. They showed up with pictures of a new, unmapped cave chamber, covered with fossils. Berger's first reaction to seeing a hominin mandible in the pictures was that "It wasn't human; that much was clear" (p. 110).

The discovery narration continued four days later when Berger entered the cave system to see for himself and to get good photographs of the cave floor. He related how he was barely able to fit through the 7 m long Superman's Crawl. (Figure 1, from Kruger, Randolph-Quinney, and Elliott 2016) and what he observed when he came out and looked around the Dragon's Back Chamber (Figure 1). He immediately saw the walls were covered in fossils, noting "This chamber alone deserved further investigation, but we were here to see fossils farther on" (p. 116). This is a significant revelation that was not included in the scientific papers of the site. And to this day, apparently no further excavation has been done on this chamber and how, if at all, the bones here relate to the bones in the Dinaledi Chamber.

Berger's narration continued as he described how he physically could not fit into the entrance shaft to the Dinaledi Chamber at the back of Dragon's Back. He had to send in his more slender son Matt and cavers Steven and Rick, while he waited for them to take more photographs inside the soon-to-be named, Dinaledi Chamber (Fig. 1). Berger also rather casually mentions that he had secured funding from National Geographic to support the work.

On October 6, Berger put out a call for knowledgeable and trained archaeological/palaeontological graduate students or experienced Ph.D.s. They also had to be "skinny and preferably small" (p. 124). He describes how he winnowed the applicants down to six young women, assembling his team of "underground astronauts." On November 7, he had his team in place, along with other colleagues and National Geographic representatives assembled in a community of 20 large canvas tents at the cave entrance. Berger then described the technology they utilized in the operation, the communication and video systems, the safety systems and the command center set up outside the cave entrance to collect all the electronic data and serve as the communication hub.

In the next section, Berger describes their excavation efforts in the Dinaledi Chamber, starting on November 10 and continuing for three weeks. One of the first bones brought out of the cave chamber, a

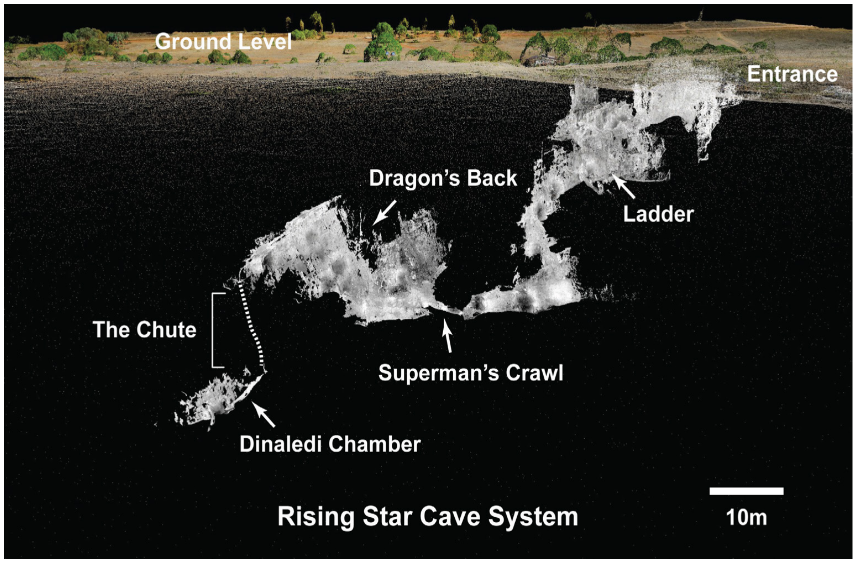

Fig. 1. Map of the Dinaldi Chamber in Rising Star Cave system. Source: Figure 9, Kruger, Randolph-Quinney, and Elliott 2016.

jawbone fragment, shocked Berger as it was smaller than expected. Berger also noted that "The third molars were the largest teeth, as in australopiths and different from humans. But the teeth were tiny, really no larger than those of modern humans" (p. 153). He continued describing various bones as they were brought out, including the femur, stating "The femur was similar to those found in australopiths like *africanus* and *afarensis*, with a long neck and small head… This one, oval in cross section, didn't look very human" (p. 155).

On page 157, an interesting detail is revealed. According to Berger, this is when Steven and Rick first described a nearby second chamber that also contained a femur similar to the one found in the Dinaledi Chamber (site 101). Berger decided to keep this information secret as "I don't want them distracted." He agreed to pursue the second site only after finishing at the first site. To me, this information is fascinating. Why did Berger keep this a secret for so long? There was no mention of a second site even in the National Geographic article. Ultimately, they called this second chamber site 102 (now known as Lesedi Chamber). Berger then describes how this chamber was reached by coming in the same main entrance and turning right instead of left toward Dragon's Back.

Berger then reported how he obtained funding from the South African National Research Foundation to invite 30 young scientists to study the 1300 fossil hominin fragments brought out of the cave in the first 21 days. The five-week workshop began in May 2014. Finally, Berger mentions that he sent two of his underground astronauts back into the Dinaledi Chamber in March 2014 to get out more skull and jaw fragments. Ultimately, they brought up another 300 specimens in two weeks.

Understanding *naledi*

Berger began this section by trying to explain away the lack of an age for the fossils at this point in the investigation. He lamented that they had no other fauna to test other than limited rodent enamel and a few bird bones from the surface of the cave floor. He eventually concluded that they would study the fossils first, without a date, and avoid damaging any fossils in the process. Berger concluded that the "Dates didn't necessarily help us to understand the relationships of fossils. In the case of *sediba*, the dates were getting in the way" (p. 184).

Berger summarized the findings of the various working groups at the end of the workshop (prior to their first round of publications in 2015) on pages 189–192.

> The Rising Star hand was humanlike in its wrist and fingertips, but the fingers seemed to be made for climbing. The shoulder was built for climbing, too. As another team worked to understand the upper body—the shoulder blade, the collarbone, the upper part of the rib cage, and the bone of the upper arm—they found that the shoulders had been canted upward, the arms oriented for climbing. The feet and parts of the hands seemed humanlike, but the fingers and shoulders were as primitive in appearance as the earliest known hominins—apelike species like *Ardipithecus ramidus*.
>
> The legs, hips, and trunk told their own stories. As we had observed in the field, the neck and head of the femur were very much like those of australopith species—similar to *sediba* and *afarensis*—yet there were two ridges on the femur necks that we had never seen before in any other species. The pelvis would prove to match these long femur necks with

a wide, flaring hip very much like Lucy's, and the lower part of the rib cage seemed well suited for such a flaring pelvis. (p. 192)

Much to Berger's credit, he describes how he had all the fossils laser scanned and released them to the public, allowing anyone to use a 3-D printer to create copies of the fossils. Berger then explained how they used these data to estimate the brain capacity of the fossils, finding one about 560 cc and one about 450 cc, noting they were about the size of many australopith skulls.

Berger then discusses on page 195 why he believes there is only one species represented in the Dinaledi Chamber, explaining that it had to do with the consistency and similarities in the bones that were found, including seven similarly, odd-shaped first metacarpals. He concluded that the fossil assemblage represented one hominin species that weighed between 90 and 120 lb (40 and 55 kg), and was 4.5–5 ft (140–150 cm) tall.

In spite of all the fossil evidence indicating a non-human looking assemblage that seems to be more in line with an australopith species (O'Micks 2017), Berger oddly finishes chapter 27 by claiming this was the genus *Homo*. It was as if he wanted this species to be closer to humans than *A. sediba* and named it as such regardless of the substantial anatomical evidence to the contrary.

In chapter 28, p. 197, Berger changes gears and describes the geological investigation of Dinaledi Chamber. He also reveals that the main geologist on staff and senior author of the geology papers of the site, Paul Dirks, did not fit in the Dinaledi Chamber, so all of his geological data were collected by a younger colleague by the name of Eric Roberts. Because the book was not written by the geologists, there is a lack of consistency between the descriptions of the cave geology in Berger's book and in the geological papers that were published. For example, Berger described soft chunks of reddish orange clay interspersed in the sediments with the fossils, but doesn't explain if he is referring to sedimentary units 1, 2, or 3 as described by Dirks et al. (2015).

Berger's geologic description makes a big deal about the different mineralogy found in the Dinaledi Chamber vs the Dragon's Back Chamber. And yet, he seems to make a mistake on page 200, claiming that dolomite weathering produces potassium and aluminum oxides, which are common weathering components of clays, but not dolomite. Dolomite is composed of magnesium and calcium carbonate minerals.

On page 201, Berger reveals that there was a significant amount of sediment that had filled in part of the Superman's Crawl and spilled into the Dragon's Back Chamber, containing "fossils of other animals." Berger further elaborates on this observation by suggesting that the Superman's Crawl may have been larger in the past, allowing easier access to the Dragon's Back Chamber. He then tries to build the case that rapid-moving water could not have reached the Dinaledi Chamber as the coarser sediments and mineralogy of the sediment in the Dragon's Back Chamber was much different. However, Berger never seems to entertain the possibility of a lower energy, temporary flooding of the Dinaledi Chamber as suggested by Clarey (2017), where suspended sediment and floating remains may have spilled over and dropped down into the Dinaledi Chamber as the Dragon's Back Chamber filled under higher energy conditions (Fig. 1). A brief flood event in the Dinaledi Chamber likely would not have had the energy to fully dissolve the orange clay chunks found in the sediment with the *H. naledi* bones. Neither does Berger try to explain the source of the other animal fossils in the Dragon's Back Chamber and the Superman's Crawl.

Next, Berger ponders why they found no signs of "grave goods with bodies—special objects to accompany the dead" and mentions no evidence of fire or habitation of the cave system. Although, he does note that some human burials are found without grave goods. But, one has to wonder why no signs of fire and why no stone tools have been found in the cave system to date. If *H. naledi* were using this site to dispose of their dead, there should have been some smoke marks on the ceilings or soot in the passageways. They would have needed a light source to make it through the long tortuous pathway to the Dinaledi Chamber.

In chapter 30, Berger finally discusses the findings in chamber 102, the second chamber containing *H. naledi* bones in the cave system (Lesedi Chamber). In this nearby location, Berger's team found over 100 bones, including pieces of skull, jawbone, and other bones from two adults and possibly three juveniles. They concluded "These bones looked like they all came from the same biological population" (p. 215). And again, no stone tools or artifacts or signs of fire were found anywhere. The origin of the bones in this chamber have to be explained also (Clarey 2017), but no disposal method was suggested for this second site.

Finally, on page 217, Berger discusses the age-dating of the fossils from the Dinaledi Chamber. He mentions how the flowstones above and in contact with the fossil bone-bearing unit were dated at "less than 250,000 years old," but failed to mention the method that was used in the determination. In their recent scientific paper, they reported it was a U-Th dating method (Dirks et al. 2017). Next, Berger laments that they had to destroy small amounts of three *H. naledi* teeth in order to conduct electron spin resonance (ESR) testing on the enamel. Their assessment indicated all three teeth "are less than 450,000 years old" (p. 217). Berger attempts to use these dates to bracket the age of the fossils between "450,000 and 250,000 years ago" (p. 217). However, two "less than" statements do not bracket a fossil's age. It appears he meant to say the flowstones were dated at least 250,000 years old, not less than.

In any case, Berger never mentions the other techniques used in an attempt to date the fossils, such as the U-Th ages determined for the three *H. naledi* teeth and the two ^{14}C dates from *H. naledi* bone fragments, discussed by Dirks et al. (2017). Nearly all of the U-Th dates of the teeth and the carbon dates of the bones indicated an age less than 100,000 years old (Clarey 2017; Dirks et al. 2017). Why Berger and his team chose the older dates is not explained in his book or even adequately explained in their paper (Dirks et al. 2017).

Berger finishes his book by waxing philosophically about the meaning of *H. naledi* in the evolution of humans. As one who categorically rejects the history recorded in the Bible, he resorts to speculation and questions on human ancestry and how his discoveries "force us to ask new questions and to question old assumptions" (p. 221). And yet, after reading this book, he never arrives at a satisfactory answer to any of his questions.

Fortunately, God has provided us with the history book of the ages. God clearly explains that there was no evolution linking His created kinds, and therefore no evolution from *H. naledi* or *A. sediba* to mankind. God answers all of Berger's questions by telling us how He created each land animal to reproduce after their kind on Day 6 of Creation Week in the book of Genesis. How much more plain can He make it?

The Biological Relevance of *H. naledi* for Creation

All things considered, *H. naledi* does not appear to be human as some even in the creationist community may think (Wood 2016a). Anatomically, *H. naledi's* cranial capacity is much smaller than that of humans, between 465 and 610 cc, even outside the range of australopiths. Wood (2016b) studied encephalization, that is, the perceived increase in endocranial volume (or ECV) during supposed human evolution in fossil and extant primates. Encephalization is influenced by body mass, with a linear relation between the two. By using data from extant primates, the significance of encephalization can be estimated for fossil taxa, using the encephalization residual, which reflects the difference in the predicted and observed ECV (ER, see Wood 2016b). Out of eight species of *Homo* in Table 1 of Wood (2016b), only *H. naledi* displayed a non-significant ER.

It has also been suggested that *H. naledi* buried its dead in a ritualistic manner, just like Neanderthals and modern humans. This notion can be refuted by the way that humans generally bury their dead, either in extended posture, or on their side in the case of archaic humans (Byers 2002). Though these modes of burial may not be entirely exhaustive, it is still speculative as to suggest that possible *H. naledi* cave dwellers simply disposed of the remains of their own species by depositing them into the Dinaledi chamber. Furthermore, human artifacts, such as stone tools or jewelry and also of megafauna are found at human burial sites, such as Qafzeh in Israel (Bar-Yosef Mayer, Vandermeersch, and Bar-Yosef 2009), no such objects were found at the Rising Star Cave. Also, human remains are usually complete and articulated, such as the remains of Neanderthals at Sima de los Huesos in Spain (Carretero et al. 2012). This was not the case in the Rising Star Cave.

Furthermore, the fact that multiple individuals were buried together in two separate parts of the cave system suggests burial due to a catastrophic event. Berger himself admits that this could be due to a flood:

> Beyond that, fossil groupings of a single species of animals—what we call a monospecific assemblage—are extraordinarily rare in the fossil record. Usually, when a monospecific assemblage is found, it is the scene of some easily identifiable catastrophic event, like a flood or mass kill site. But even these situations usually include some other species of animals. When a natural catchment traps animals, it usually traps other things too. If a herd of wildebeests drowned in a

Table 1. Brain volume listed for several hominid species, taken from Wood 2016b. The value for *H. naledi* was updated with the 610 cc ECV of the LES1 specimen.

Species	Mean Endocranial Volume (cc)
Aridipithecus ramidus	300
Paranthropus aethipicus	410
Australopithecus afarensis	419.5
Australopithecus sediba	420
Australopithecus africanus	441.7
Paranthropus boisei	503.3
Homo naledi	545
Homo habilis	609.3
Homo rudolfensis	788.5
Homo ergaster	800.7
Homo erectus	960.1
Homo heidelbergensis	1231.6
Homo neanderthalensis	1391.4
Homo sapiens	1463.8

river, for example, a paleontologist will also find fish fossils, crocodile teeth, and bits of bone that would normally be in the gravel of a river. Maybe even some zebras amid the herd. (pp. 162–163)

Another issue is the difficulty in accessing the Dinaledi Chamber of Rising Star Cave. Overall, it took about 45 minutes to an hour to get to the chamber. There are two constricting points in the cave system which would have made it difficult to get to the remote Dinaledi Chamber, one called "Superman's Crawl," named so because someone could only get through by pushing their arms forward so as to pull themselves through. People on Berger's team had their clothes torn off while squeezing through. Berger himself could hardly get through. The second constricting point was known as "the chute," which was a narrow opening, which led from the Dragon's Back into Dinaledi Chamber, 39 ft (12 m), downwards (Fig. 1). It would have been difficult for *H. naledi* to get in, but even more difficult to get out. At some points the cave system was only 8 in (20 cm) in diameter. The big question is, if the Dinaledi Chamber was simply so difficult to access, how could *H. naledi* have done it, while dragging a corpse with them, and holding artificial fire? Why not bury the body in the upper part of the cave, which was much more accessible and less dangerous? Berger's team was concerned about CO_2 levels in the Dinaledi Chamber; live *H. naledi* could not have known about this without modern technology, and could thus have suffocated while depositing their dead, had the situation been the same in the cave system thousands of years ago. Berger suggests that Superman's Crawl was more accessible in the past, although he maintains that it still would have been difficult and even dangerous to get to Dinaledi Chamber. Berger had several medical personnel around the cave in case of accidents. Some members of the team initially thought that the presence of survey pegs suggested that the remains, which had only been partially fossilized, were the remains of a caver who had recently made it into the cave and never came out.

Originally, *H. naledi* had been dated to be 912,000 years old, based on phylogenetic trees (Dembo et al. 2016). Yet, dating of rocks and sediments in the Dinaledi Chamber showed that it was a "mere" 235,000–335,000 years old. This is remarkable, since *H. naledi* was held to be basal to the genus *Homo*, yet *H. erectus*, a species of archaic human, comes later on in the supposed evolutionary transition from ape to man (Zaim et al. 2011). This, in contrast with Berger's ideas about the place of any fossil on the line of development reflecting its geological age. Let it be said to Berger's credit, that instead of trying to reinterpret results to fit his theory, in the hope of finding a transitional fossil between australopiths and humans, he thus concluded that *H. naledi* must have been in competition with modern humans during their parallel existence next to each other. Whereas, he believes *H. floresienses* may have been sheltered from the expansion of modern humans for thousands of years on an isolated island. It is a stretch of the imagination to think that *H. naledi*, with its more "primitive" characteristics, would have been able to survive on the open plains of South Africa. Only those members of the genus *Homo* could truly be considered to be members of the human kind which have a sub-global, multi-continental distribution, such as *H. erectus*, Neanderthals, and modern humans. These are the only species of primates found on all six habitable continents.

Based on cranial and postcranial characteristics, the disparity between the predicted and measured evolutionary ages of *H. naledi*, and the near impossible manner in which *H. naledi* would have been able to access the Dinaledi Chamber, it is most likely that *H. naledi* was not a member of the human kind, did not exhibit burial practices, but instead was only a species of ape.

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