

Teeth in Bioanthropology

Comments on the practical lessons: Teeth & you





Atelier 1: Identification

Which tooth am I?

Aim: Identify isolated teeth & compare mandibles



Mandible I

Id number: Vresovice 1930

Complete mandible

Excellent state of preservation

Only three **deciduous** teeth in situ, the rest are lost post-mortem

No visible dental **pathology** except for periodontal disease around the two 1st Molars

No **hypoplasia**

Age at death:

The mandible belong to a **sub adult**, due to the permanent teeth seen in the alveoli (Mixt dentition)

X-ray needed to estimate the age at death using *Moorrees et al. 1963*

Tooth

M1, Lower, Right

M2, Lower, Right

M2, Lower, Left

Aim: Identify isolated teeth & compare mandibles



Tooth

M1, Lower, Right
M2, Lower, Right
M2, Lower, Left

Mandible II

Id number: 12, Naklo 1929

Complete mandible

Excellent state of preservation

Only three **permanent** teeth in situ, the rest are lost post-mortem

No visible dental **pathology**

No **hypoplasia**

Moderate **calculus** on the lingual surfaces of both right molars, no calculus on the left one

Dental attrition phase 3 on all present molars/ more pronounced on the buccal sides than the lingual ones

Age at death:

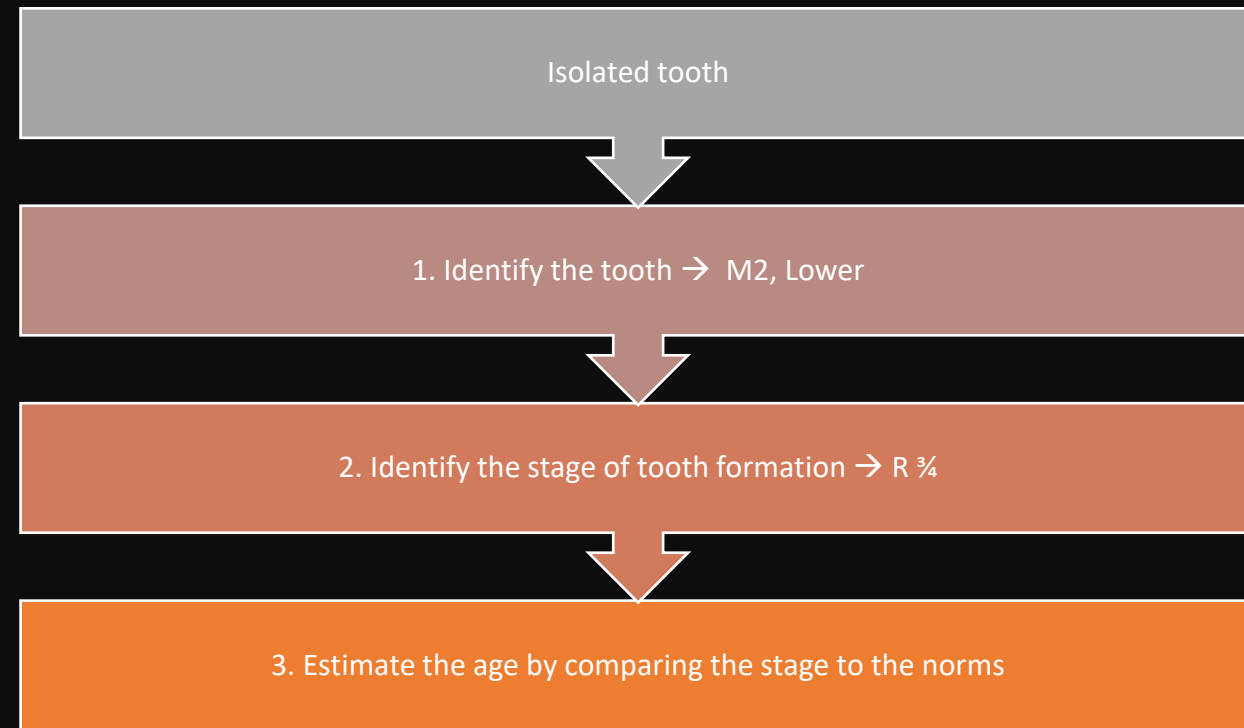
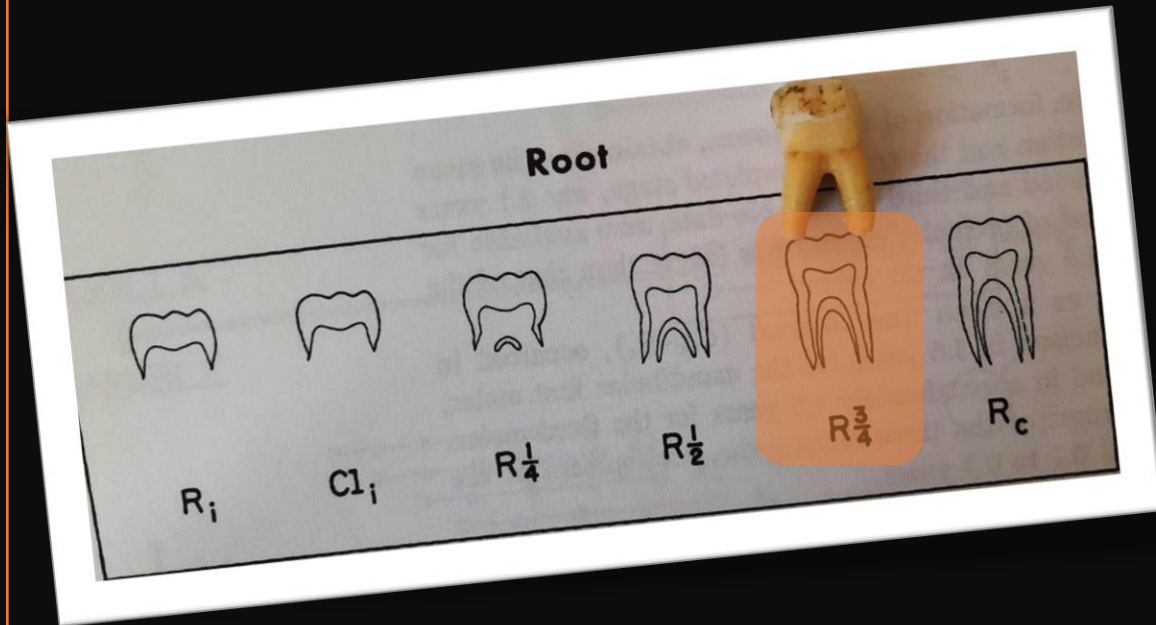
Permanent dentition, no presence of 3rd Molar



Atelier 2: Age Estimation

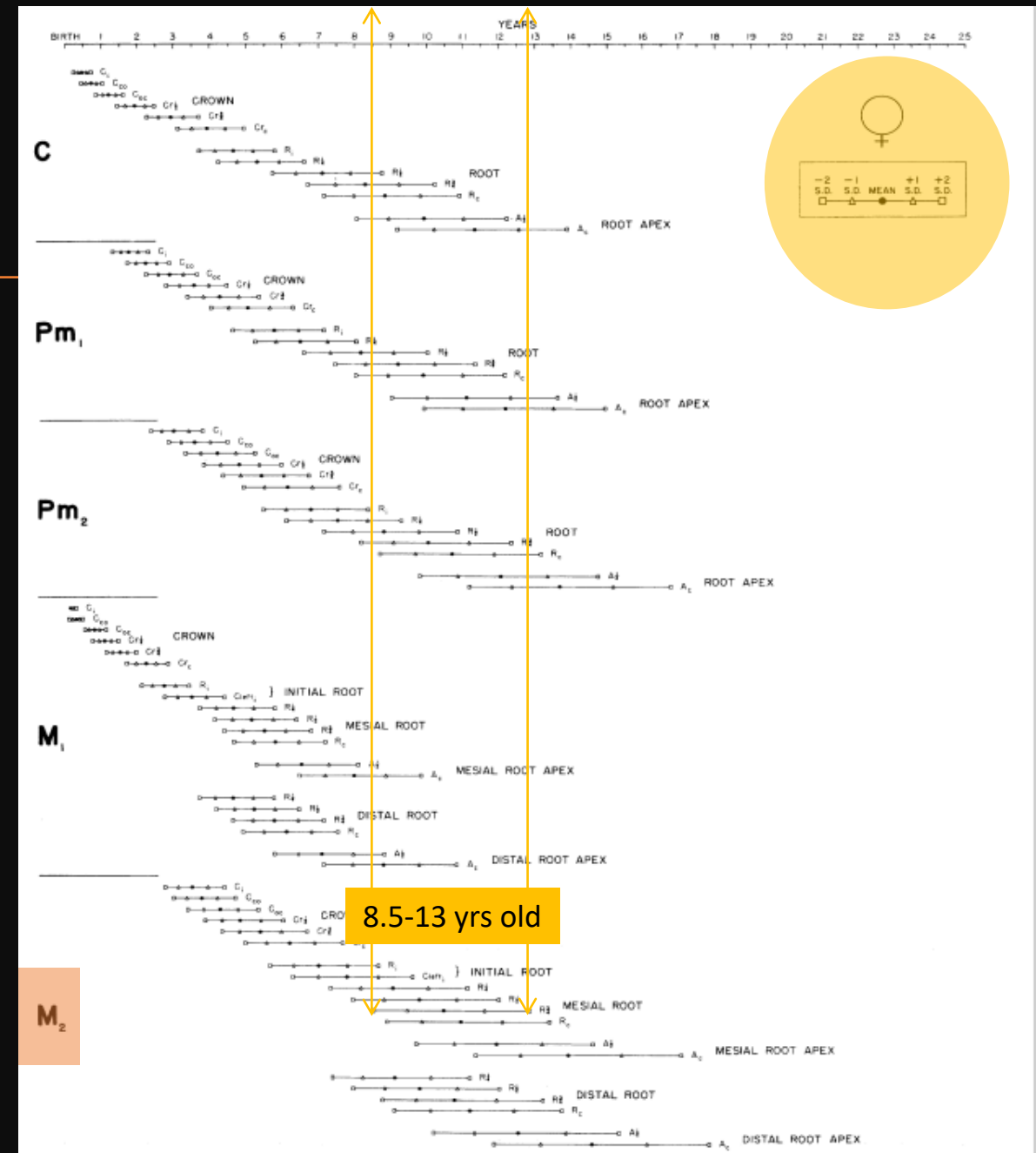
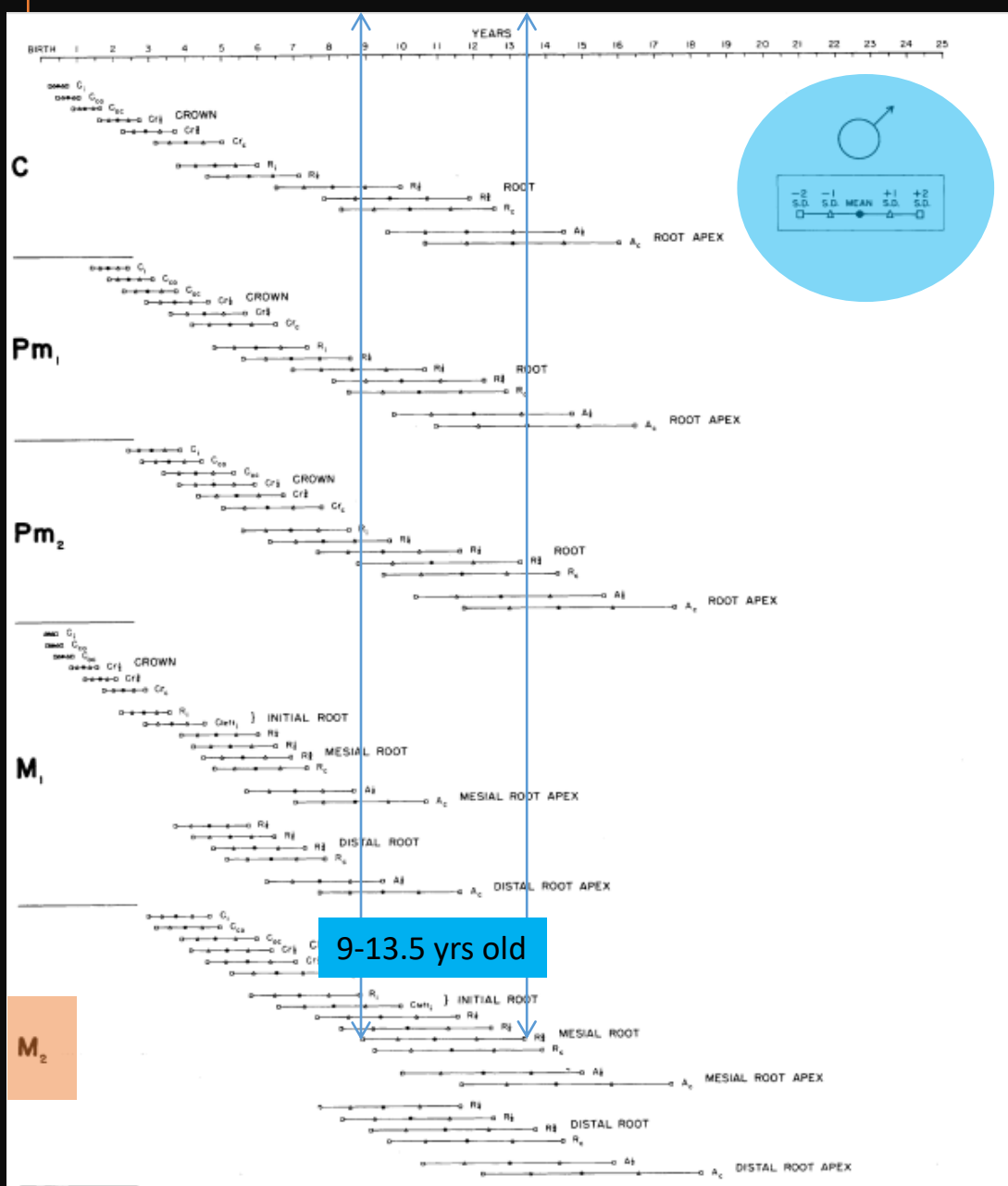
How old am I?

Aim: Age estimation (Eruption) Apply Moorrees et al. 1963

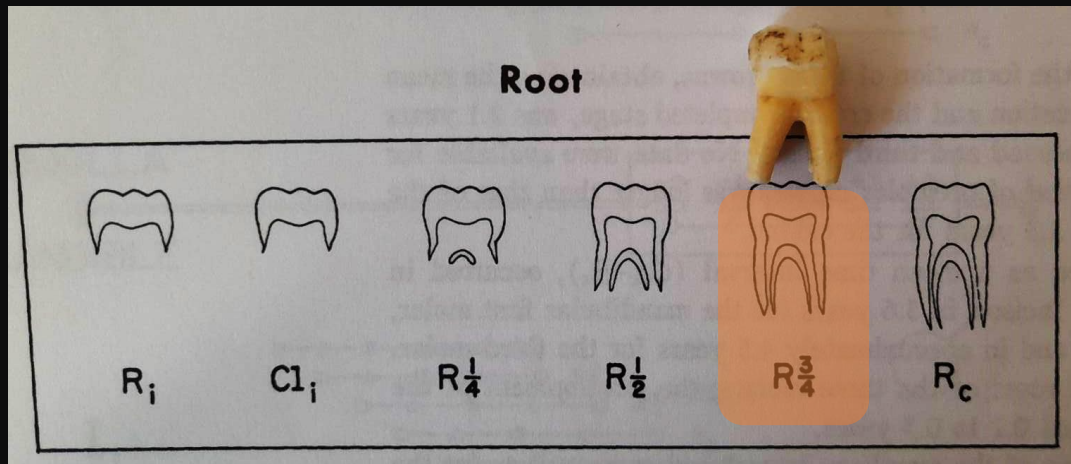


Male

Female



Aim: Age estimation (Eruption) Apply Moorrees et al. 1963



Isolated tooth:

1. Identify the tooth → M2, Lower
2. Identify the stage of tooth formation → $R_{\frac{3}{4}}$
3. estimate the age comparing the stage to the norms

3.1. if it is a male → 9-13.5 yrs old

3.2. if it is a female → 8.5-13 yrs old

Estimated age is between
8.5-13.5 yrs old





Atelier 3:
Sex determination
A male or a female?



Aim: Sex determination (Metric)

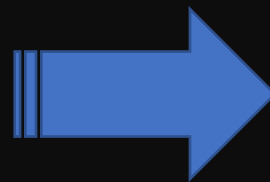
Apply Franklin et al. 2008

1. Take the 4 measures on the mandible using Mandibulometer & Calipers
2. Compare each measure to table 3 demarking points for sex differentiation

Table 3
Demarking points (in mm) for sex differentiation

Measurement	Demarking points	Expected accuracy
Maximum mandible length	♀ < 117.87 < ♂	77.3%
Ramus height	♀ < 53.81 < ♂	73.8%
Coronoid height	♀ < 55.48 < ♂	73.3%
Bi-gonion breadth	♀ < 90.30 < ♂	70.7%

Measurements	Mandible 012	Mandible 007
MML	106 ♀	100 ♀
RH	65 ♂	65 ♂
CH	65 ♂	61 ♂
BI-g B	101 ♂	95 ♂

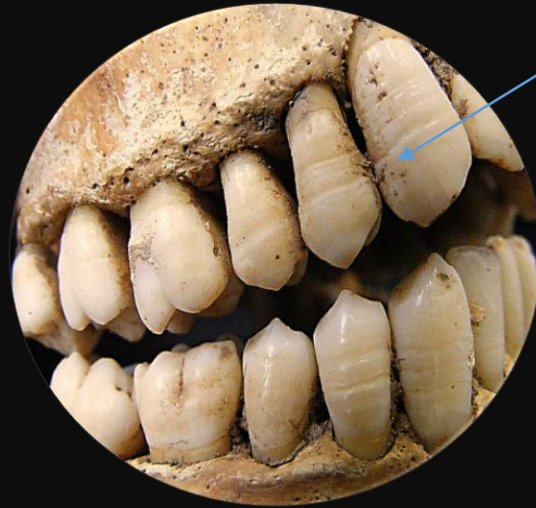


Both belong to (Probably) males



Atelier 4: Stress Indicator

Doctor, am I stressed?



Aim: Identify the LEH (stress) Apply Goodman & Rose 1990

1. Identify the teeth
2. Identify the LEH
3. Measure the LEH (between the LEH and the cemento enamel junction (CEJ))
4. Compare the result with the table

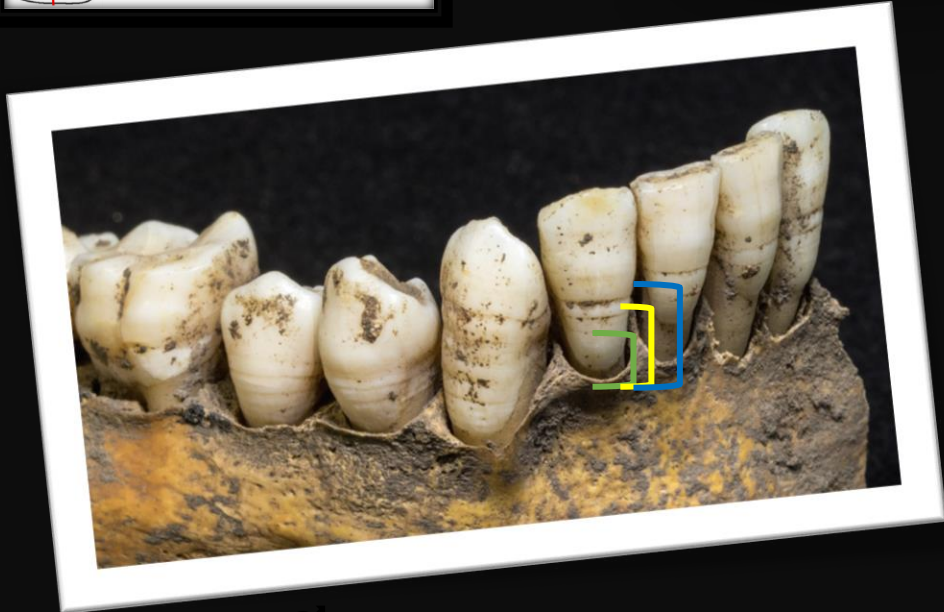
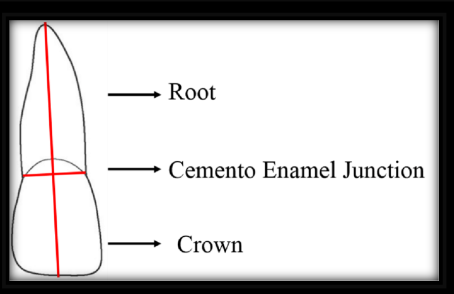


TABLE 1. Regression equations from Goodman and Rose (1990)

Tooth type	Formula ^a
Maxillary teeth	
I1	Age (in years) = $-(0.454 \times H) + 4.5$
I2	Age (in years) = $-(0.402 \times H) + 4.5$
C	Age (in years) = $-(0.625 \times H) + 6.0$
P3	Age (in years) = $-(0.494 \times H) + 6.0$
P4	Age (in years) = $-(0.467 \times H) + 6.0$
M1	Age (in years) = $-(0.448 \times H) + 3.5$
M2	Age (in years) = $-(0.625 \times H) + 7.5$
Mandibular teeth	
I1	Age (in years) = $-(0.460 \times H) + 4.0$
I2	Age (in years) = $-(0.417 \times H) + 4.0$
C	Age (in years) = $-(0.588 \times H) + 6.5$
P3	Age (in years) = $-(0.641 \times H) + 6.0$
P4	Age (in years) = $-(0.641 \times H) + 7.0$
M1	Age (in years) = $-(0.449 \times H) + 3.5$
M2	Age (in years) = $-(0.580 \times H) + 7.0$

^a Where H equals the distance between LEH and the CEJ in mm.

3.6 yrs
(estimated age of stress episode)

Atelier 5: Oral Health

Show me your teeth!



Record the oral health:

1. Dental caries
2. Dental attrition
3. Periodontal disease
4. Calculus
5. Others

Recording must include:

1. Location (buccal, lingual)
2. Severity (light, medium or heavy)
3. Phases (regarding the used method)



Atelier 6: Read a Paper

- Work in group
- Read a paper (dental anthropology)
- Analysis it
- Present it on Friday 12th May



nature > british dental journal > general > article

General | Published: 09 December 2022

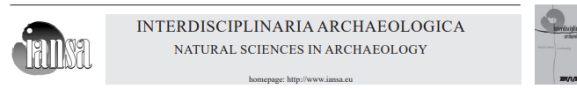
Dental calculus - oral health, forensic studies and archaeology: a review

Roger Forshaw *British Dental Journal* 233, 961–967 (2022) | [Cite this article](#)1195 Accesses | 11 Altmetric | [Metrics](#)

Abstract

Dental calculus is recognised as a secondary aetiological factor in periodontal disease, and being a prominent plaque retentive factor, it is routinely removed by the dental team to maintain oral health. Conversely, dental calculus can potentially be useful in forensic studies by supplying data that may be helpful in the identification of human remains and assist in determining the cause of death. During the last few decades, dental calculus has been increasingly recognised as an informative tool to understand ancient diet and health. As an

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Locals or Migrants? Strontium Isotope Analysis of Two North-South Oriented Great Moravian Graves

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Staré Město – Na Valách
non-standard grave orientation
mobility analysis
⁸⁷Sr/⁸⁶Sr ratio

ABSTRACT

Migration has been used as one explanation for graves that deviate from the prevailing orientation and structure. Graves oriented in the north-south direction (*i.e.*, deviating from the customary contemporary west-east orientation) at the Great Moravian and early medieval burial grounds of Ptenyšid Bohemia and Moravia have attracted the attention of archaeologists for more than 100 years. These are most often interpreted as the graves of foreigners, based on the assumption that different burial rites indicate immigrants, but this has not been confirmed or refuted with empirical evidence. With this study, we have taken the first step towards testing the validity of this hypothesis. Samples from the dental enamel of the permanent molars of two individuals (H 16/2018 and H 18/2018) from the burial site “Na Valách”, located at the Great Moravian central site in Staré Město, were subjected to stable strontium isotope analysis. This analysis can help to assess the likelihood of mobility for these individuals. From the results obtained, it is not possible to confirm the non-local origin of either of the individuals, although in the case of H 16/2018 we may theoretically consider it. However, to definitively reject or confirm the hypothesis of a non-local origin of the people buried along the north-south azimuth, future analysis of a much larger sample size will be necessary.

Paléorient

REVUE PLURIDISCIPLINAIRE DE PRÉHISTOIRE ET DE PROTOHISTOIRE DE L'ASIE DU SUD-OUEST ET DE L'ASIE CENTRALE
PLURIDISCIPLINARY REVIEW OF PREHISTORY AND PROTOHISTORY OF SOUTHWESTERN ASIA

Recherche

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The populations of the Near East and nearby regions: evolution of diet and health status from the Neolithization to the Early Bronze Age

Articles

Dental health status changes during the Neolithisation in Syria: a diachronic perspective (9,820-6,000 cal. BC)

Bérénice Chamel

p. 83-96
<https://doi.org/10.4000/paleorient.921>

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RÉSUMÉS

ENGLISH | FRANÇAIS

Résumé. La Néolithisation au Proche-Orient est une période phare de l'histoire de l'humanité : c'est en effet au cours de cette phase qu'interviennent de grands changements dans l'économie de subsistance, apportés par l'invention de l'agriculture et de l'élevage. D'autres changements dans le mode de vie sont également engendrés par la sédentarisation et, en dernier lieu, par l'invention de la céramique. L'objectif de cette étude est de voir si les changements dans ces domaines sont corrélés à la sédentarisation.



Ancient Asia

Journal of the Society of South Asian Archaeology

Reading: Role of Human Tooth Wear Analysis in Archaeology: A Review Download A-

Short Report

Role of Human Tooth Wear Analysis in Archaeology: A Review

Authors: Sangeeta Mahajan 

Abstract

The path of human evolution has always been a topic of contentious discussion for researchers worldwide. Many theories were proposed to explain the phenomenon based on meagre physical evidences available. Interpretations about subsistence strategies of hominins and their descendants had to be derived from scanty biological remains which mostly consisted of random presence of teeth and fragments of cranial and post-cranial skeleton. Due to better preservation and good resistance to diagenesis, owing to tough enamel covering, teeth have been exploited the most in archaeological studies.

First Read Considerations



What is the main question addressed by the research? Is it relevant and interesting?



How original is the topic? What does it add to the subject area compared with other published material?



Is the paper well written? Is the text clear and easy to read?



Are the conclusions consistent with the evidence and arguments presented? Do they address the main question posed?



If the author is disagreeing significantly with the current academic consensus, do they have a substantial case? If not, what would be required to make their case credible?



If the paper includes tables or figures, what do they add to the paper? Do they aid understanding or are they superfluous?

You need to examine



The sampling in analytical papers



The sufficient use of control experiments



The precision of process data



The regularity of sampling in time-dependent studies

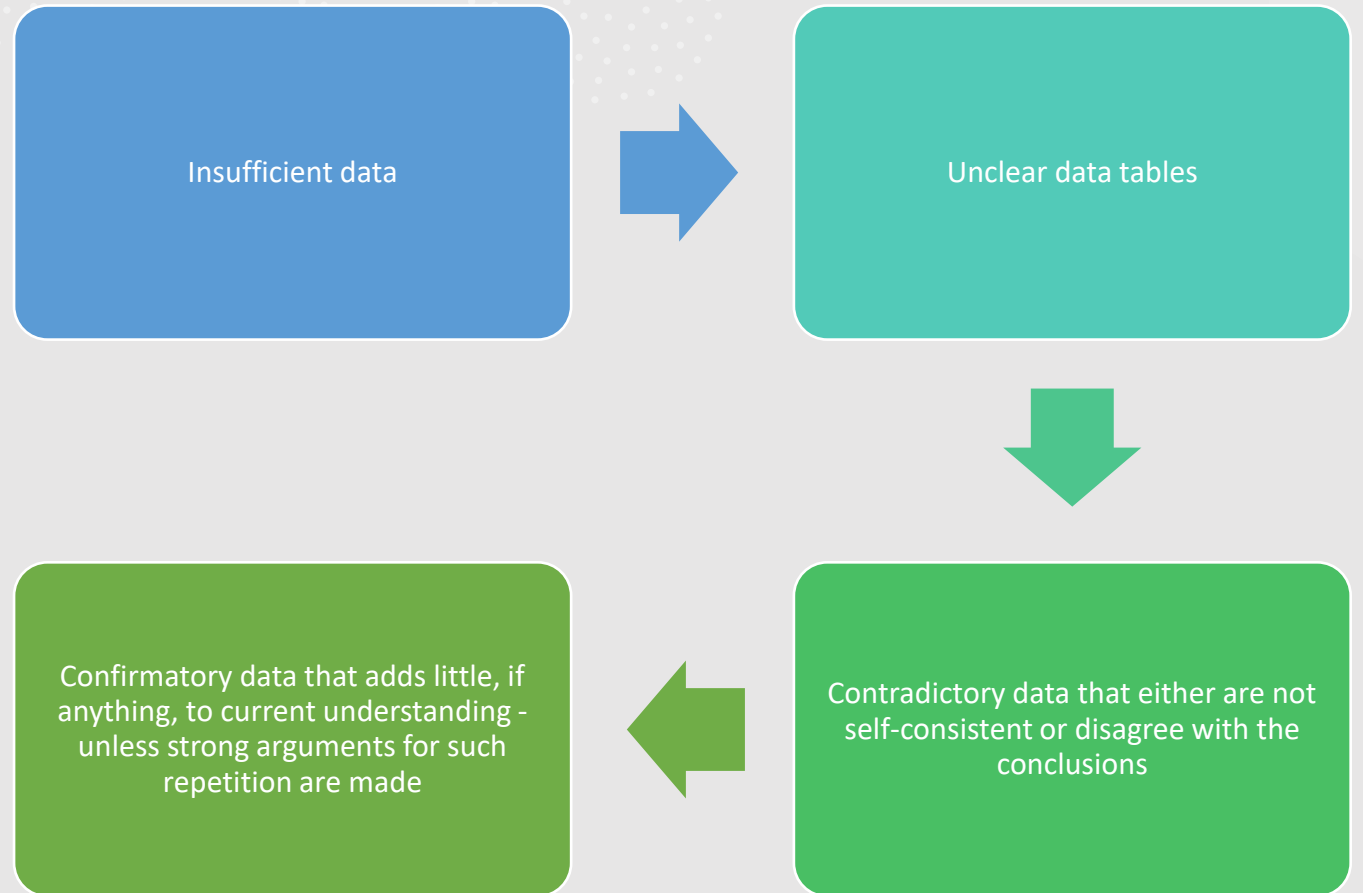


The validity of questions, the use of a detailed methodology and the data analysis being done systematically (in qualitative research)



That qualitative research extends beyond the author's opinions, with sufficient descriptive elements and appropriate quotes from interviews or focus groups

Critical flaws



So consider

1. Is the paper's premise interesting & important?
2. Are the methods used appropriate?
3. Do the data support the conclusions?





Be critical,
but constructive