

GLOBAL WEATHERING PROJECT

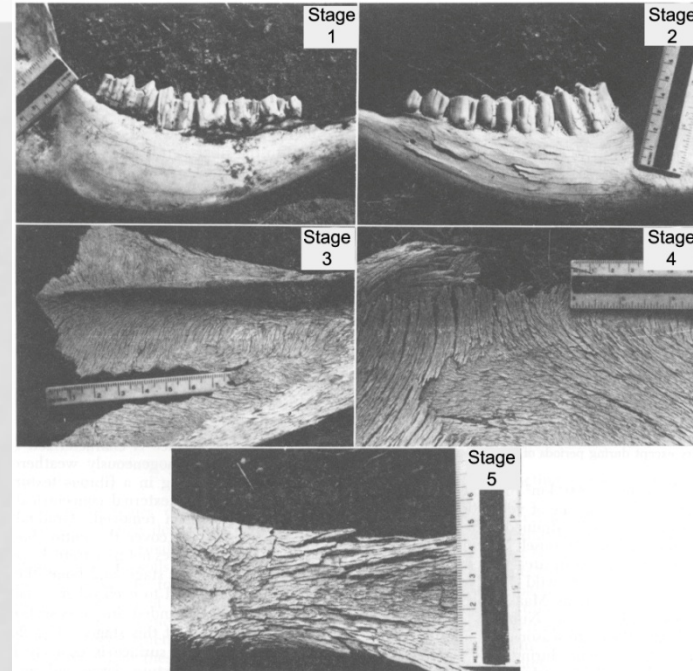
Alexander H Parkinson ^a & Yolanda Fernandez
Jalvo ^b Peter Andrews^c

- ^a Evolutionary Studies Institute & School of Geosciences, University of the Witwatersrand, Johannesburg, South Africa
- ^b Museo Nacional de Ciencias Naturales, Consejo Superior de Investigaciones Cientificas, Jose Gutierrez Abascal 2, 28006 Madrid, Spain
- ^c The Natural History Museum. Cromwell Road. 7SW-5BD London. UK.

WHY GLOBAL? WHY WEATHERING?

THE ORIGIN:

- Behrensmeyer published in 1978 the results of her observations in Amboseli (Tanzania).
- Since then, weathering stages have been used as a “watch” to indicate years of bone exposure on surface=> i.e. Weathering stage **5** = **10** years of exposure on the ground



However, weathering is not a watch!. Different observers today, as well as Behrensmeyer, have documented that **environmental conditions increase/reduce speed of weathering.**



WEATHERING: STATE OF ART



These observations on the influence of environment on weathering stages and speed are based on several long term and shorter time monitoring experiments.

There are two long term monitoring experiments:

1. Tropical ecosystem lasting for close on 50 years: Amboseli (Kenya). Behrensmeyer & Western (1979), Western & Behrensmeyer (2009)
2. Temperate habitat in Wales (UK) lasting for 30 years (Andrews & Armour-Chelu 1998)

WEATHERING STATE OF ART

There are also several shorter studies, among them:

1. The 8 year monitoring of a single cow skeleton in Southern England (Draycott, Andrews & Cook 1985)
2. The 10 year monitoring elephant carcass in a tropical rain forest (Tappen 1994) in contrast to guanacos in Argentina (Gutiérrez, Borrero, Cruz)
3. The 15 year record of a single camel skeleton in Abu Dhabi (Andrews & Whybrow 2005).
4. The 16 years record of red deer and fallow deer in Riofrio (Segovia, Spain, Cáceres et al., 2008)...

...and many more studies and observations that are or not published.

All these experiments show that weathering increases along time and varies with the environment/climate.

WEATHERING, STATE OF ART

AMBOSELI PARK (KENYA)

+50years

- Behrensmeyer (1978) recorded progressive rates of weathering. After 10-13 years of carcass exposure, skeletal elements were falling apart. She observed that only complete burial of bones delayed or halted this process.



- **The studies in Amboseli showed weathering processes are related to body size and the anatomical element.**

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NEUADD, WALES (UK) +30years



- The aims of the Neuadd project were to record weathering and dispersal of animal bones in the wet temperate setting of Wales, and monitor change over as long a period of time as was practicable.
- Preliminary results on taphonomic modifications show that **only one third of the bones showed any evidence of weathering**, but it is not known how long they had been exposed to weathering.

DRAYCOTT, UK

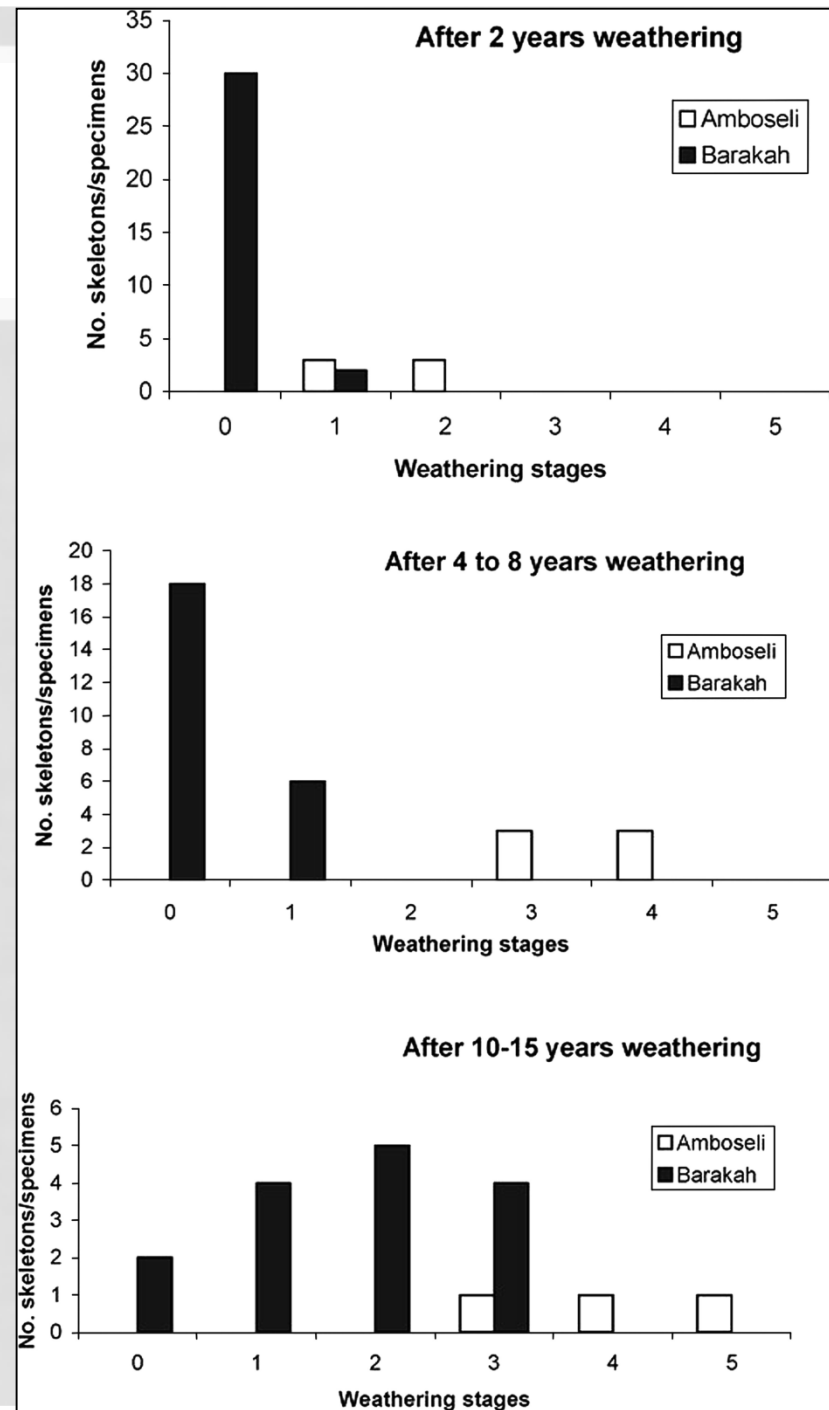


A field record of the break up of the skeleton and dispersal of the bones, mainly by trampling and gravitational movement was maintained for 7.5 years and culminated in excavation after **8 years**.

- **No evidence of weathering** was observed on any of the bones, not even the earliest stages of weathering, and this may be due to the highly protected nature of the site, so that the bones were not exposed to direct solar radiation.

JEBEL BARAKAH, ABU DHABI

- Weathering was substantially **less rapid** than that recorded in tropical environments, being slower both in inception and in later development.
- For example, after 8 years, the Abu Dhabi bones were still at stages 0 or 1 while all the bones from Amboseli were at stages 3 and 4



AND OTHERS...

1. The 10 year monitoring elephant carcass in a tropical rain forest (Tappen 1994) showed that **no weathering stage** was recorded on these bones after 10 years of exposure on the ground.
2. The 16 years record of red deer and fallow deer in Riofrio (Segovia, Spain, Cáceres et al., 2008) mountain temperate environment. Bones reach only low weathering stages 1-3, usually stage 0.



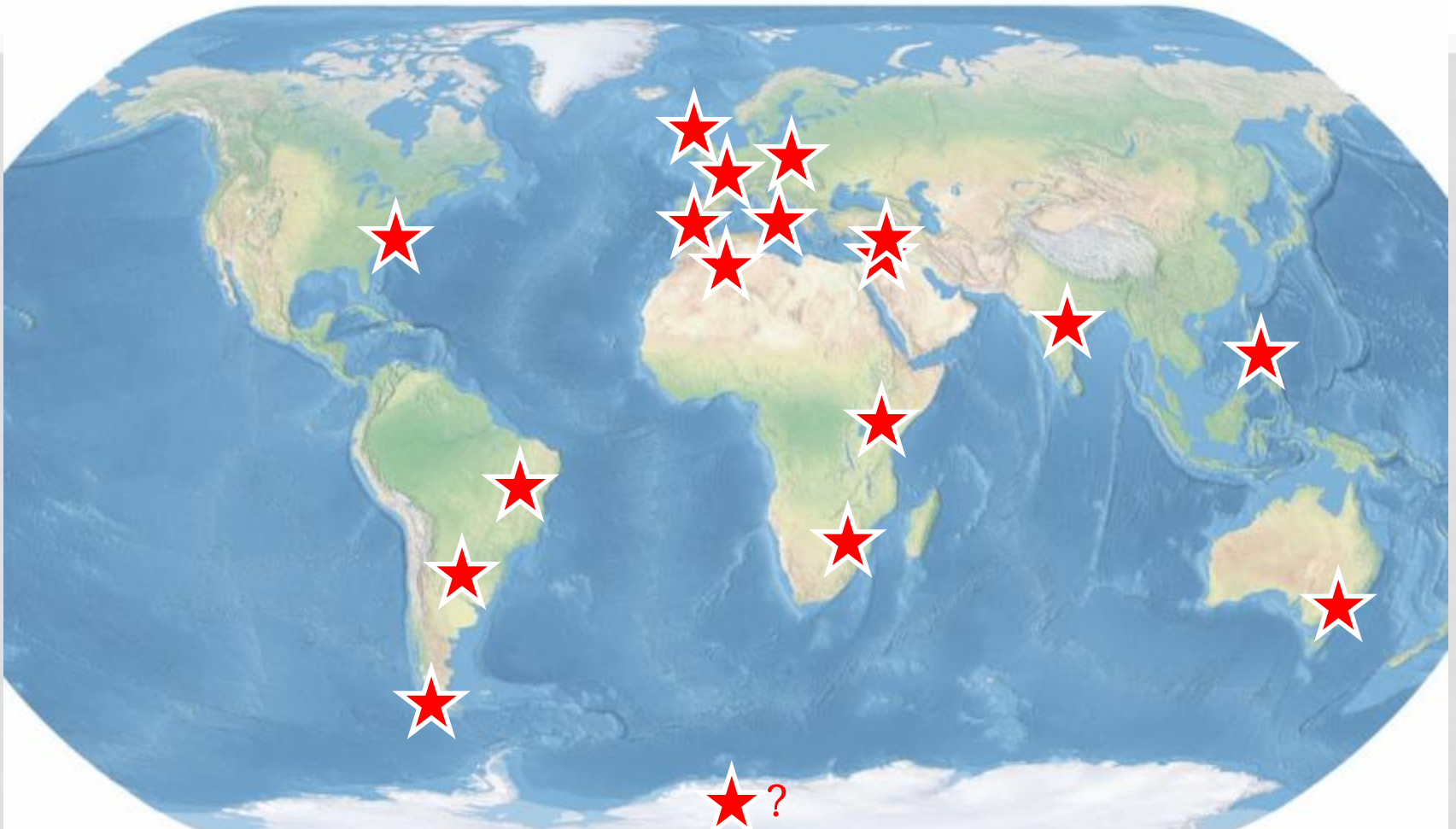
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After all these practical cases...the question is:

HOW TO CONTROL WEATHERING INFORMATION?

- At the ICAZ in San Rafael (Argentina) during the meeting of the Taphonomy Working Group we agreed that the same experiment needs to be done in different parts of the world.
- We aim to settle simple PROTOCOLS to have the possibility of comparing bones all over the world exposed to weathering

GLOBAL WEATHERING PARTICIPANTS



...BUT WE STILL HAVE TO COVER ALL THE
GLOBE, **PLEASE JOIN THE PROJECT!**