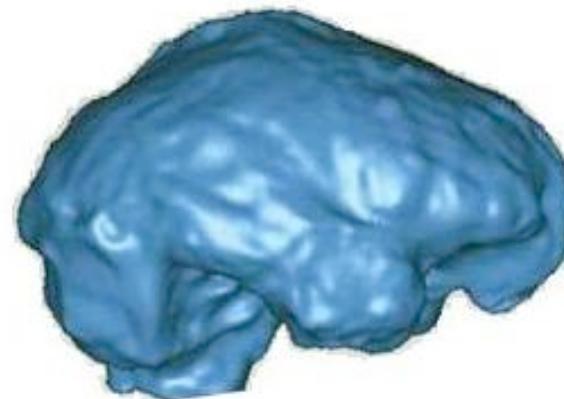
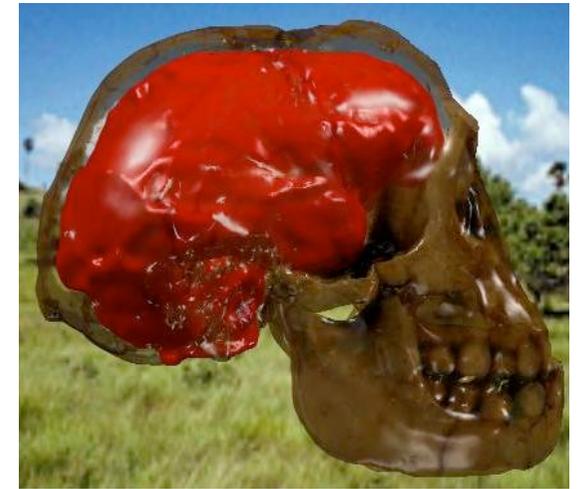


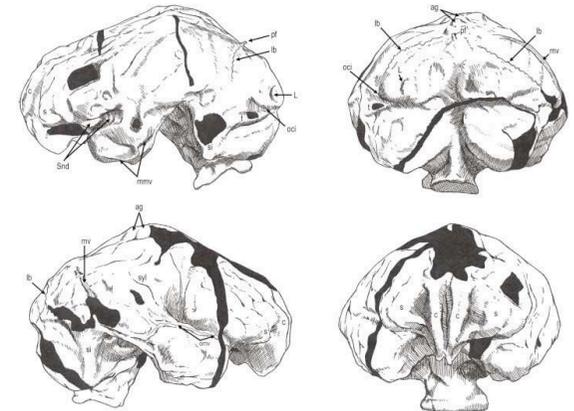
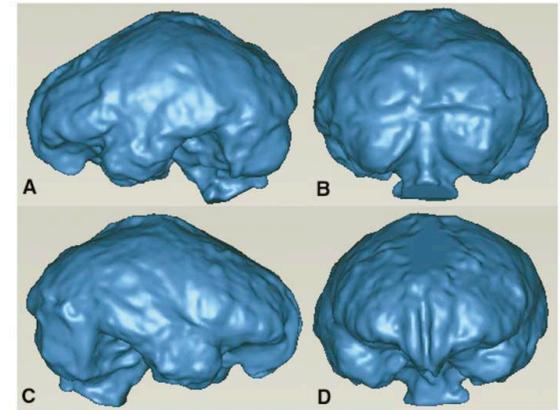
# Endocast of Taung (*Australopithecus africanus*) compared to that of LB1 (*Homo floresiensis*)—more than just a coincidence?

Dean Falk; School for Advanced Research, Santa Fe, NM  
AAPA; April 17, 2010



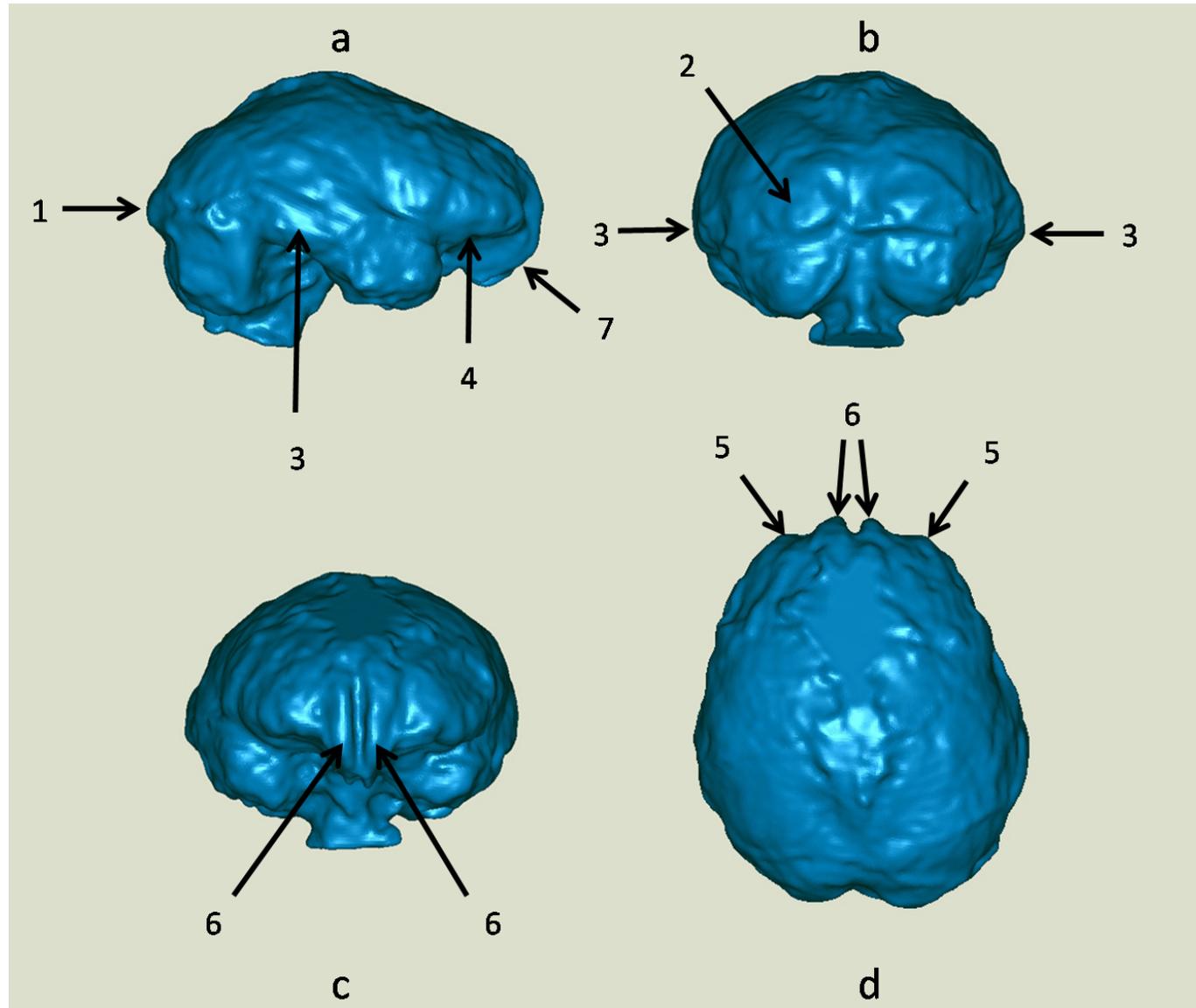
# 3 advanced areas of LB1's endocast

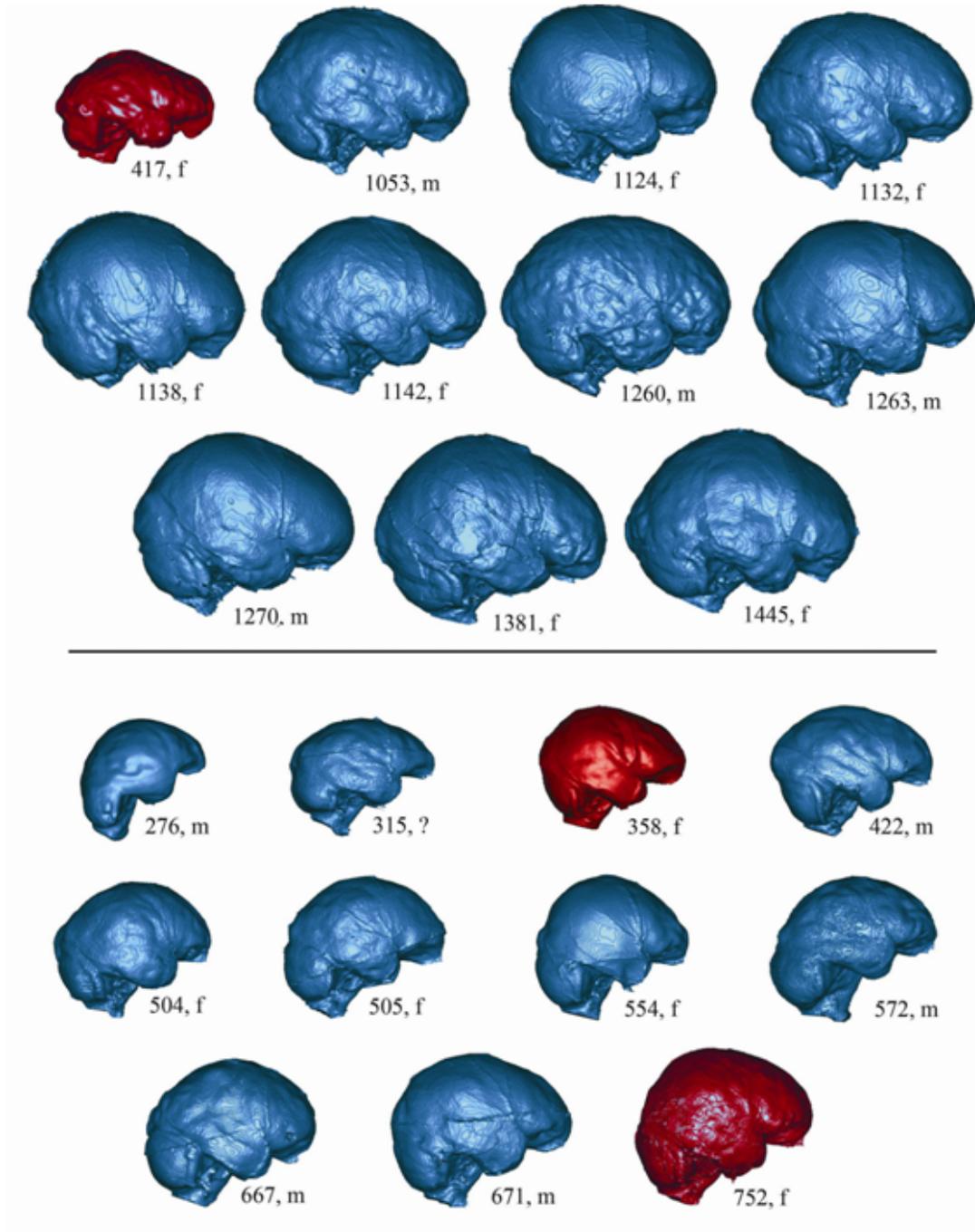
- **1** back: parietal association cortex (no apelike lunate s.)
- **2** prefrontal cortex (BA 10)
- **3** temporal lobes, back parts
  - **Global reorganization**



(Falk et al. 2005, *Science*)

# Falk et al., 2009, JHE





Falk et al.  
2007,  
PNAS

FEBRUARY 7, 1925]

NATURE

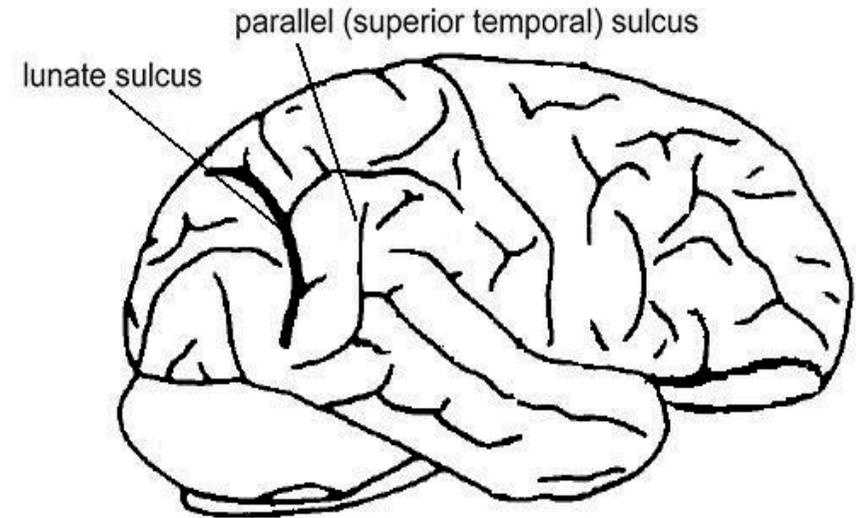
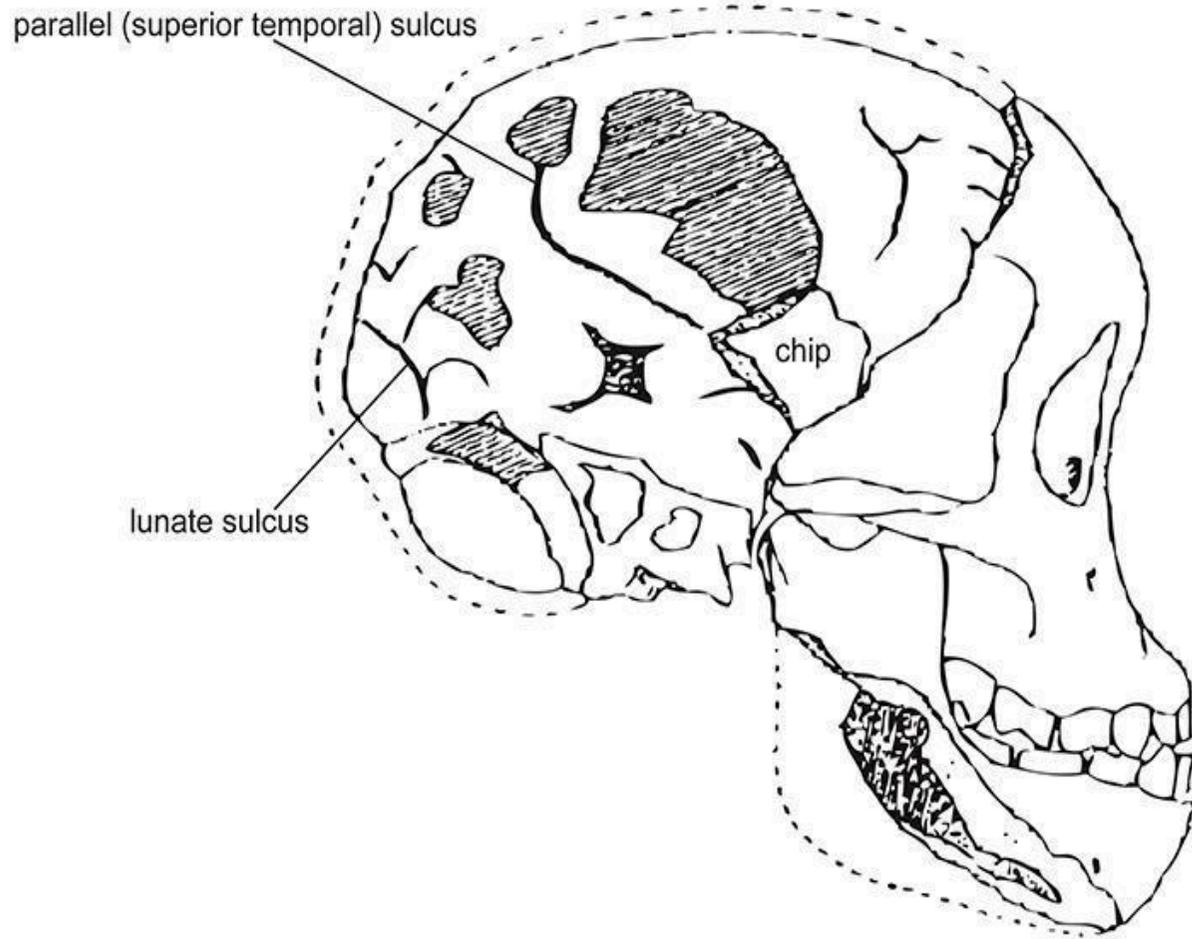
*Australopithecus africanus*: The Man-Ape of South Africa.

Not like Piltdown  
man

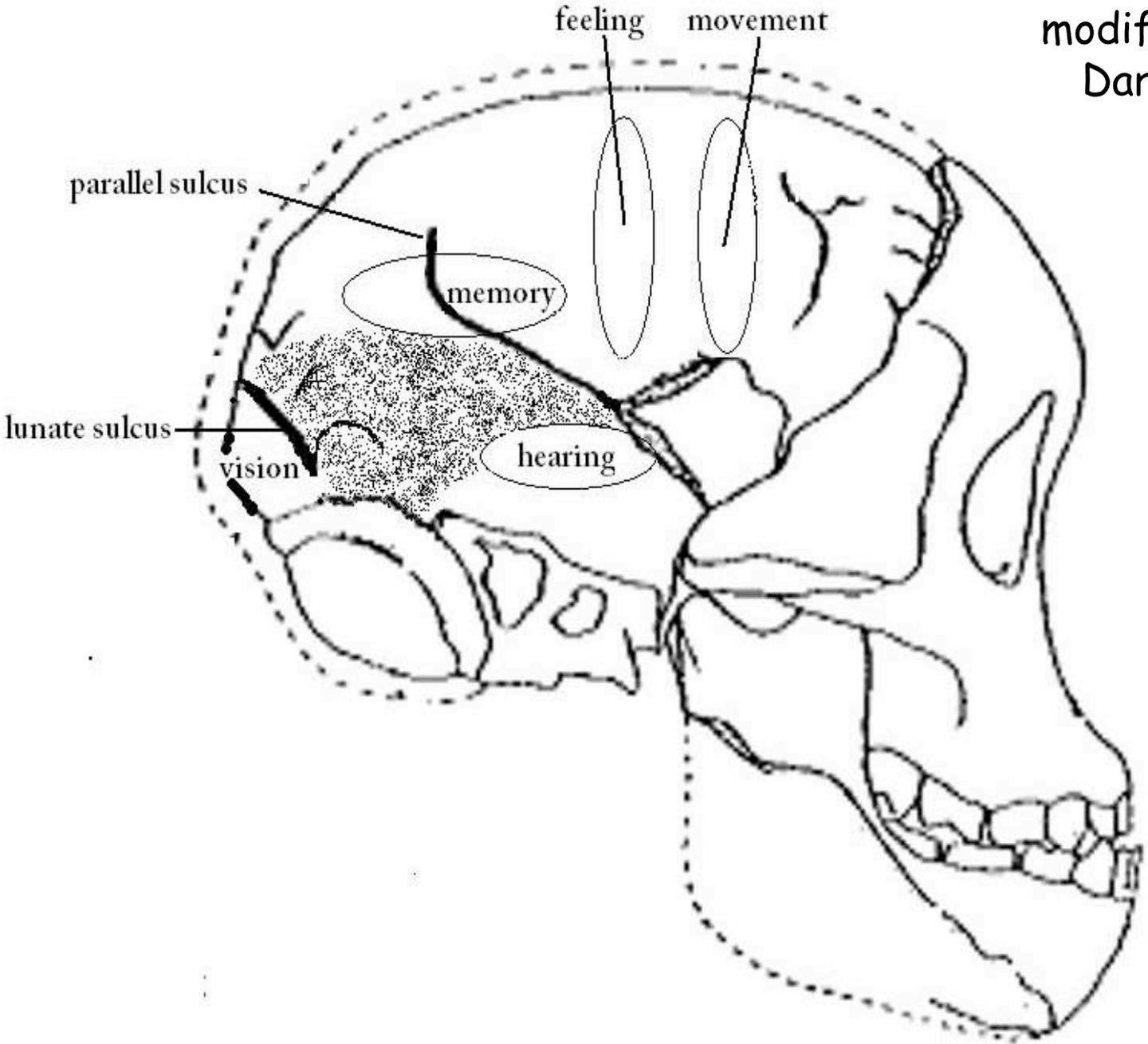
- Wrong part of world
- Brain too small



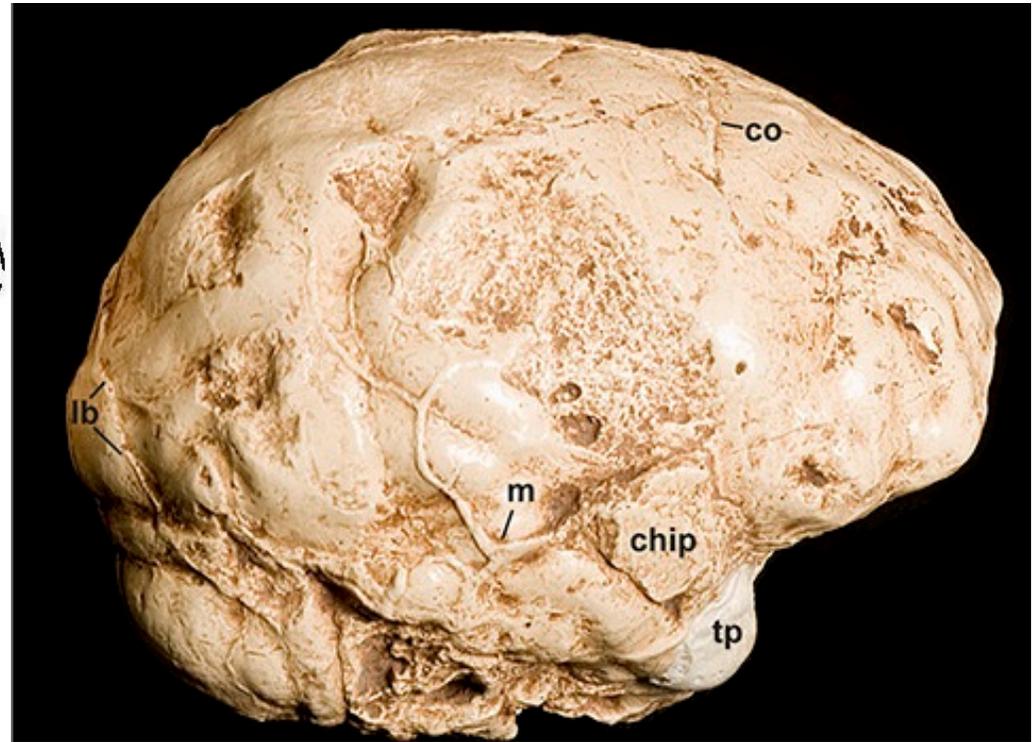
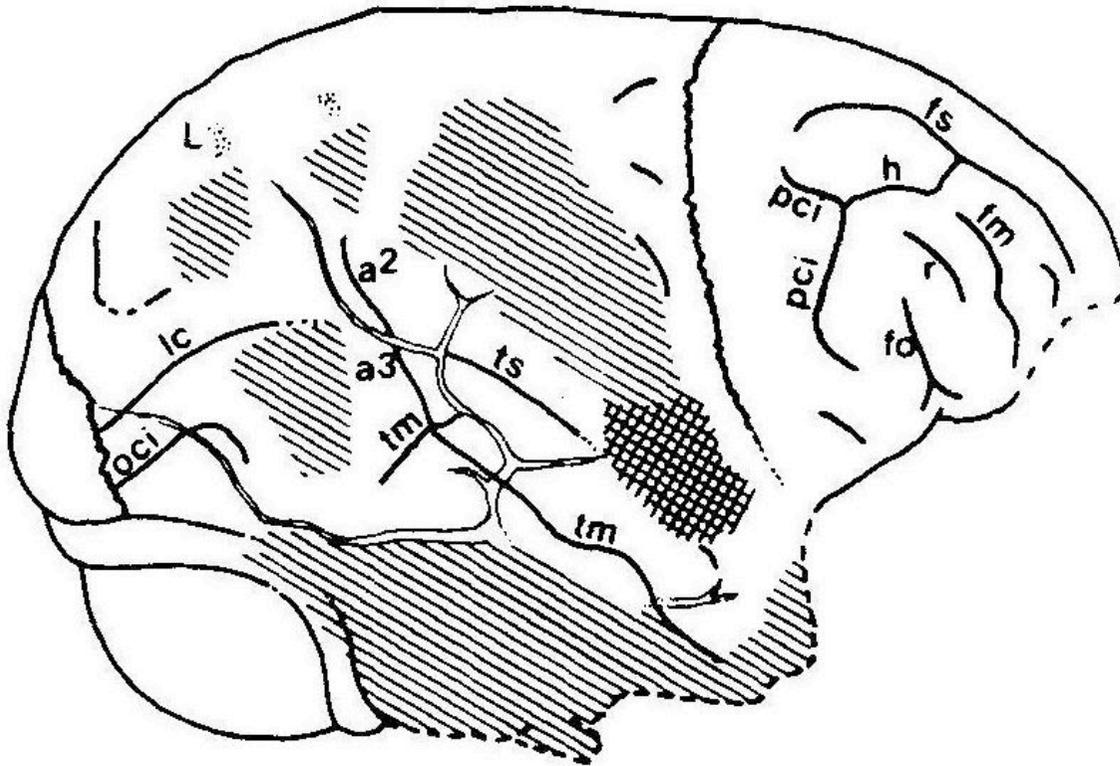
# Taung, Dart 1925 (left); Chimp (right)



modified from  
Dart 1959



# Falk 1980; Falk & Clarke 2007



# No evidence of "mosaic brain evolution"



from <http://cvcl.mit.edu/MM/images/mosaic.jpg>

# WITS Archives, Jo'berg, July - August, 2008



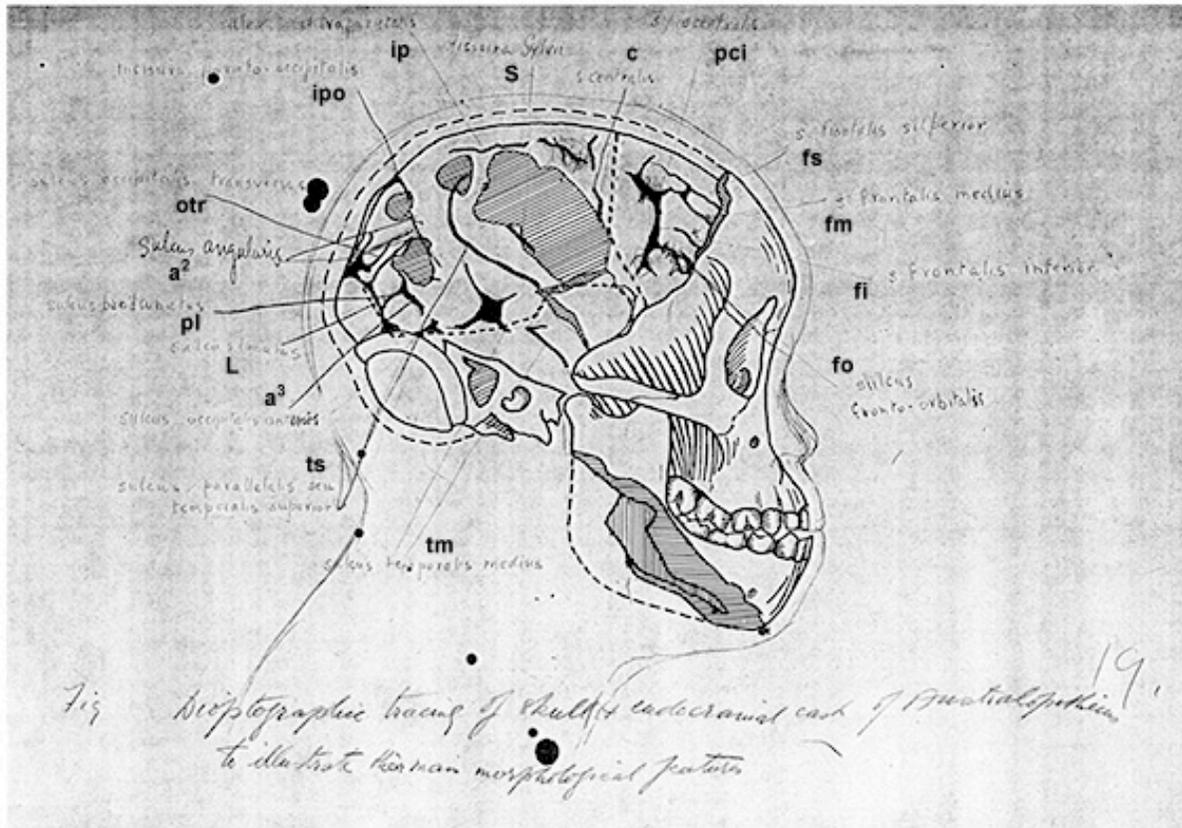
Dart wrote a 269 page manuscript,  
1929

- "Australopithecus africanus: And his place in human origins"
- **Rejected** by Royal Society, 1930  
(Piltdown gang) remains **unpublished**

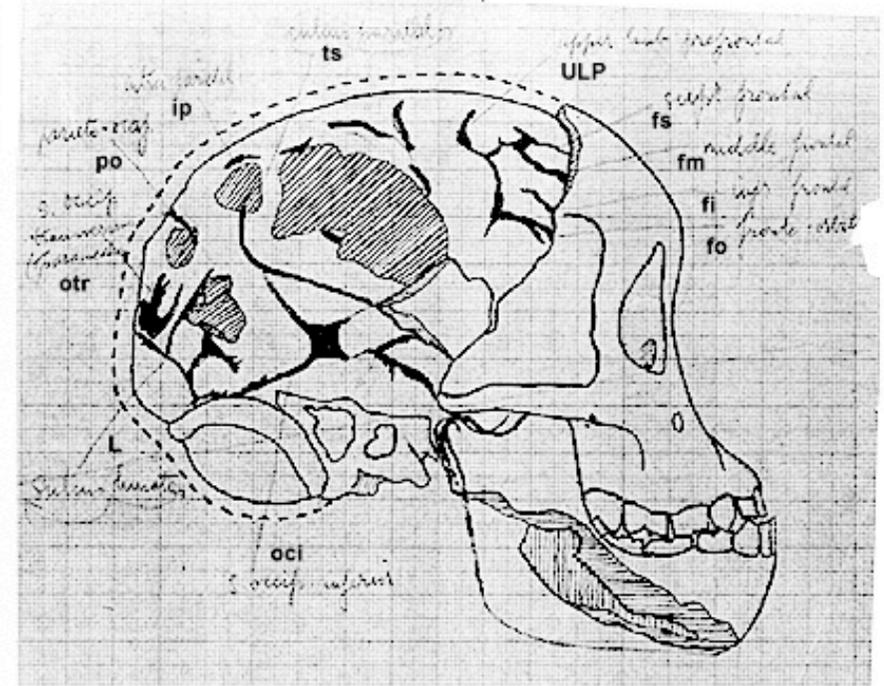
"The Piltdown Gang," 1915 oil painting by John Cooke



# Courtesy U. of Witwatersrand Archives; Falk 2009, Yearbook of Physical Anthropology

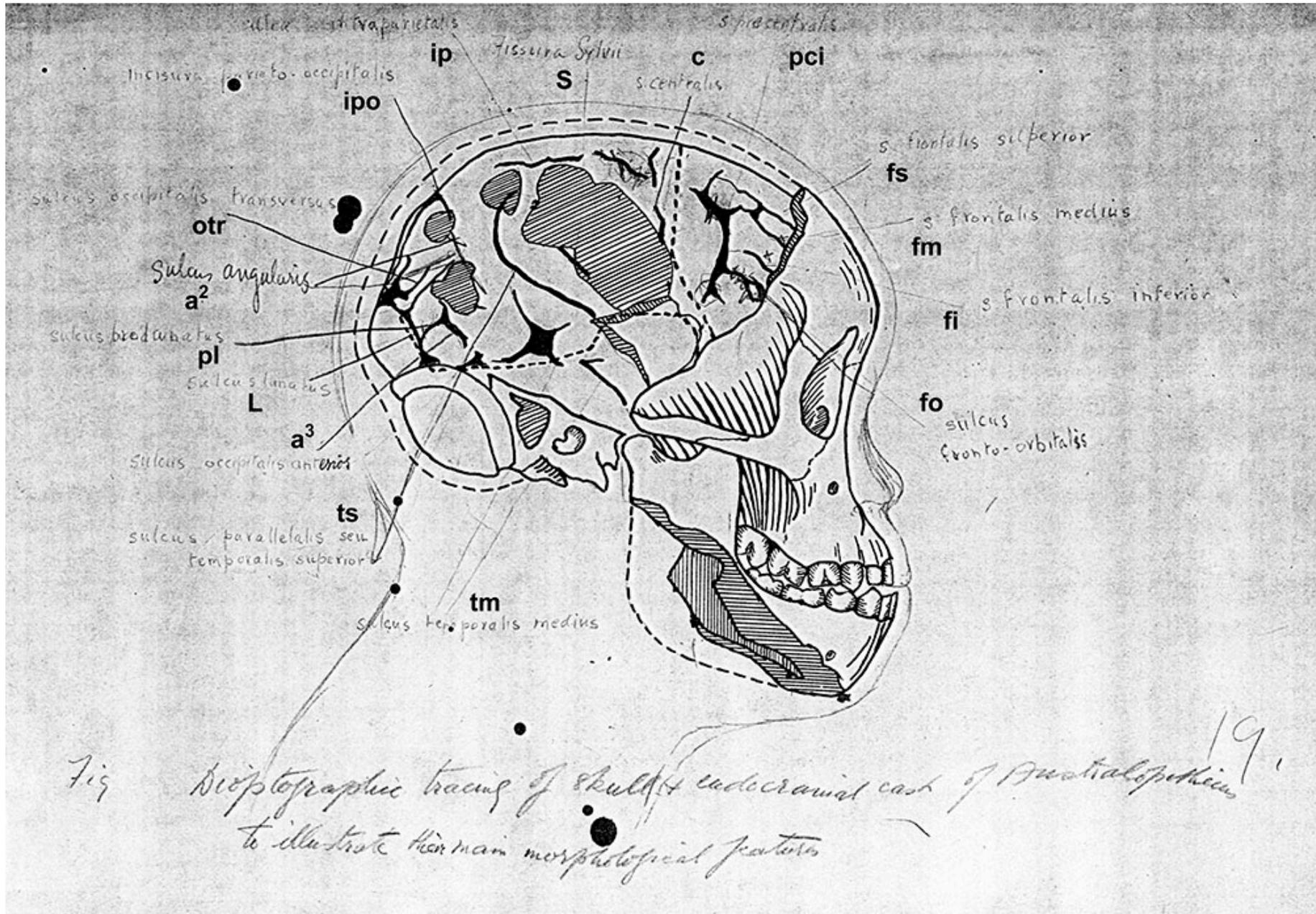


a

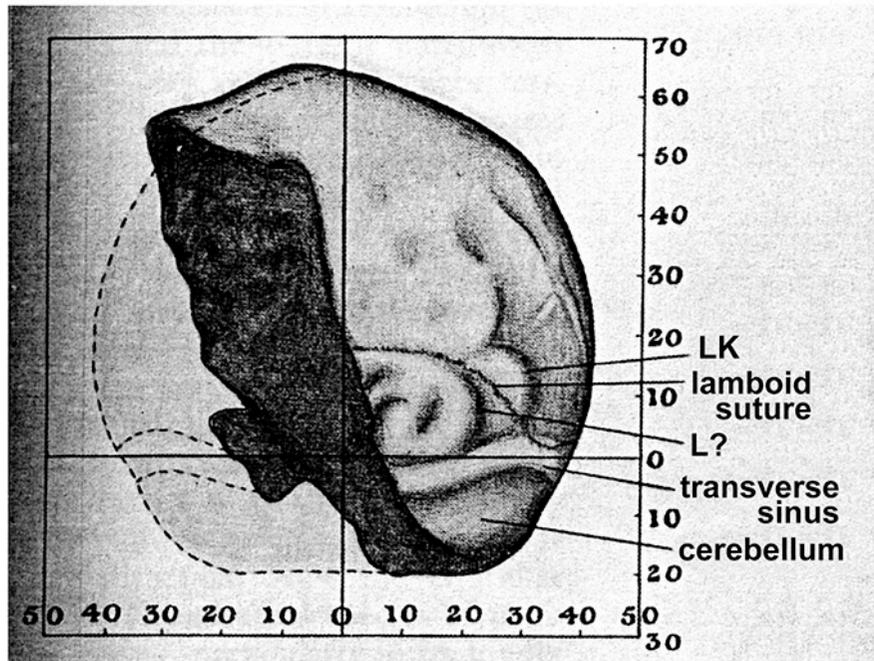


b

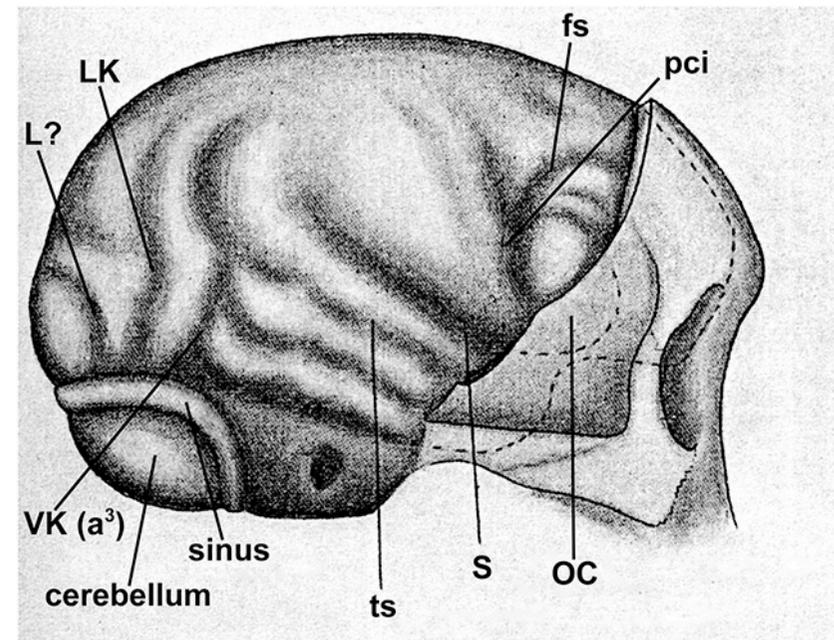
Courtesy U. of Witwatersrand Archives (Falk 2009, Yrbk PA)



# Arthur Keith, 1931



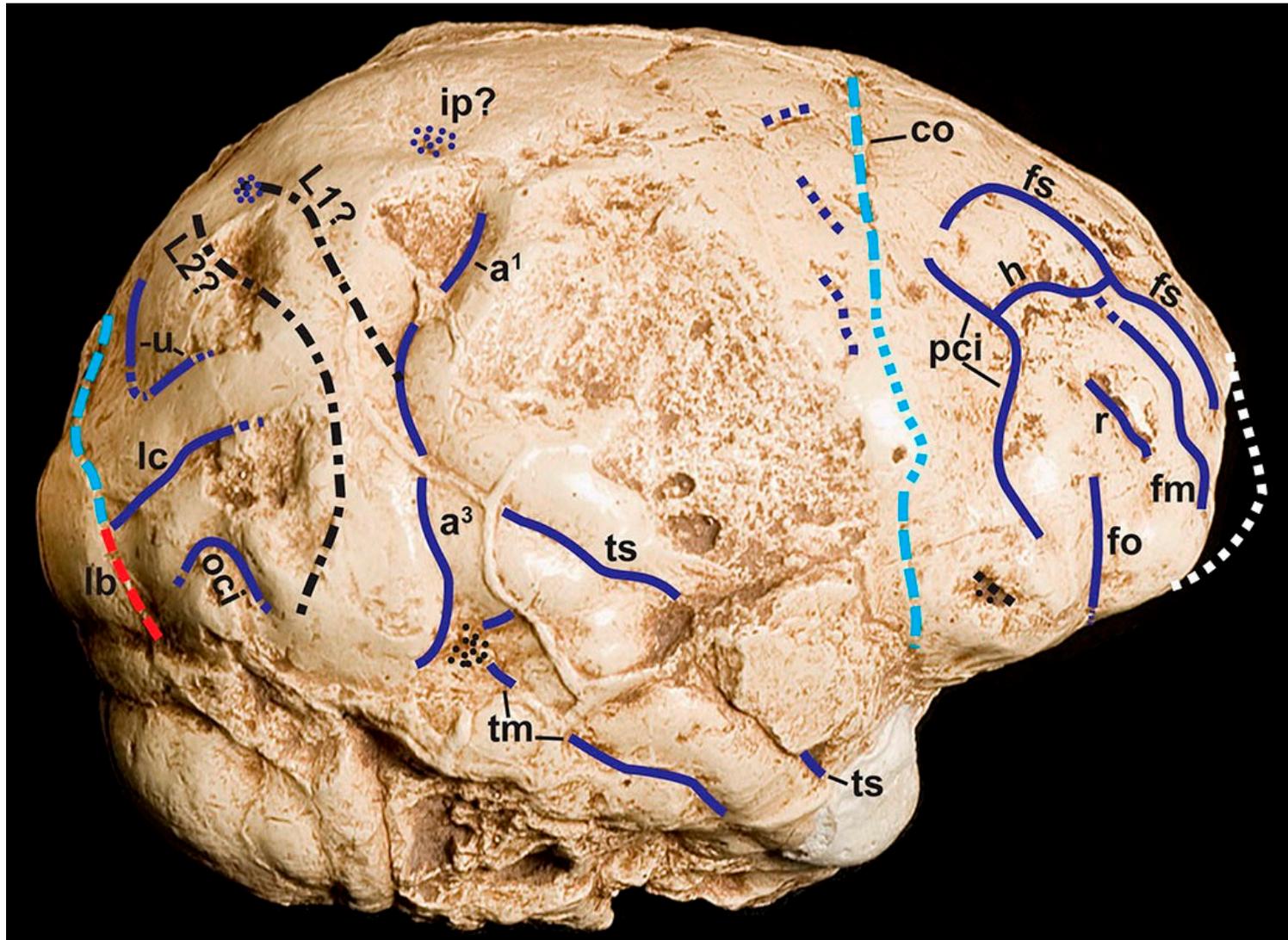
a



b



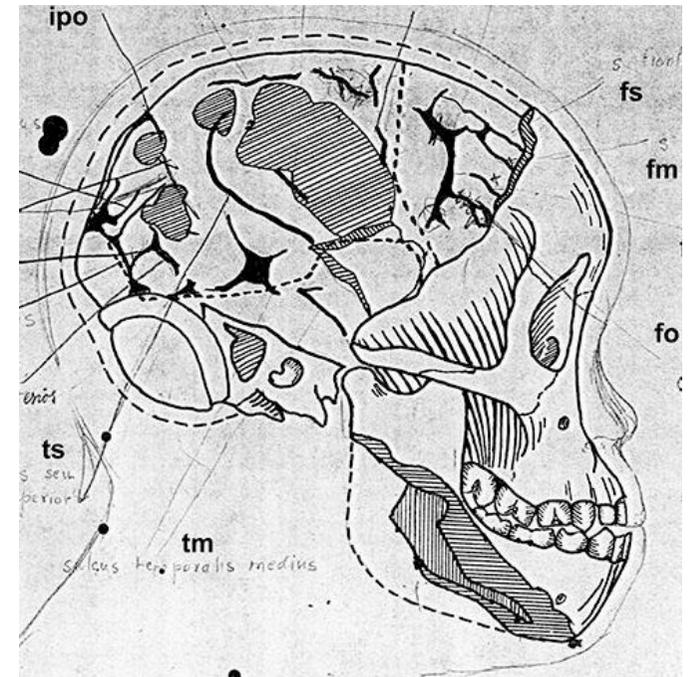
# Falk 2009, Yrbk Phys Anthropol



# Dart argued that Taung's endocast was advanced in **shapes** of 3 areas:

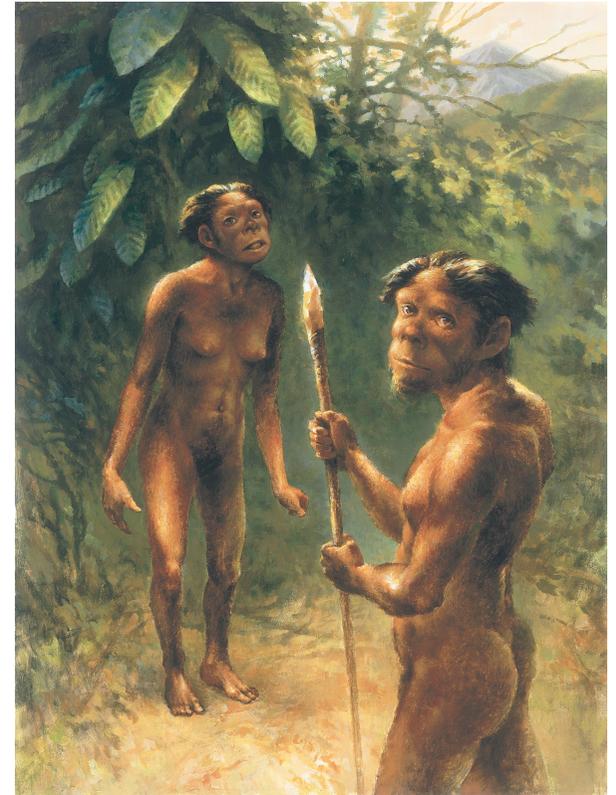
- **1** back: parietal association area (+no apelike lunate)
- **2** prefrontal
- **3** temporal lobes, back parts
  - **Global, not mosaic reorganization**

» Courtesy of U. Witwatersrand Archives; Falk 2009, Yrbk Phys Anthropol

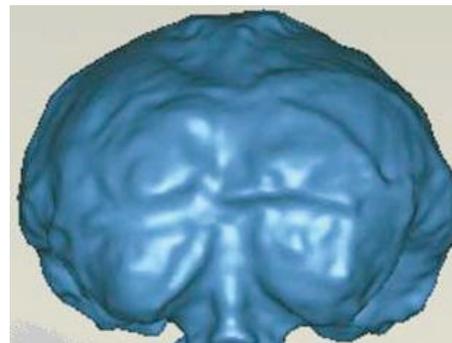
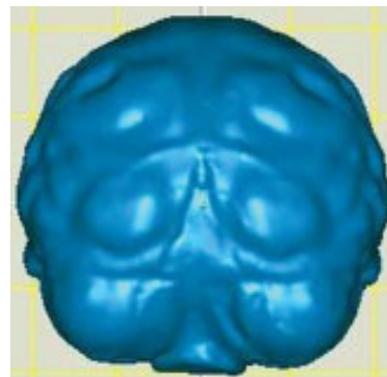
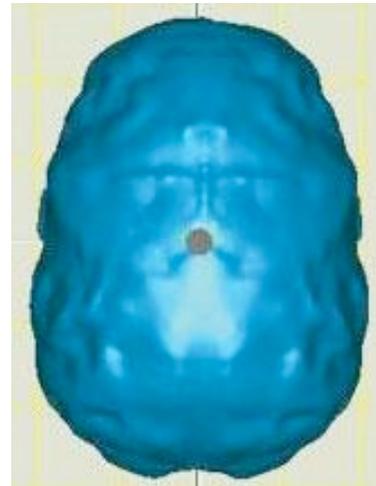


# Like Taung, Hobbit Controversial:

- 3 derived brain regions
- Appearance unexpected
- In wrong part of world
- Brain too small
- Global reorganization



courtesy Michael Hagelberg

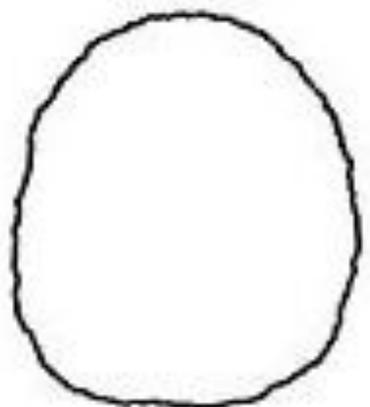


Taung,  
left  
column  
(Falk &  
Clarke  
2007);

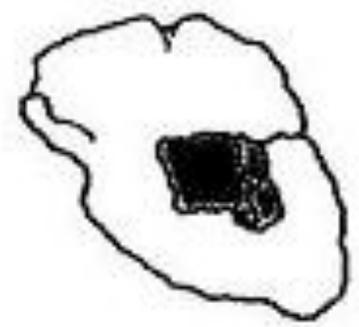
Hobbit,  
right  
column,  
Falk et  
al. 2005

# Falk et al. 2000, JHE

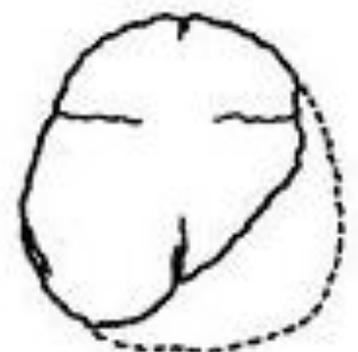
*A. africanus*



Sts 5



Sterk. No. 2

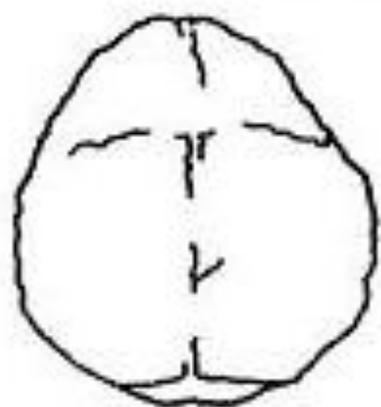


Sts 60



Stw 505

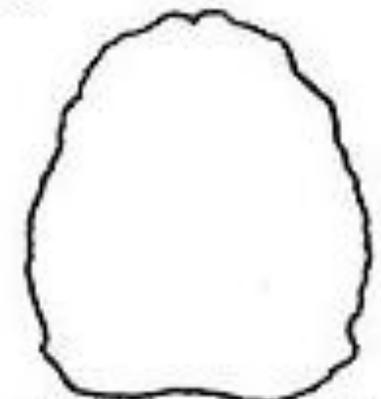
*Paranthropus*



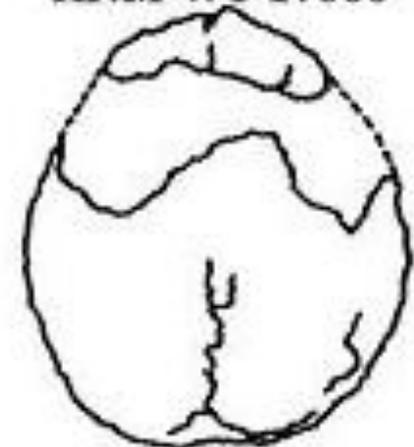
KNM-ER 23000



KNM-WT 17400

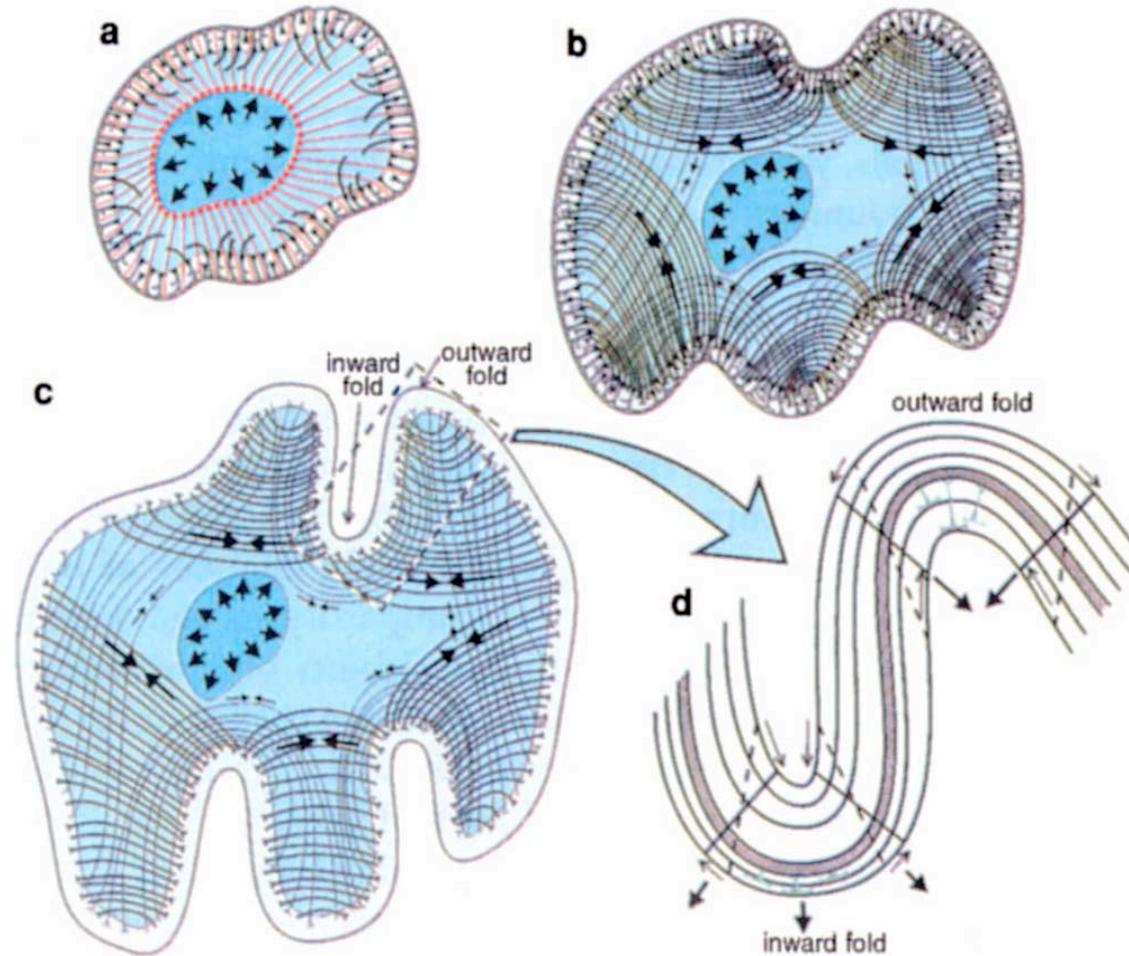


KNM-WT 17000

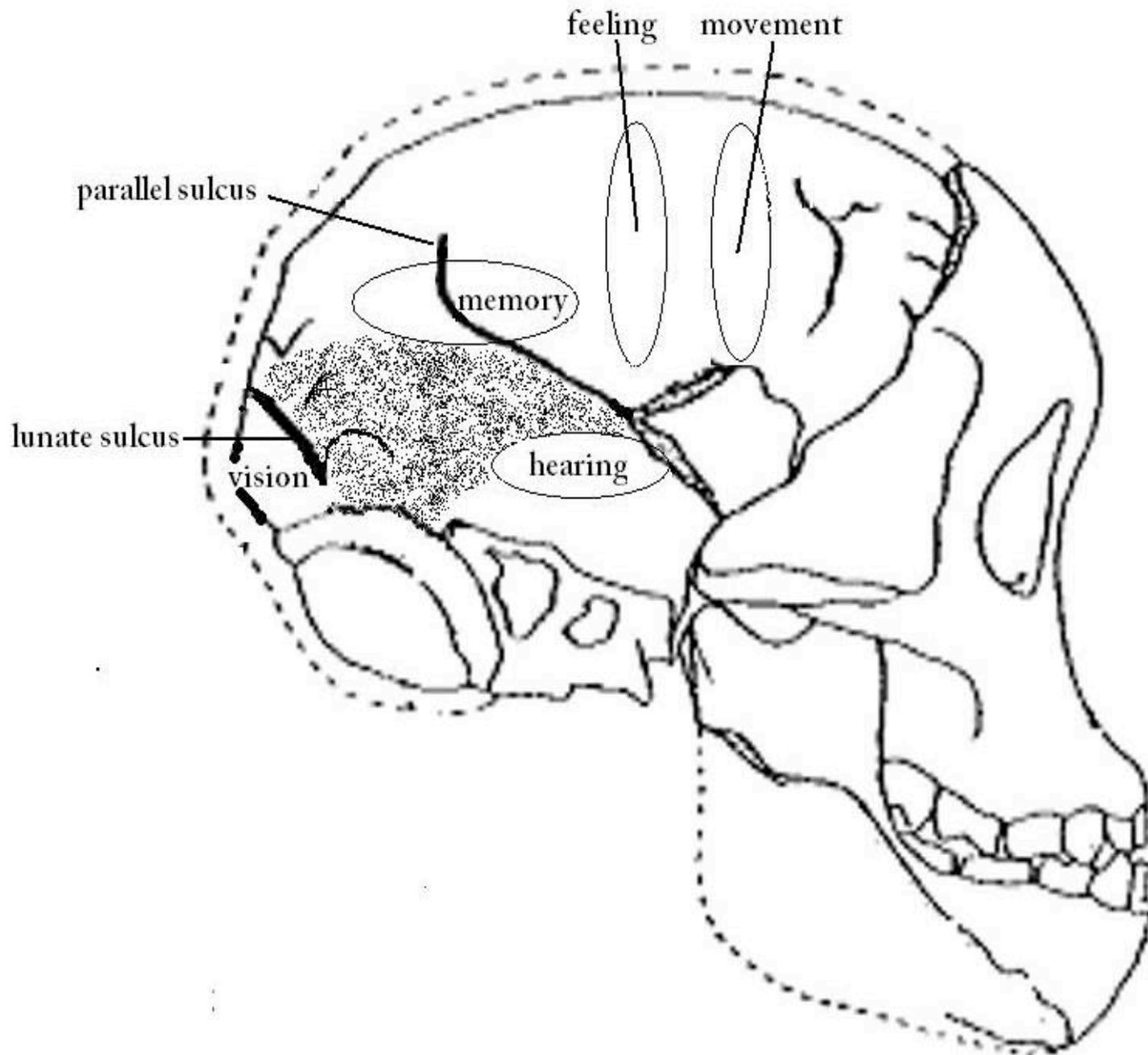


OH 5

# Van Essen, 1997 (tension-based theory of sulcal patterns)



# Modified after Dart, 1959



Allen, Bruce & Damasio, 2006

"Looking for the Lunate  
Sulcus: A Magnetic  
Resonance Imaging  
Study in Modern Humans"

The Anatomical Record

"If the form of endocranial cast is unintelligible, the comparative neurological studies of the last half century are a mockery, a delusion and a snare. It would be deplorable if, at this stage of neurological history, no tangible conclusions could be drawn from the shape of the simian endocranial cast, which Nature has provided for scrutiny; and dismal indeed, when the gap separating Man from the Apes is so patently cerebral and psychological, rather than structural or bodily. Such an attitude towards the study of endocranial casts today would be obscurantist and disastrous." (Dart unpublished manuscript 1929:162; see Falk 2009, *Yrbk Phys Anthropol*)

# Acknowledgments:

- University of Witwatersrand
- Mallinckrodt Institute of Radiology  
(Electronic Radiology Laboratory)
- National Geographic Society  
(7769-04, 7897-05)
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- School for Advanced Research,  
Santa Fe

