Locality: Drimolen is located centrally within the demarcated UNESCO World Heritage Sites, ~40km outside of Johannesburg (25° 58’07”S; 27° 45’21”E). The site is made up of two distinct deposits: the historically known Main Quarry (DMQ- in blue above) and the smaller, lesser investigated Makondo (DMK- in green). It is unknown whether the two deposits were once part of the same cave system, or represent two different caves. The cave remnants are today located approximately 50m apart (east to west) and are joined by a long trench excavated by Andre Keyser (c. early 2000s). There as an additional north-south trench that bisects the longer Keyser trench; excavated by Colin Menter to link two lime miner test pits (c. 2005). These both yielded some fossil bearing breccia but do not definitively show if the two deposits were once linked physically, although they seem to have been hydrologically linked.
Areas of focus for future studies: DMQ has a number of ‘problem areas’ that are remnants of earlier excavation focuses. Moving forward we aim to stabilize these sections, namely: the western decalcified sediment section; the northern decalcified sediment section; and the Eurydice Pinnacle.

The success of the previous field season has proven that excavating fossils immediately adjacent to the surviving in situ breccia uncovered better preserved specimens with less damage/mixing. As such the areas of focus for research excavation moving forward are along the Western breccia ledges and south of Marcel’s Pinnacle.

The DMK has not been excavated for the previous two seasons. We will consider excavating areas of the Makondo in the coming (2019) field season as the need arises. This is mainly to further establish the geological nature of the deposit and its extent. Since there is a backlog in the excavated DMK assemblage the focus will be on publishing already excavated materials rather than excavating more.

Witness sections

DMQ

The Drimolen Main Quarry has 4 witness sections (image below). All have remained the same as per the previous report, but I have included the descriptions here again.
Drimolen Main Quarry Witness Sections: DMQ with all four witness sections highlighted. WC: Warthog Cave (A); MP: Marcel’s Pinnacle (B); TIJ: The Italian Job (C); WoJ: Walls of Jericho (D). Also included for reference is EP: Eurydice Pinnacle.

Warthog Cave (WC)

In the SW corner of the Main Quarry there is a witness section that runs from a rare outcrop of the basal speleothem up through a fossil rich breccia, then sandstone and siltstone and finally a capping speleothem formed after an erosional hiatus. The sequence preserves unique geological features including the oldest exposed fossil bearing deposits in the palaeocave and the interaction between recent cave forming processes (Warthog Cave itself) and the palaeocave sequence. One hominin fossil, DNH 122, was recovered from this sequence in 2012. It had been eroded out of the
edge of the palaeokarst and had been incorporated into the more recent distinct dark brown sediments of Warthog Cave. No other fossil material has yet to be recovered from the Warthog Cave sediments. This sequence is critical for the defined stratigraphy and chronology of the sequence. There are no datum points in this section.

**Marcel’s Pinnacle (MP)**

The first and largest of the in-situ pinnacles that preserves palaeocave deposits is Marcel's Pinnacle. This pinnacle has been nicknamed Marcel's Pinnacle after a complete primate skull preserved in its face and was named by some previous excavators at the site. Andre Keyser originally named this as a witness section. This pinnacle preserves the best example of the slope of the original central debris pile (entrance talus cone) that formed beneath a vertical entrance. It is this central debris pile breccia that preserves the vast majority of the hominins and Marcel Pinnacle preserves the most continuous sequence through these deposits and some of the youngest parts of the breccia sequence. On the eastern face of the pinnacle is a single datum point labelled MRP (Marcels Reflector Point; co-ords S: 196.249; W: 213.147; Ht.: 0.305).

**The Italian Job (TIJ)**

The second witness section is adjacent and to the north of Marcel's Pinnacle and has been nicknamed The Italian Job (TIJ; figure 3)). It is thus named after students that excavated around the base of the pinnacle during a 2012 Italian Field School run by Prof Jacopo Moggi-Cecchi. TIJ shows the transition from the more clast supported breccia of the central debris pile as noted in Marcel’s Pinnacle to sandstone and siltstone deposits represented in The Wall of Jericho Witness (described below) section to the north. The section consists of matrix supported
breccia that shows this transition. There are no control points in this section but it is defined as a type section because of its importance for stratigraphic understanding and chronology at the site.

*The Walls of Jericho (WoJ)*

The third witness section is a remnant of laminated siltstone and sandstone deposits located at the north-west corner of the Main Quarry siltstones (figure 4). This section is important for a number of reasons. Firstly, it contains one of the few remnants of basal speleothem in the Main Quarry. Overlying this is a series of laminated siltstone and sandstones that represent winnowing from the central debris pile. At roughly mid-height is an interstratified flowstone speleothem layer that is critical for dating the deposits and the deposits below and above this show distinct changes in deposition. It is thus defined as a type section because of its importance for stratigraphic understanding and chronology at the site.

The section was unstable at one point, hence its nickname, but has been stabilised with rockset (see grey in image below). There is no evidence of movement via cracking of this rockset since this time. There is a single control point in this section named NW-SILT.PIN (co-ords S: 188.4644; W: 212.6705; Ht.: -0.7956).

*DMK*

The Makondo has a single major witness section within what is termed the Main Makondo. This solution fissure (labelled as MM in the image below) was the originally exposed deposit that Keyser dug to link his trench to the Main Quarry. This section is circular in nature and the makondo is narrow and thus it is almost impossible to get a picture of the entire section. The MM sequence is the only one to show the full thickness through the DMK deposits.
The Drimolen Makondo Photogrammetry model as it exists post the last major excavations in 2016 and showing the location of all the plotted fossil material. Areas of different geology have been labelled as have the names of the various makondo features: MM: Main Makondo; EM: East Makondo; NM: North Makondo; WM: West Makondo; SM: South Makondo; CG: Chris’ Gym; MB: Maddie’s Bath; NWR: North West Rift; HR; The Hanging Remnant; TT: The Tongue; TB: Traynorberg; SEB: South-East Breccia; UL: Uluru.
Picture of the Makondo with various features labelled as it was soon after excavation started in 2014 and as it is today. The main features shown in the photogrammetry above are labelled.
Section through DMQ Main Makondo type section showing the two main phases of deposition within the breccia. The lower clast supported breccia (1) that overlies the basal flowstone and then the matrix support breccia (2) that contains the majority of the fossils.
The North-West Rift type section is the original exposed face of palaeocave sediments that were outcropping at DMK. The sequence has residual cave sediment (WAD) at its base overlain by the basal flowstone and then a sequence of siltstone and sandstone deposits winnowed from the breccia seen in the Main Makondo Type Section. It is critical for understanding the stratigraphic and chronological sequence at the site.

Papers Published or Accepted for Publication on Drimolen


