

## **A report based on fieldwork and research regarding Kromdraai A and B.**

Prof J.F. Thackeray. Submitted to SAHRA, March 2012

Kromdraai A and B sites are situated within 2 kilometres east of Sterkfontein in the Cradle of Humankind World Heritage Site. Kromdraai B is important as a hominid site where both *Paranthropus robustus* and Early *Homo* are represented. Kromdraai A has not yielded hominids but a hominid presence is reflected by the fact that stone artefacts occur there.

The list of 37 publications regarding Kromdraai A and B since 1992 (Thackeray et al), listed in Table 1, reflects the sustained work on Kromdraai in the field and in the laboratory, in collaboration with South African and overseas institutions. The fieldwork involved excavations at both Kromdraai A and B using a grid established by Vrba. New hominid material was discovered from Kromdraai B.

The artefacts from Kromdraai A and B including polyhedral cores of the kind found at Olduvai Bed I. Dates at Kromdraai B include the beginning of the Olduvai Event at 1.95 million years BP, based on palaeomagnetism and fauna. It is believed that all deposits from Kromdraai A, with reversed magnetic polarity, predate 1.8 million years B.P.

A survey of the caves at Kromdraai is currently being undertaken, and there are plans to continue excavation. A monograph is to be compiled, edited by Jose Braga and Francis Thackeray.

An application is made for a permit to renew excavations and fieldwork at Kromdraai beyond March 2012.

### **Table 1. LIST OF PUBLICATIONS SINCE 1992 REGARDING KROMDRAAI A AND B (Thackeray et al, in chronological order of publication).**

Macho, G.A. & Thackeray, J.F. 1992. Computed tomography and enamel thickness of maxillary molars of Plio-Pleistocene hominids from Sterkfontein, Swartkrans and Kromdraai (South Africa): An exploratory study. *American Journal of Physical Anthropology* 89:133-143.

Macho, G.A. & Thackeray, J.F. 1993. Computed tomography and intercuspal angulation of maxillary molars of Plio-Pleistocene hominids from Sterkfontein, Swartkrans and Kromdraai (South Africa): An exploratory study. *Zeitschrift für Morphologie und Anatomie* 79:261-269.

Thackeray, J.F. 1994. Robust australopithecines and certain specimens attributed to early *Homo*: are they congeneric? *Proceedings of the Anatomical society of Southern Africa. Journal of Anatomy* 185:693.

Berger, L., Menter, C. & Thackeray, J.F. 1994. The renewal of excavation activities at Kromdraai, South Africa. *South African Journal of Science* 90:209-210.

Thackeray, J.F., Lewies, A., Eriksson, P. & Partridge, T.C. 1995. Vanadium concentrations in cave sediments from the Sterkfontein Valley, South Africa. *South African Journal of Science* 91:556.

McKee, J.K., Thackeray, J.F. & Berger, L.R. 1995. Faunal assemblage seriation of southern African Pliocene and Pleistocene fossil deposits. *American Journal of Physical Anthropology* 96:235-250.

Schwartz, G.T., Thackeray, J.F. & Martin, L.B. 1995. Taxonomic relevance of enamel cap shape in extant hominoids and South African Plio-Pleistocene hominids. Abstract of paper presented at the 64<sup>th</sup> Annual Meeting of the American Association of Physical Anthropologists held in Oakland, California, 28 March - 1 April 1995. *American Journal of Physical Anthropology Supplement* 20: 193.

Thackeray, J.F. 1997. Probabilities of conspecificity. *Nature* 390:30-31.

Thackeray, J.F. & Reynolds, S. 1997. Variability in Plio-Pleistocene climates, habitats, and ungulate biomass in southern Africa. *South African Journal of Science* 93:171-172.

Kuman, K., Field, A.S. & Thackeray, J.F. 1997. Discovery of new artefacts at Kromdraai. *South African Journal of Science* 93:187-193.

Young, S., Thackeray, J.F. & Van der Merwe, N.J. 1997. Vanadium concentration variability in Plio-Pleistocene deposits at Kromdraai, South Africa. *Annals of the Transvaal Museum* 36:253-256.

Thackeray, F. 1998. Comparisons between the type specimens of *Paranthropus robustus* (TM 1517) and *Homo habilis* (OH 7). In: Raath, M.A., Soodyall, H., Barkhan, D., Kuykendall, K.L. & Tobias, P.V. (eds) Abstracts of contributions to the Dual Congress 1998: 134. Johannesburg: Dual Congress Organising Committee, Department of Anatomical Sciences, University of the Witwatersrand.

Blackwell, B.A.B., Thackeray, J.F., Tobias, P.V., Kuman, K., Schwarcz, H.P. & Skinner, A.F.R. 1998. The challenges in electron spin resonance (ESR) dating teeth from the classic australopithecine sites, Swartkrans, Sterkfontein, and Kromdraai, South Africa. In: Raath, M.A., Soodyall, H., Barkhan, D., Kuykendall, K.L. & Tobias, P.V. (eds) Abstracts of contributions to the Dual Congress 1998: 56. Johannesburg: Dual Congress Organising Committee, Department of Anatomical Sciences, University of the Witwatersrand.

Navsa, N. & Thackeray, F. 1998. Morphometric analyses of the dentition of type specimens of *Australopithecus boisei* (OH 5) and *Homo habilis* (OH 7), compared with the type specimen of *Paranthropus* (*Australopithecus*) *robustus* (TM 1517). In: Raath, M.A., Soodyall, H., Barkhan, D., Kuykendall, K.L. & Tobias, P.V. (eds) Abstracts of contributions to the Dual Congress 1998: 128. Johannesburg: Dual Congress Organising Committee, Department of Anatomical Sciences, University of the Witwatersrand.

Schwartz, G.T., Thackeray, J.F., Read, C. & Van Reenen, J.F. 1998. Enamel thickness and the topography of the enamel-dentine junction in South African Plio-Pleistocene hominids with special reference to the Carabelli trait. *Journal of Human Evolution* 35:523-542.

Thackeray, J.F. 1999. Kromdraai: A summary of excavations since 1938. In: A guide to the palaeontological sites of Sterkfontein, Swartkrans, Kromdraai, Gladysvale & Drimolen: 37-41. International Union for Quaternary Research: XV International Conference Field Guide.

Lee-Thorp, J.A., Van der Merwe, N.J. & Thackeray, J.F. 2000. The hunters and the hunted revisited. *Journal of Human Evolution* 39:565-576.

Thackeray, J.F., De Ruiter, D.J., Berger, L.R. & Van der Merwe, N.J. 2001. Hominid fossils from Kromdraai: a revised list of specimens discovered since 1938. *Annals of the Transvaal Museum* 38:43-56.

Thackeray, J.F., Kirschvink, J.L. & Raub, T.D. 2002. Palaeomagnetic analyses of calcified deposits from the Plio-Pleistocene hominid site of Kromdraai, South Africa. *South African Journal of Science* 98:537-540.

Thackeray, J.F., Young, S.M.M., Van de Venter, A., Potze, S., Sénégas, F. & Aiello, L.C. 2002. Relationships between vanadium concentrations and small mammal fauna in early Pleistocene deposits from Kromdraai A, South Africa. *Annals of the Transvaal Museum* 39:73-75.

Curnoe, D., Grün, R. & Thackeray, J.F. 2002. Electron spin resonance dating of tooth enamel from Kromdraai B, South Africa. *South African Journal of Science* 98:540.

Thackeray, J.F., McBride, V.A., Segonyane, S.P. & Franklyn, C.B. 2003. Trace element analysis of breccias associated with the type specimen of *Australopithecus* (*Paranthropus*) *robustus* from Kromdraai. *Annals of the Transvaal Museum* 40:147-150.

Thackeray, J.F., Van de Venter, A., Lee-Thorp, J.A., Chimimba, C.T. & Van Heerden, J. 2003. Stable carbon isotope analysis of modern and fossil samples of the South African rodent *Aethomys namaquensis*. *Annals of the Transvaal Museum* 40:43-46.

Braga, J. & Thackeray, J.F. 2003. Early *Homo* at Kromdraai B: probabilistic and morphological analysis of the lower dentition. *Comptes Rendus Palevol* 2:269-279.

Thackeray, J.F., Botha, R. & L'Abbé, E. 2005. Comparison of lower molars attributed to early *Homo* and *Paranthropus robustus*. *South African Journal of Science* 101:488.

Thackeray, J.F. & Braga, J. 2005. Early *Homo*, 'robust' australopithecines and stone tools at Kromdraai, South Africa. In: D'Errico, F. & Backwell, L. (eds) *From tools to symbols. From early hominids to modern humans*:229-235. Johannesburg: Wits University Press.

Thackeray, J.F., Braga, J., Sénégas, F., Gommery, D., Potze, S. & Senut, B. 2005. Discovery of a humerus shaft from Kromdraai B: part of the skeleton of the type specimen of *Paranthropus robustus* Broom, 1938? *Annals of the Transvaal Museum* 42:92-93.

Thackeray, J.F., Sénégas, F. & Wallace, I. 2005. The distribution of cave breccias at Kromdraai A and B in relation to dolomite. *Annals of the Transvaal Museum* 42:89-91.

Thackeray, J.F., Venter, A.M., & Nothnagel, G. 2005. Bone apatite residues and early Pleistocene stone tools: associations with bone breakage. *South African Journal of Science* 101:17-18.

Sponheimer, M., Lee-Thorp, J., De Ruiter, D., Codron, D., Codron, J., Baugh, A. & Thackeray, F. 2005. Hominins, sedges, and termites: new carbon isotope data from the Sterkfontein valley and Kruger National Park. *Journal of Human Evolution* 48:301-312.

Lesnick, J. & Thackeray, J.F. 2006. Analysis of crown heights of equid dentition from sites in the Cradle of Humankind: behavioural implications. *Annals of the Transvaal Museum* 43:118-120.

Thackeray, J.F. 2007. Hominids and carnivores at Kromdraai and other Quaternary sites in southern Africa. In: Pickering, T.R., Schick, K. & Toth, N. (eds) *Breathing life into fossils: taphonomic studies in honor of C.K. (Bob) Brain*: 43-49. Bloomington: Stone Age Institute Press.

Gommery, D., Thackeray, J.F., Potze, S. & Braga, J. 2008. The first recorded occurrence of honey badger of the genus *Mellivora* (Carnivora: Mustelidae) at Kromdraai B, South Africa. *Annals of the Transvaal Museum* 45:145-148.

Olejniczak, A., Smith, T.M., Skinner, M.M., Grine, F.E., Feeney, R.N.M., Thackeray, J.F. & Hublin, J.-J. 2007. Three-dimensional molar enamel distribution and thickness in *Australopithecus* and *Paranthropus*. *The Royal Society Biology Letters, Palaeontology* doi:10.1098/rsbl.2008.0223

Sénégas, F. & Thackeray, J.F. 2008. Temperature indices based on relative abundances of rodent taxa represented in South African Plio-Pleistocene assemblages. *Annals of the Transvaal Museum* 45:143-144.

Thackeray, J.F. & Prat, S. 2009. Chimpanzee subspecies and 'robust' australopithecine holotypes, in the context of comments by Darwin. *South African Journal of Science* 105: 463-464.

Cofran, Z. & Thackeray, J.F. 2010. One or two species? A morphometric comparison between robust australopithecines from Kromdraai and Swartkrans. *South African Journal of Science* 2010;106(1/2), Art.#15, 4 pages. DOI: 10.4102/sajs.v106i1/2.15.