

**A survey of visitors' experiences of human origins
at the Cradle of Humankind, South Africa**

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Abstract

Relatively little is known about the general public's views of evolution, particularly with respect to humans, and this research addresses the issue of visitor perceptions of human evolution at Maropeng Visitor Center in the Cradle of Humankind, West of Pretoria, South Africa. In this first phase of a larger project, visitors who exited the Visitor Center were invited to complete a survey questionnaire asking questions about their knowledge of hominins as well as their views of human evolution. Over 430 'general public' visitors were surveyed between April and July 2013. The results analysed indicate that approximately 80% have not visited the center before. While only one in ten visitors have heard of the newly discovered Australopithecine (*Au. sediba*), the great majority (80%) have heard of "Mrs. Ples" (the Australopithecine discovered in the area in 1947). The respondents' knowledge of this hominin referred to fossils; skull; skeleton; early human and the fact that it was found in the Sterkfontein area. A majority (58%) of participants accept the concept of human evolution. Those who do not accept the idea of human evolution mostly refer to religious reasons for their view (invoking God or the bible), while those who do accept evolution refer to the evidence provided by fossils and comparative anatomy in support of their opinion. The findings have relevance not only for the Cradle of Humankind visitor centers, but for the school curriculum and the public engagement with science generally. The ongoing study will collect more detailed data using interviews.

Introduction

The Cradle of Humankind World Heritage Site (CoH) is an area approximately 500 square kilometers in size, 50km West of Johannesburg and Pretoria in South Africa. It was named in 1999 due to its rich reserves of hominin fossils, some dating back to 3.5 million years old. New fossil sites are regularly being discovered in the area, for example the 2013 Rising Star Expedition lead by Prof. Lee Berger has uncovered possible the largest cache of hominin fossils ever found. There are two visitor centers at the Cradle site: one at the Sterkfontein Caves where numerous fossils have been found and the other at Maropeng which is the official visitor center for the World Heritage Site.

Worldwide, the scientific literacy of the general population is regarded as being less-than-ideal (Roberts, 2007). In South Africa, “African Origins” is a focus area of the Department of Science and Technology spearheaded by the South African Agency for Science and Technology Advancement (SASTA). This focus area covers interdisciplinary research programs in Paleontology, Archaeology and Genetics, and includes the evolution of humankind, as exemplified in numerous sites in the Cradle of Humankind. Relatively little is known about the general public’s views of evolution, particularly with respect to humans. This is true internationally (e.g. Besterman & La Velle, 2007; Spiegel, Evans, Gram, & Diamond, 2006) as well as locally (Pillay, 2011). The larger study provides valuable information on why people visit the CoH, how they view the concept of evolution, and what features of the visitor centers may influence visitors’ views. This information will be valuable for various reasons: as an advance of knowledge in its own right, to advance policies of the South African government with respect to scientific literacy, to develop the field of paleontology in the Gauteng region and to inform players in the CoH how to better attract visitors to their facilities. In the larger study, visitors consisting of the general public as well as school students on organized visits completed a questionnaire as the end of their visit. The research question which this paper aims to answer is “What are the views of the general public visiting the Cradle of Humankind concerning human origins”? This paper focuses on findings from the public who visited the Maropeng Visitor Center.

Methods

The first phase of the study was a quantitative survey of the general public visiting Maropeng Visitor Center, following studies in similar contexts (see Scott, 2007). Visitors who exited the visitor centers were invited to complete a survey questionnaire eliciting demographic information and their views about aspects of the center and human origins. The questions in the survey which are analysed in this paper are as follows:

- Have you visited Maropeng/Sterkfontein before?
- Have you heard of “Mrs Ples”? If so, who or what is she? Where did you hear about her?
- Have you heard of “Karabo” (aka Sediba)? If so, who or what is he? Where did you hear about him?
- Do you accept that humans evolved from an ape-like ancestor? Y/N
 - Explain your thinking in giving this answer.

The first two questions aim to ascertain knowledge about fossil hominins found in the CoH. Mrs. Ples is the nickname of a partial skull of *Australopithecus africanus* found at Sterkfontein by Robert Broom in 1947 (Broom & Robinson, 1949). More recent analysis of the skull suggests that it may be a male rather than a female specimen. “Karabo” is the nickname given to the partial skeleton of *Australopithecus sediba* found in 2008-09 by paleoanthropologist Lee Berger and his team at Malapa in the CoH. The name “Karabo” isn’t very well known, and the fossil is more commonly referred to as sediba. Whereas Mrs. Ples is relatively well-known to the South African public over the past 60 years, *Au. sediba* is a well-publicized but recent find (Berger et al., 2010). The final question was devised to ascertain the visitors’ view on human evolution, and was worded to try and avoid the notion of ‘belief’. However, “evolved from” and “ape-like ancestor” are loaded terms, and tend to elicit a response which visitors have brought with them to the VC rather than anything they experienced during their visit (Scott, 2007).

437 ‘general public’ visitors to the Maropeng Visitor Center were surveyed between April and July 2013, mainly during weekends and public holidays. The process involved the researcher or assistant approaching all ‘general public’ visitors who were exiting the main hall at Maropeng. Visitors were invited to complete the survey either

individually or in pairs or groups. A log was kept of those who declined to participate, but many visitors would pass by and avoid the research team altogether so that the actual number of participants was considerably fewer than the total number of visitors on each survey day.

Findings

Using total ticket sales for each day, it was calculated that the data collected (N=437 at Maropeng) represents a mean 15% of visitors surveyed daily. These results show that approximately 80% have not visited the center before, and a similar number consider that their visit made an impression on them. The great majority (81%) have heard of “Mrs. Ples” (the Australopithecine fossil skull). Figure 1 shows the commonest answers to the question “Who or what is she” (62% answered the question, and the percentages shown have been calculated from these respondents). The most common answers were a fossil, a skull, an early human, or an answer which included one of these ideas. Nearly 20% knew that the skull was found at the Sterkfontein caves, while about 10% knew at least part of the scientific name: *Australopithecus africanus*. Over the past decade, there have been debates as to whether the fossil is a male or a female, and some of the respondents appear to have picked up on this academic debate (which has been reported in the media) as about 10% questioned the sex of the specimen as possible a male.

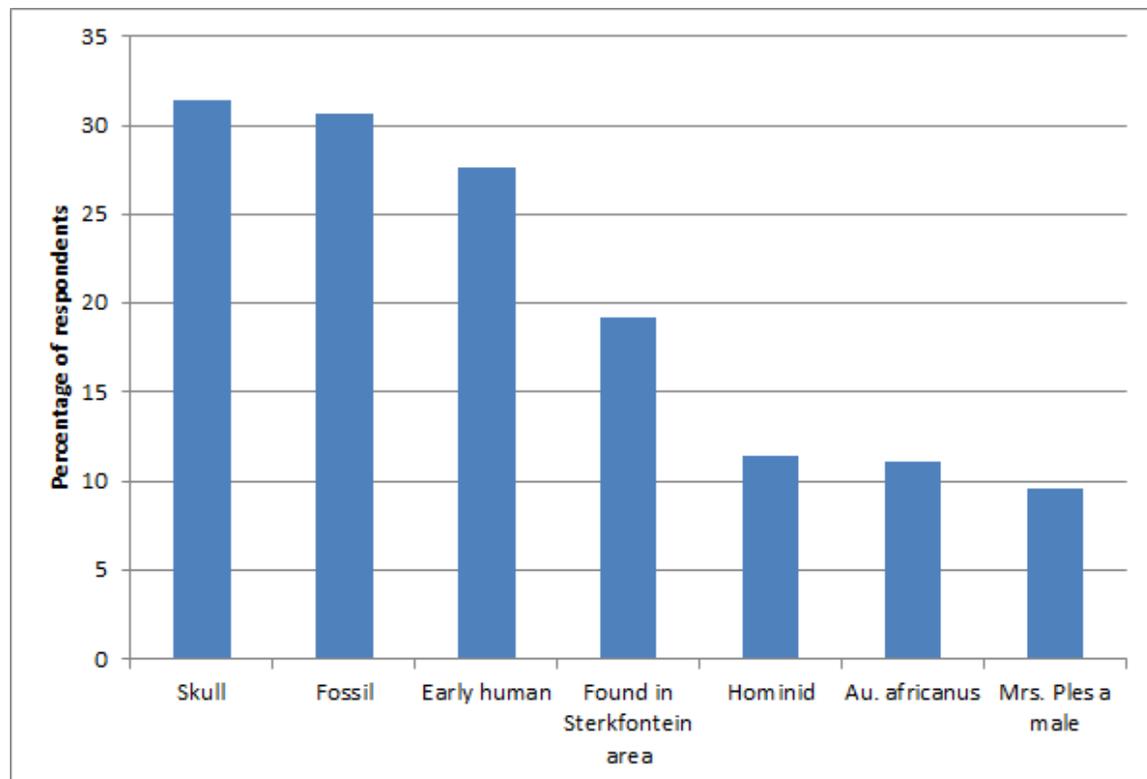


Figure 1. Respondents' ideas of the nature of Mrs. Ples (N=271)

Regarding where they had heard of Mrs. Ples, 68% (n=298) answered the question. 1 in 4 stated that they heard at one of the visitor centers in the Cradle of Humankind, the same number referred to hearing from the media, and 17% cited during their education (several respondents stated more than one answer). In contrast to Mrs. Ples, only 1 in 10 visitors have heard of the newly discovered Australopithecine (*Au. sediba*). Of the few who did answer, the respondents were similar to the answers provided for Mrs. Ples regarding *Au. sediba*'s nature, and where they had heard of him.

The participants were also asked about their acceptance of evolution of humans from an ape-like ancestor. 58% of Maropeng respondents agreed that they accept the concept, 1 in 4 disagreed, while 16% did not state their opinion, or gave another answer. The most interesting answers in the questionnaire came from the participants' responses to "Explain your thinking in giving [your] answer". 61% of the respondents gave an explanation, and the following findings refer to that proportion of the participants who were interested and literate enough to respond, recalculated to 100%. The respondents' explanations fell into the two clear groups of agreement or disagreement, with some

expanding on their “maybe” or “yes and no” answers. A summary of the ‘agreement’ respondents’ answers is shown in Figure 2.

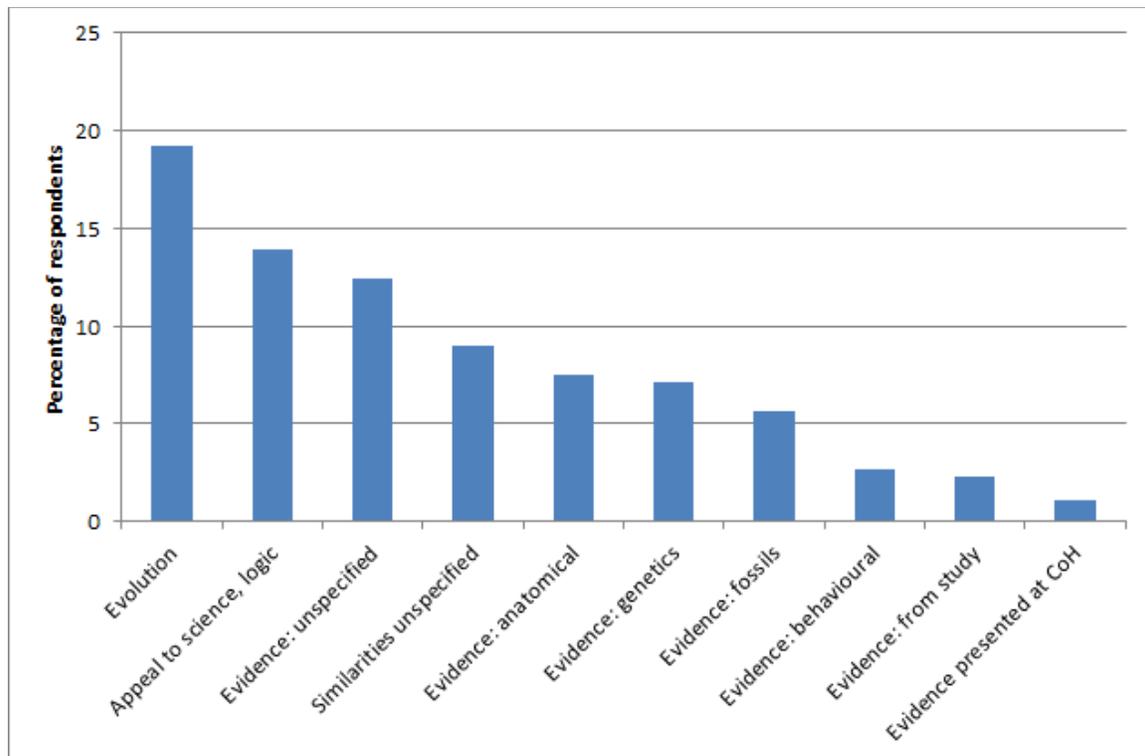


Figure 2. Summary of explanations of respondents who accept that humans evolved from an ape-like ancestor (n=255)

Of those who agreed with the statement, the largest combined category (23%) was the respondents who cited various forms of evidence to back up their assertion. This included anatomical (8%), genetic (7%), fossil (6%), and behavioral (3%) facts in support of evolution, for example: “Facial features, ability to use hands to grip tools etc” (1/5 83); “The ape-like ancestors had many physical features that evolved into current human species – based on mode of erect mobility and use of the ‘thumb’” (2/6 30); “In DNA terms all creatures of our configuration are ‘related’” (26/5 38); “Genetic makeup is similar to man” (11/5 28); “Fossils give an indication as to where we evolved from” (16/6 26); “We resemble many behaviors of theirs” (9/6 23).

Note that some of the examples refer to human similarities to apes, rather than to an ape-like **ancestor**.

The next largest category (19%) was those respondents who referred to evolution in their explanation. Comments ranged from simple one-word answers, to more detailed explanations, as follows: “Evolution” (14/7 38); “I believe in the theory of evolution” (1/5 71); “Origin of the species” (16/6 18); “Evolution is obvious if you see how humans have adapted in modern times. There is enough scientific evidence to prove this” (1/5 2) “If you look at apes today you can still see in some ways how they have evolved to become humans – just how time progressed and evolution set in” (2/6 32).

14% of the explanations appealed to ‘science’ or ‘logic’, without much further explanation. For example: “Scientific evidence” (11/5 26 & 14/7 41); “Because it is logical” (9/6 31); “Absolutely – science has proved it with definite evidence”(1/5 31); “It seems obvious and is the best/most logical explanation we have” (1/5 25); “Research and other discovery points to this. More scientific proof exists than can be found in other theories” (14/7 5).

Other explanations (12%) referred to evidence, but did not actually specify what the evidence is, for example: “Evidence” (1/5 1 & 9/6 8); “The evidence overwhelmingly points in that direction” (1/5 86); “The research & evidence leads to this conclusion” (13/7 31).

Finally, 9% of the explanations cited ‘similarities’ between humans and apes (or ape-like ancestors), but did not specify what such similarities are, for example: “Similarity in looks” (18/5 10); “To [sic] many similarities between the two species to not be related somehow” (16/6 22); “It has always been in my mind as to why the resemblance was so much!” (13/7 38).

A summary of the respondents whose explanation did **not** agree with the statement is shown in Figure 3. The most common explanation of these respondents was of God as a Creator (9%), for example “God created us” (14/7 20); “God created everything” (16/6 12); “We were all created by an all-powerful being. GOD” (1/5 47). The next most common explanation by these respondents was a statement that they do not accept evolution (5%), for example “I am not convinced” (14/7 6); “There is no proven link in evolution theory” (13/7 30); “We are special” (14/7 30). Along similar lines, 4% of the disagreeing respondents appealed to the Bible as the source of authority. For example, “Bible says NO to evolution” (16/6 35); “I am a Christian and believe the

Bible is the truth and God created us as human beings” (1/5 38); “The Bible’s description makes more sense as far as our make-up as physical/spiritual and mental (emotional) beings (16/6 39).

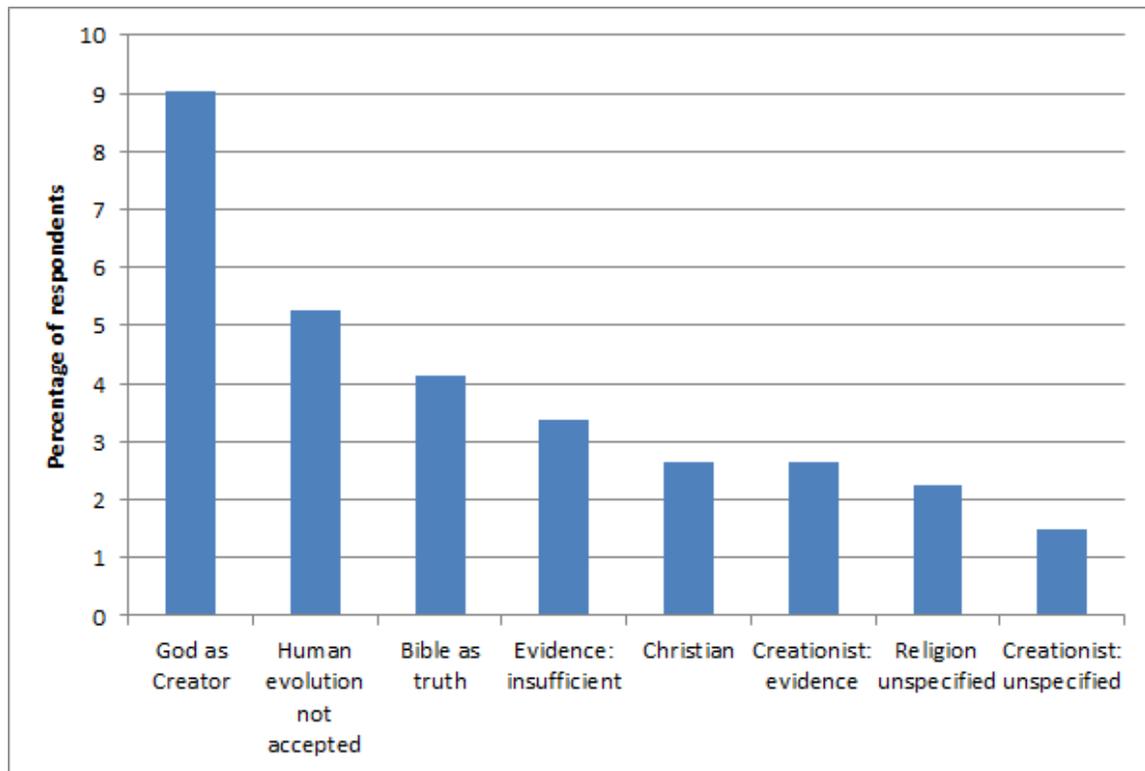


Figure 3. Summary of explanations of respondents who do not accept that humans evolved from an ape-like ancestor (n=108)

The remaining explanations of the respondents who disagreed with the statement covered such areas as the evidence for evolution being insufficient; Christian and other unspecified religious beliefs as well as a small percentage (2.5%) who provided some evidence for creationism. Some examples of these explanations are as follows”

“Don’t believe in evolution. Believe that an ape its an ape, human being is a human being – cause all this things I have seen there, there is no full evidence to convince me. God is a creator.” (18/5 4)

“Then humans would still be evolving – and this doesn’t seem to be the case. It also contradicts with Christian views” (1/5 81)

“When God created man, he wasn’t confused and started with a Ape. Why there aren’t there and half ape half human species today?” (1/5 39)

“God created humans, not an evolution from primates strongly reaffirmed by mankind source being one women as started by display at Maropeng” (1/5 49)

Clearly there is a wide variety of views, many of which display more about what visitors bring in with them to the Visitor Center than what is shown to them in the exhibits (Scott, 2007).

Conclusions

It is pleasing to note that 81% of Maropeng visitors have heard of Mrs. Ples. This is more than the study by Thackeray and Mathers (1997), who cite a figure of 65% of visitors to the Transvaal Museum in Pretoria. The relatively high figure suggests that, amongst visitors to the Cradle of Humankind at least, South Africa’s most famous fossil is well known. As well as having heard of Mrs. Ples, there is a degree of knowledge regarding what she is. Again, this suggests that aspects of palaeontological knowledge regarding the hominin’s fossil skull are becoming part of the ‘scientific literacy’ of visitors to Maropeng.

Knowledge of *Australopithecus sediba* (“Karabo”) is very low, at only 10%, which suggests that it takes time for fossil discoveries to reach the general public, even when they have been well-publicized. It is also possible that people knew about ‘a recent fossil find’, but did not know its name and therefore could not connect it with *Au. sediba*. The displays at Maropeng were designed before *Au. sediba*’s discovery, and it would be advisable for the center to produce an exhibit on this scientifically and culturally valuable fossil, so that it becomes more well-known. Many museums around the world have a site devoted to topical issues or new discoveries, which expose visitors to current scientific matters.

While a majority (58%) do accept the concept of human evolution, other studies have found that visitors to museums are more likely to endorse evolution as the explanation of human origins compared with the general public (Storksdieck & Stein, 2006). This would suggest that the acceptance amongst the South African general public is likely to be lower than 50%.

A significant proportion of the ‘agree’ respondents referred to the concept of evidence to support their agreement (even if the evidence was not provided). Many others referred to evolution or appealed to science or logic to support their explanation. In contrast, few of the ‘disagree’ respondents used the concept of evidence. Instead, they appealed to their own absolutes such as God as the Creator, and the Bible as truth. This suggests very different ways of thinking between the two groups based on “nonoverlapping magisteria” or NOMA (Gould, 1997). This view suggests that both evolution and religion can exist as concepts in the world, and we should accept NOMA as a principled position. Further research in 2014 and beyond will provide an indication of visitors’ interests when visiting science centers as a leisure-time activity, as well as their views of the exhibits and experiences provided. Also, as evolution was introduced into the South African school curriculum in 2008, we will investigate students’ knowledge and views too.

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