Chapter 3

Kromdraai Cave

This chapter provides a background to the Kromdraai Cave, the analysis of the Kromdraai Cave, the placement of the Kromdraai cave within the peri-urban framework, and the selected client and programme.

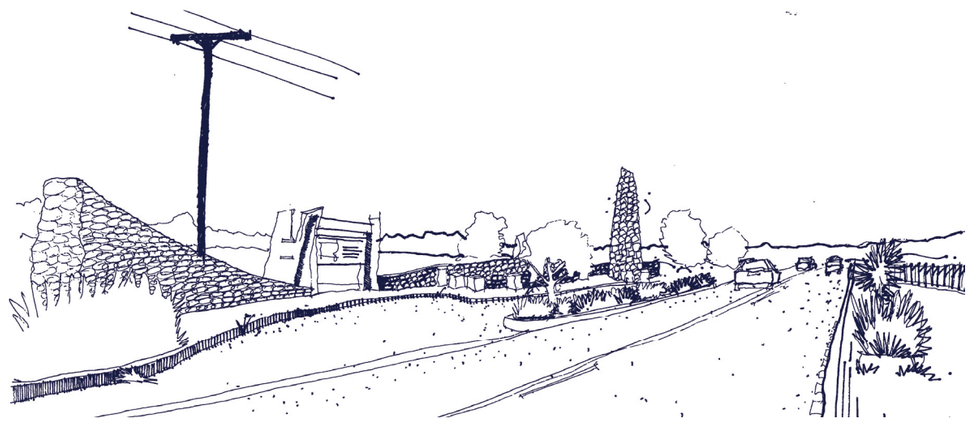
3.1 The background

Located at 26°00'S, 27°45'E, 2km east of the better known Sterkfontein Caves, the discovery of hominid fossils at Kromdraai represented one of the most important events in South African and universal archaeological history (Hilton-Barber & Berger, 2004:209)(Berger et al. 1994:209). On the site evidence can be found of an important development in South African prehistory representing advances in technological innovation, but which also impacted South African history and most probably the future.

Today few know the location of the Kromdraai fossil site or the significance it holds in the archaeological community. Aside from the discovery of over 6 800 remains, exploration of the site initiated the notion of South Africa being the birthplace of humankind and it plays a pivotal role in understanding the larger australopithecine landscape. The unroofed cave forms part of a vast network of galleries formed during the Miocene-Pliocene period, and is partially cut by an erosional surface, due to the deepening of the Blaauwbank River valley.

The cave consists of two erosion channels, which were used by carnivores such as Dinofelis, an extinct sabre-toothed cat, as a lair. The site therefore consists of two excavation sites, Kromdraai A and Kromdraai B, located 40m apart. The channels were filled with breccia over time, with Kromdraai B producing mammalian fossils, two stone tools from Earlier Stone Age Acheulian or Developed Oldowan technology, and nine sets of Paranthropus robustus remains dating from between 1.5-2 Millenia (Thackeray et al., 2002:43). The Paranthropus robustus remains (TM 1517) are dated to a minimum of 1.95 Ma, based on the Olduvai Event. Since discovery the remains have been kept at the Transvaal Museum (Berger & Hilton-Barber, 2006), with the cave still functioning as a habitat for bats and owls – "bone collectors" – today.

The dolomite near the cave has remained intact and chert bands are common in the area. Mat and biscuit stromatolites and oolites used to occur in loose pieces in the surrounding landscape, but in the 1960s due to collectors and commercial exploitation of Pelindaba Stone caused these popular stones to disappear. The cave was subsequently stripped of speleothem by lime workers in the 1920s and 1930s.



3.1 - Kromdraai (Author, 2016).

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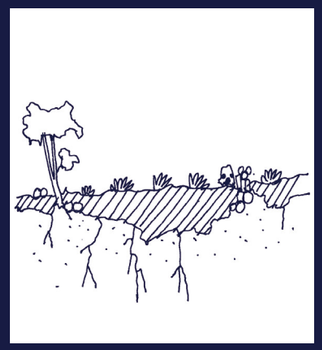
3.2 The background of the site



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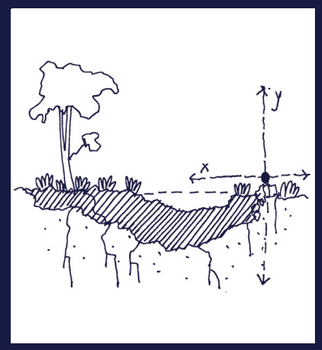
Original State

3.2 - Original State (Author, 2016).



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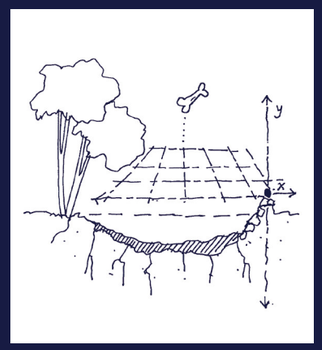
Vrba Datum Point

3.3 - Vrba Datum Point (Author, 2016).



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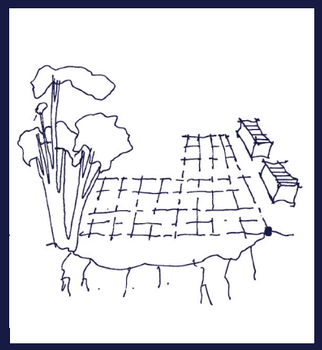
1970 Vrba Grid

3.4 - 1970 Vrba Grid (Author, 2016).

4
1990 Grid Extention

3.5 - 1990 Grid Extention (Author, 2016).



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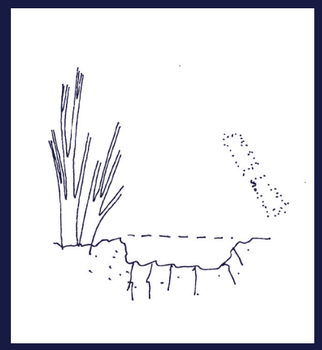
1990 Structures

3.6 - 1990 Structures (Author, 2016).



6
Site today

3.7 - Site today (Author, 2016).

Excavation at Kromdraai took place during five periods (Braga, Thackeray, Bruxelles, Dumoncel & Fourvel, 2015:4-5):

- 1938-44: Broom 1938; 1942; 1943; Broom & Schepers 1946
- 1955-56: Brain 1958; 1975; 1978; 1981
- 1977-80: Vrba 1981; Vrba & Panagos 1982; Partridge 1982; Grine 1982; 1988
- 1993-2002: Berger et al. 1994
- 2002 – ongoing: Thackeray et al. 2001, 2002, 2003, 2005; Braga et al. 2003, 2013

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Previously an abandoned lime works, the discovery of robust ape-man teeth in 1938 by a schoolboy (Berger & Hilton-Barber, 2006:209) transformed Kromdraai Cave into a rich fossil hominid treasure. The exact location within Kromdraai B of the Paranthropus robustus discovery in 1938 (TM 1517) is not clear, as it is unknown whether these specimens had been found in situ or in a loose block. Although the exact circumstances of the discovery remain a mystery, it revealed a new genus and species, coined Paranthropus robustus by Robert Broom (Thackeray et al., 2002:43).

In 1941 intensive excavation of the site started at Kromdraai B (Berger & Hilton-Barber, 2006:209) and several more hominid fossils followed. During the excavation a juvenile mandible was discovered and named TM 1536, which allowed for a juvenile comparison to the Taung Skull (Thackeray et al., 2002:43) . The location of the 1941 juvenile mandible is only known to be within four feet of the place where the skull lay(Broom, Schepers & Schepers, 1946: 109-110) with records of fossil finds proving a conundrum.

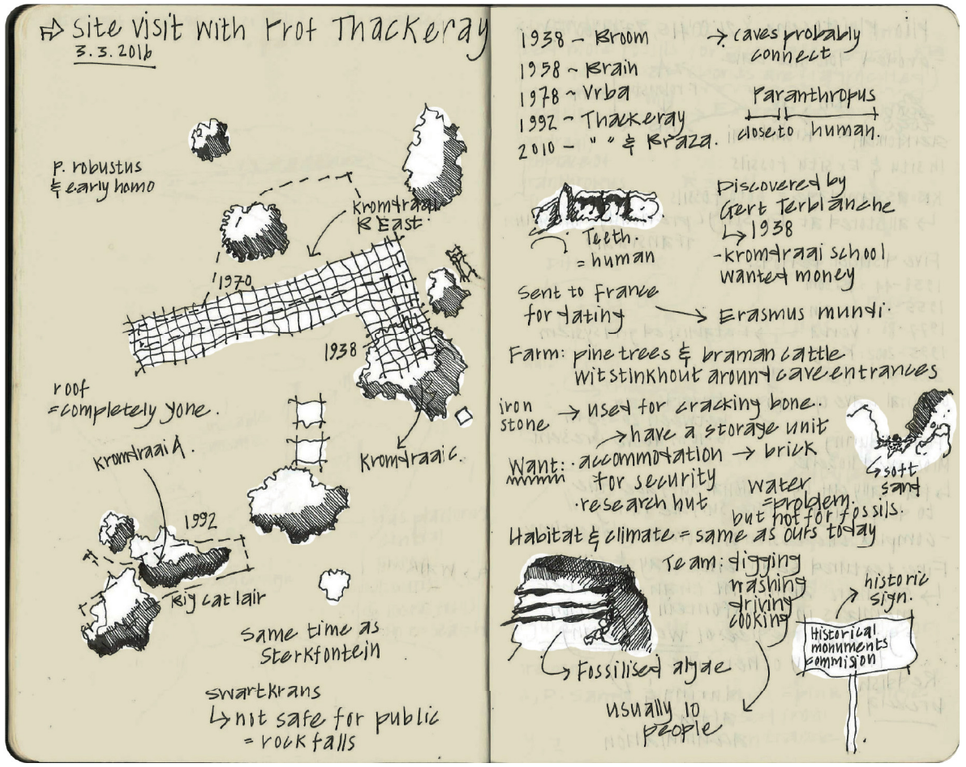
In 1947 a three-month excavation at Kromdraai A started with the goal to obtain a faunal assemblage relating to that of Paranthropus robustus. The excavation resulted in the blasting of breccia at Kromdraai A which revealed abundant fauna for investigation.

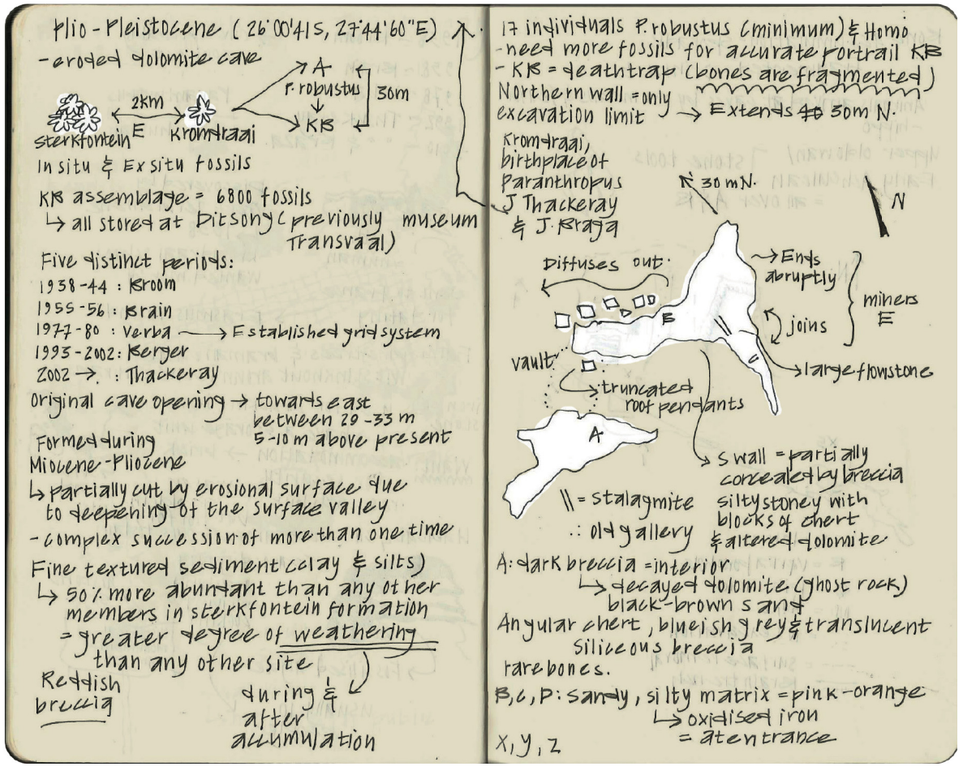
Excavation of Kromdraai Cave ceased as Mrs Ples was discovered at Sterkfontein in 1947 (Thackeray et al., 2002:43) but in 1955 C.K. Brain renewed excavations at the site (Berger & Hilton-Barber, 2006:209). Brain's excavation concentrated on mainly decalcified breccia along what he believed to be "the northern wall" of the KB East Formation, estimated to be situated between E-W coordinates 20 and 30m, to a depth of approximately 5m. Excavations revealed diverse fauna at Kromdraai B, yet only that of 2m could be directly associated with the australopithecine fossils. C.K. Brain's efforts led to the first discoveries of cultural material at Kromdraai B, which consisted of artificially introduced blocks of pebbles and quartzite, and an unquestionable flake of chert (Braga, Thackeray, Bruxelles, Dumoncel & Fourvel, 2015:4).

Elisabeth Vrba, seeking in situ fauna associated with hominid fossils, started excavations at Kromdraai in 1977, which proved to be the most extensive to date (Berger & Hilton-Barber, 2006:209) . During the three years of excavation Vrba, together with Partridge, established a stratigraphic member sequence allowing her to place fossils recovered from earlier work within a geological sequence. During the 1977-80 fieldwork led by Vrba, a grid system was established for the first time on this site. The location of the original cave opening was assessed to lie towards the eastern end of the site, between E-W coordinates 29 and 33m, likely between 5 and 10m above the present erosion level (Braga et al., 2015:5). During this time numerous mammal and five hominid fossils were discovered and non-hominid fauna was used to draw inferences regarding the prehistoric environment(Thackeray, Senegas & Wallace, 2005:43). Several tools were discovered during the early excavations in Kromdraai B marking the appearance of the first lower Oldowan tools in South Africa(Braga et al., 2015:13)(Granger, Gibbon, Kuman, Clarke, Bruxelles & Caffee, 2015:522). In comparison with the material from Kromdraai A, these tools were attributed to be Upper Oldowan/ Early Acheulean, and were set in a wide time bracket ranging between 1 and 2 Ma.

J.F. Thackeray and L.R. Berger commenced excavation at Kromdraai B in 1993 as a joint research effort by the Transvaal Museum and the Paleo-Anthropology Research Unit of the University of the Witwatersrand (Berger & Hilton-Barber, 2006:209). The 1993 excavation extended 100m east of Vrba's 1977 grid, with a 30-40m northern extension and a 0-10m eastern extension of the grid, removing a 5m layer of decalcified deposits from the area. Blocks of breccias were recorded in 3D based on Vrba's grid, using measuring staffs and measuring tape. The grid was stolen during the 1990s. Today a total station is used to record the precise position of fossils(Braga et al., 2015:5-7).

After the 2000s the Kromdraai Research Project was been established, prompted by the discovery of additional fossil material at Kromdraai B, and it was concluded that the site was six times larger than previously estimated and may have an extension more than 30m towards the north(Braga et al., 2015:5).





3.8 - Site visit (Author, 2016).

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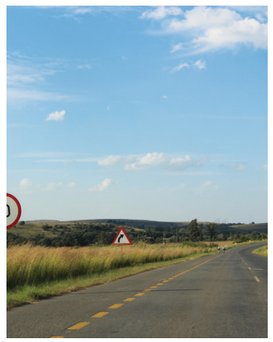
3.3 The site analysis

3.3.1 The photographic study

The photographic study provides a visual understanding of the characteristics and context of the cave. The vastness of the landscape and functioning of the context is evident in the images, as well as the isolation and "neglect" of the fossil site.



3.9 - Photos of Kromdraai cave (Author, 2016).

3.10 - Aerial of Kromdraai (Thackeray, sa).

3.11 - Photo of Kromdraai cave (Author, 2016).

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3.3.2 The general analysis

The Kromdraai Site Management Plan (Leyland, 2008:14) identifies the values of Kromdraai fossil site as landscape, palaeontological and archaeological assets, mining and history, research, biodiversity and ecology, education, and tourism.

3.3.3 The mining and historical values

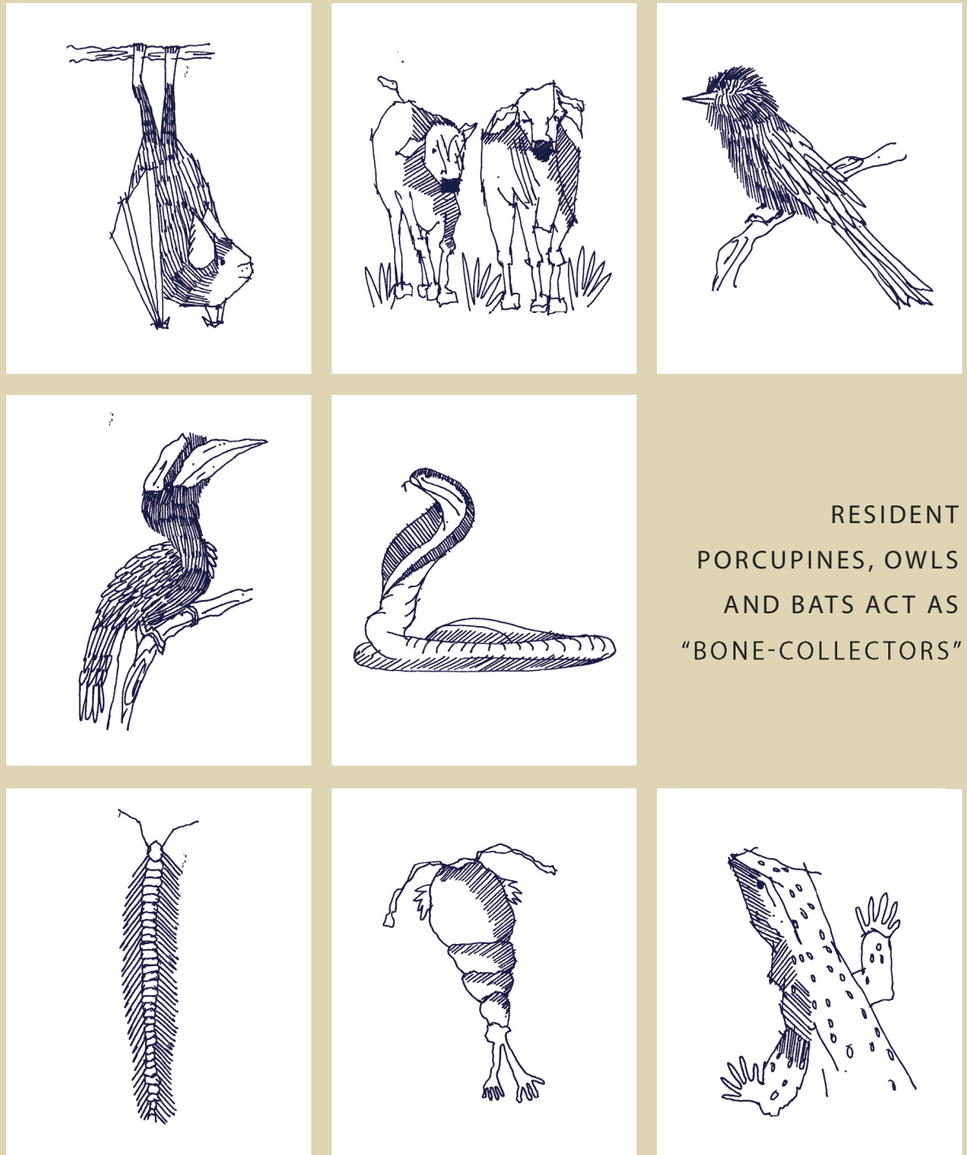
Although mining at Kromdraai was never extensive due to limited limestone at the cave, the existing speleothem was stripped from the cave and surface outcrops of travertine removed. Although the linkages between Kromdraai Cave and mining are not strong, mining played an important role in the history of the area and must be acknowledged in understanding the site.

3.3.4 The landscape and biodiversity

The vegetation found at Kromdraai Cave is found in the Cradle of Humankind generally and is known as Carletonville Dolomite Grassland (Eloff, 2010:19). The vegetation regionally coincides with the Rocky Highveld Grassland within the Grassland Biome of South Africa (Berger & Hilton-Barber, 2002:12), or Bankenveld (Eloff, 2010:18) . Rocky Highveld Grassland, as described by Bredenkamp, Brown & Pfab (2006:65), is fairly rare in its natural state, with over 65% of it being classed as altered (Eloff, 2010:19).

With more than 500 plant species making up this open grassland vegetation, together with the view, Kromdraai Cave has major potential for showcasing the environment. Although species on the Red Data List are known to be part of the environment, these have not been listed yet. The subterranean environment has remained intact and resident porcupines, owls and bats occupying caves.

3.12 - The landscape at Kromdraai Cave (Author, 2016).



3.13 - Animal species at Kromdraai cave (Author, 2016).

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3.3.5 The geological features of the cave

3.13 - The geological features of the cave (Author, 2016).

3.3.6 The built environment

During the 1990s excavation, a storage shed, water storage tank and caretaker quarters were erected next to the fossil site (Gauteng Provincial Government, 2008:25-26). Since the caretaker acting as security for the site has been absent, all equipment as well as the physical structures have been stolen. Today the only evidence of these structures lies in their remaining foundations. During periods of excavation the researchers rely on bed and breakfast accommodation in the area.

The lack of infrastructure, such as access to electricity water and ablution facilities, impedes the excavation process as water has to be hauled to the site, or the excavation team has to drive fossils to better equipped locations.

3.3.7 Presentation

No tourism-related activities or infrastructure exist on the site, nor is it open to the public. Its location is generally unknown, yet one board indicating the status of the site can still be seen. The public may only access the site if accompanied by a researcher.

Lack of presentation and little public knowledge of Kromdraai Cave have resulted in a missed opportunity for education and dissemination of information. The site offers strong opportunities for tourism, and the lack of tourism infrastructure could diminish the experience of the Cradle of Humankind. The site is at risk of losing important information as elements may be left unrecorded or vulnerable to damage. Funding opportunities for conservation and future research have been missed, with researchers and academics being undervalued and unacknowledged.

3.3.8 The site in terms of the seasons

Excavation of the site usually occurs during the winter months. During this period the grassland becomes dull and unassuming, with semi-deciduous trees dotting the landscape. Of these trees the white stinkwood (Celtis africana) is the most relevant to archaeology as the tree acts as an indicator of the presence of caves (Berger & Hilton-Barber, 2006:17).

During springtime the white stinkwood tree expresses gentle, light-green new leaves which contrast with its pale bark, and in autumn the leaves turn yellow before dropping off. As the tree is semi-deciduous, the old leaves are dropped all at the same time when the new spring leaf flush appears (Berger & Hilton-Barber, 2002:199). The leaves are eaten by livestock and may attract the attention of the Brahman cattle of the farm. The tree provides food for the larvae of various species of moth, the presence of which attract bats, and the food simultaneously attracts butterflies like the blue-spotted emperor and the African snout. With greenish flowers appearing in early spring and summer, the flowers are pollinated by various insects, particularly honeybees. Following the flowers, small, rounded, berry-like fruits grow, turning yellow-brown to black when ripe. The fruit is sought after by wildlife, such as fruit-eating birds like Rameron pigeons, doves, willow warblers, bulbuls, mousebirds and crested barbets, all living exhibitions of the ecological system and habitat of the landscape (Gardening in South Africa, 2016); therefore the tree itself serves as an indicator of seasonal changes and acts as a coordinate of the seasons.

3.4 The opportunities

3.4.1 Education and tourism

As the site is situated only 2km from Sterkfontein and 400m from Cooper's Cave, it opens up the opportunity to connect to the existing tourism infrastructure. The caved-in roof makes the site safe for the public, and the cave demonstrates the main geological features of the cave itself and the area.

The clumped distribution of large trees and examples of economically significant plants, including edible and toxic plants, can be pointed out within the greenbelt. The cave itself provides the possibility for education on the main geological features, as it displays good examples of weathered dolomite, chert bands, stromatolites, pisolites and oolites.

Kromdraai Cave forms part of a network of caves within the Cradle of Humankind. In the context the site is one of only three to host Earlier Stone

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Age tools (Berger et al. 1994:209). Through the presence of Paranthropus robustus fossils the site is connected to the larger Cradle landscape as a means of understanding the australopithecine environment.

Due to the topography of Kromdraai farm the site has a 360-degree view over the Blaauwbank River valley, and seven caves can be pointed out from the cave site. The land encompassing the view consists of farmland, tourism and recreational activities as well as economic enterprises. The natural state of the landscape has generally been altered, as many farming and commercial structures as well as infrastructure such as roads and telephone poles are visible, but the landscape has generally maintained a rural ambience.

3.5 Kromdraai cave within the framework

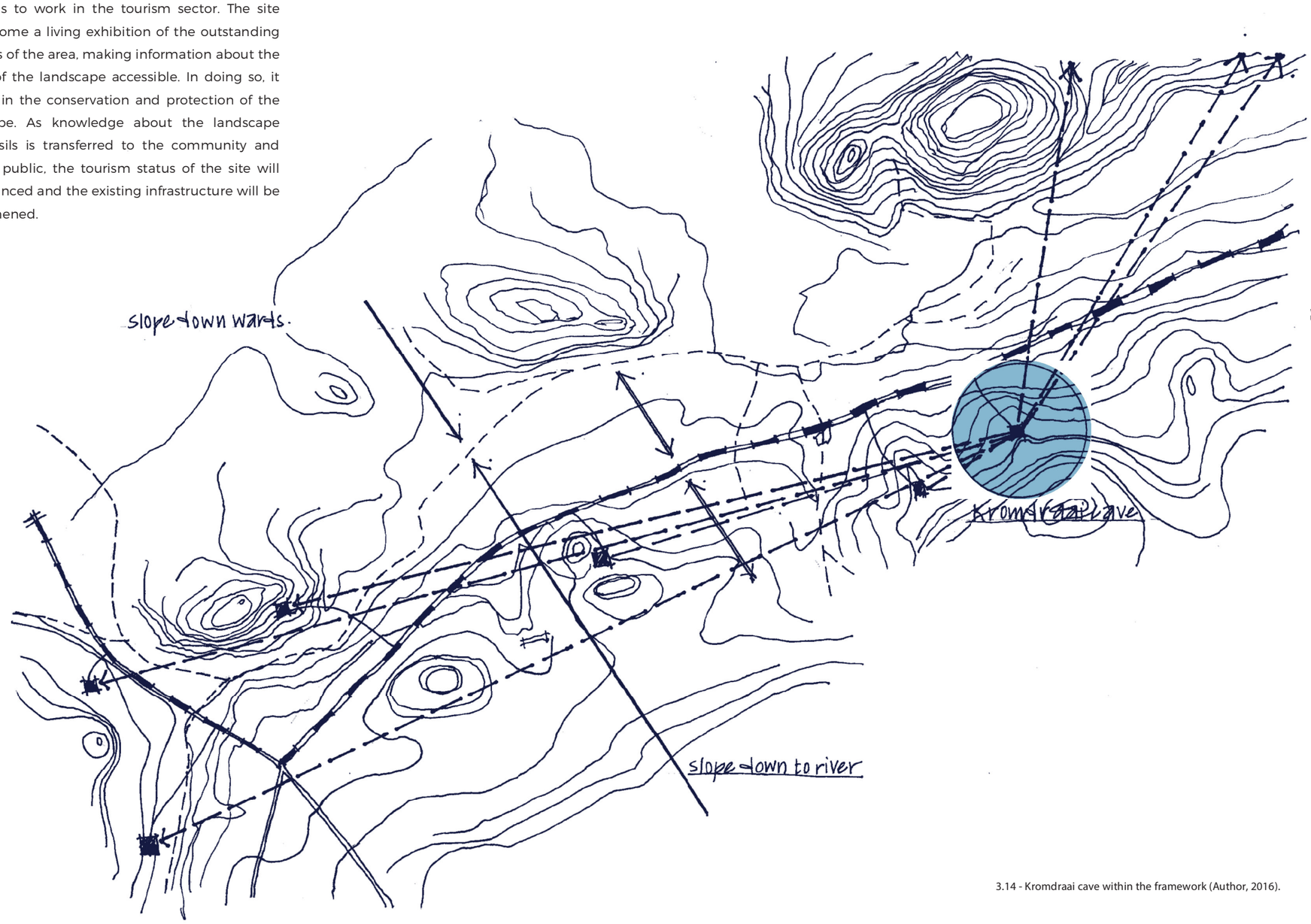
Although Maropeng boasts an array of community projects (Cradle of Humankind., 2016), funded by a community development trust to comprise 7.5% of the revenue generated once the goal of 400 000 visitors per annum have been reached, the visitor numbers have not been achieved and, therefore, no projects have been developed for community benefit (Development Bank of South Africa, 2011:21). Other than a few employment opportunities at the site, benefits have remained limited. The approach of the framework thus focuses not only on conserving heritage but investigates a strategy to bring value directly to the informal Cradle community.

The presence of the informal farming community on and next to Kromdraai farm, together with its proximity to the existing Sterkfontein visitor centre, makes the farm the ideal location to reach the goals of the Cradle of Humankind Trust.

3.6 The client and programme

The Evolutionary Science Institute is to act as main client for the development of an on-site research and excavation facility with a community education and tourism interface. The programme aims at facilitating excavations and research done by the Evolutionary Science Institute at Kromdraai Cave in order to generate new discoveries. As the intervention would support the existing facilities and form part of the proposed corridor, UNESCO and Maropeng a'Afrika Leisure (Pty) Ltd. would act as supporting clients.

The site will function as a research facility, utilizing the presence of the scientific community on site to assist in providing the local community with the skills to work in the tourism sector. The site will become a living exhibition of the outstanding qualities of the area, making information about the values of the landscape accessible. In doing so, it will aid in the conservation and protection of the landscape. As knowledge about the landscape and fossils is transferred to the community and general public, the tourism status of the site will be enhanced and the existing infrastructure will be strengthened.



3.14 - Kromdraai cave within the framework (Author, 2016).

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