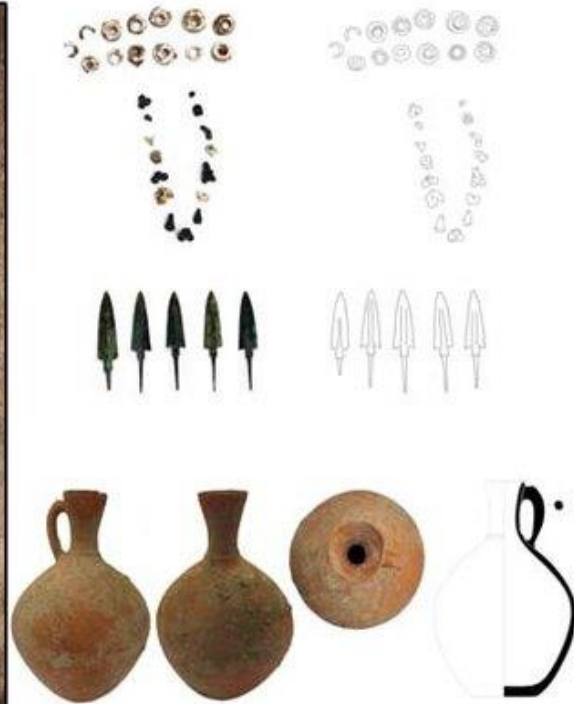




INDIVIDUAL VS COMMINGLED BURIALS

Dr Arwa Kharobi



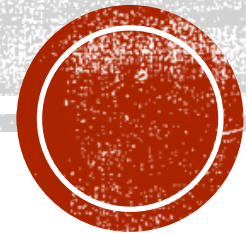


SH.19.TR1-G3

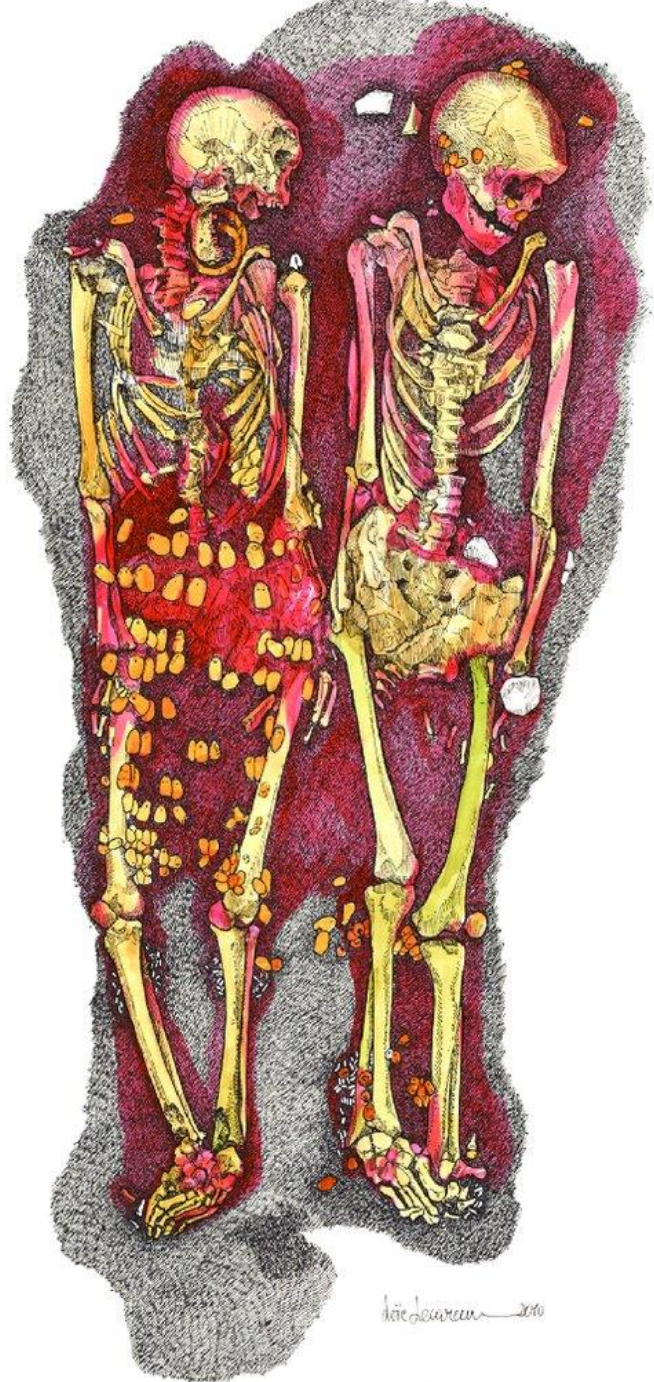
SINGLE/INDIVIDUAL BURIAL:

ONE GRAVE = ONE INDIVIDUAL

*Human remains from Shahne
Poshte, Iran- Soltysiak et al. 2019*

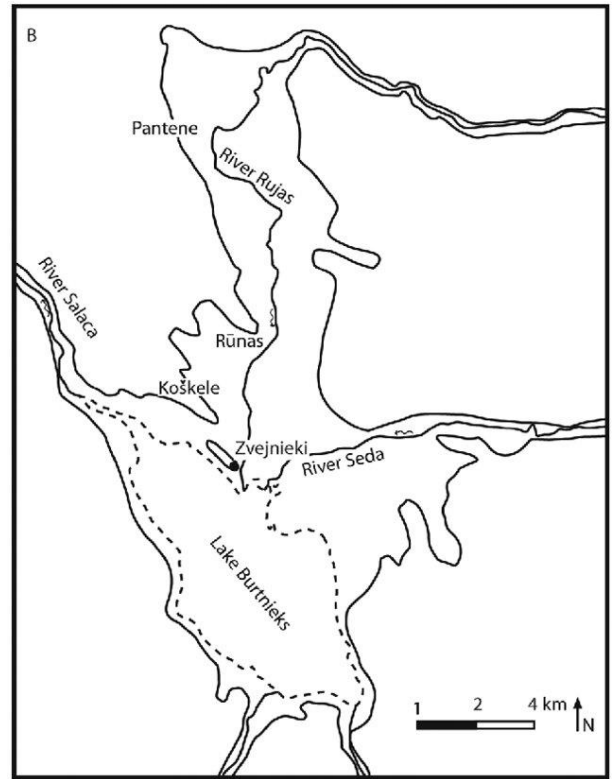
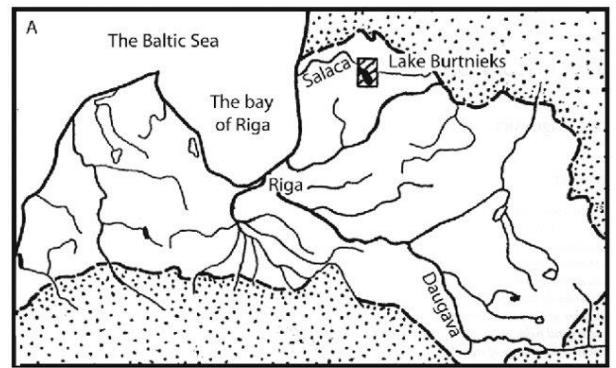


DOUBLE/ DUAL BURIAL



Anders Larsson 2010

0 0.5 m



Zvejnieki site, Latvia
© Larsson 2018



LOVERS' TOMB

- China, dates to the Northern Wei dynasty (386-534).“,”
- skeletons of a man and woman in one tomb (in an eternal embrace)
- one of 600 found in the ancient cemetery



An illustration of the ancient Chinese couple buried embracing during the Northern Wei dynasty (386-534). Photo courtesy of the International Journal of Osteoarchaeology



SKELETAL MANIFESTATIONS

Pathological & trauma signs on the skeletons:

- (a) An unhealed ulnar fracture and missing part of the fourth digit on the right hand (male individual)
- Slight development of the marginal osteophytes on the lumbar vertebrae could be detected in the female skeleton;
- (b) Osteophytosis on the distal end of the lower limbs (male individual)
- (c) Antemortem tooth loss (female individual)



CAUSE OF DEATH

1. the man—whose body showed signs of an unhealed traumatic injury on his right arm—died, and that the woman died by suicide to be buried with him.
 2. a double death by suicide,
 3. both died of illness at the same time
-



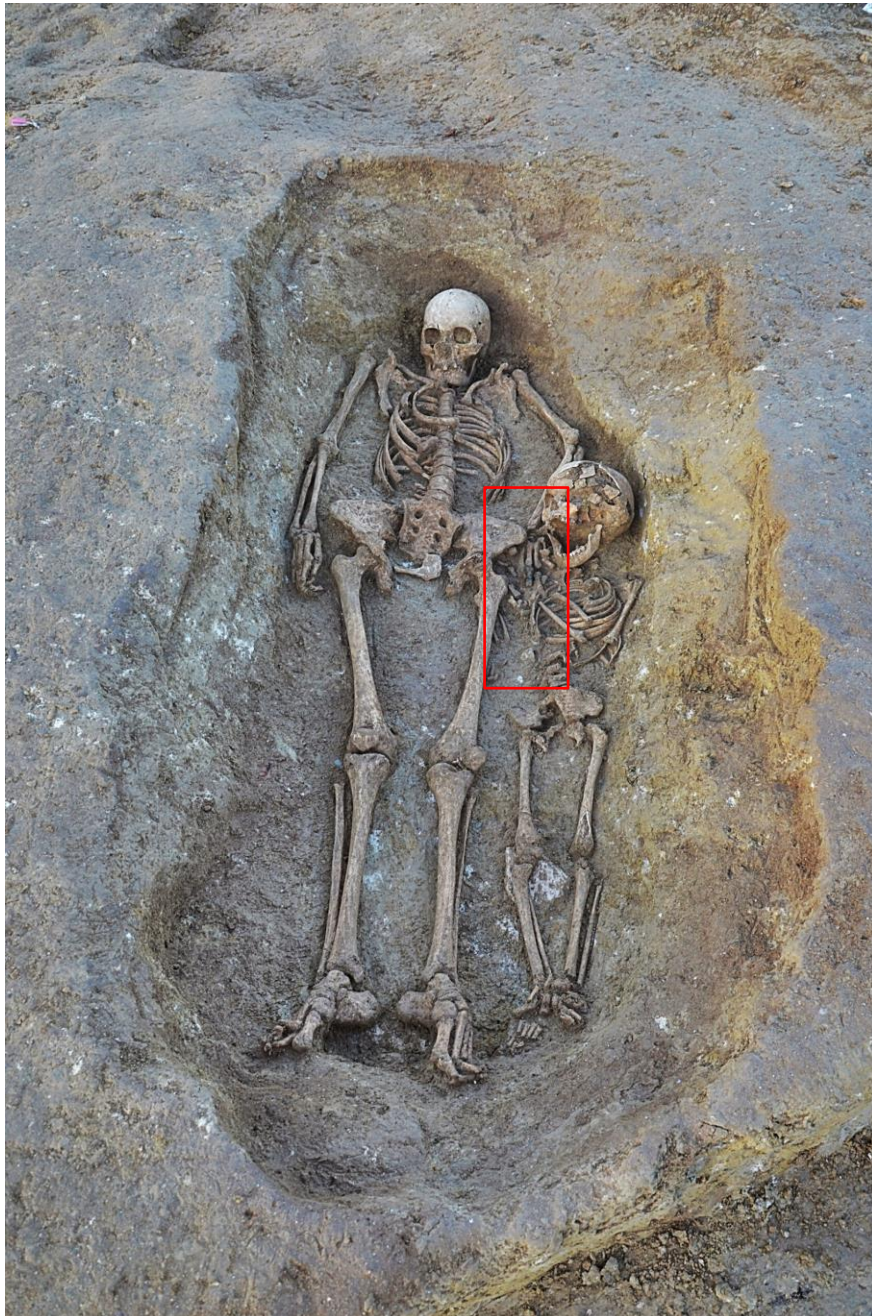


DOUBLE/DUAL BURIAL

be aware of (LIMITS)

- 1. reconstructing the inhumation*
- 2. reconstructing the identity*

DOUBLE/DUAL BURIAL



Two skeletons
belonging to an adult
female and a child
Evidence of bones in
contact → buried at
the same time.

A mother &
her child
buried hand-
in-hand...



Anthropologists vs journalists



DOUBLE/DUAL BURIAL

- Lovers of Modena, 4-6th Century AD. Italy
- Discovered in 2009 and called the lovers of Modena
- Badly preserved skeletons → sex indeterminate
- 10 years later
- Using a new technique (Protein on tooth enamel) → 2 males



© ArcheoModena





2 AND MORE...





COMMINGLED HUMAN REMAINS

- defined as the *mixing of the elements of multiple individuals into a single archaeological or forensic context.*

- Two causes:
 1. Natural
 2. Cultural mechanisms

- Three categories:
 1. Long-term usage
 2. Episodic usage
 3. Lab commingling

- Several methodologies



Causes:

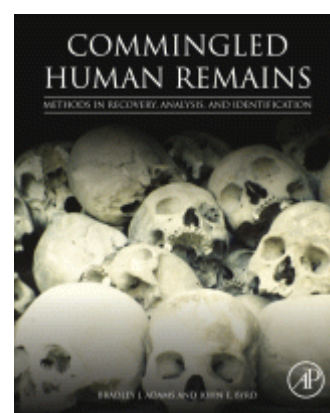
1. *Natural*
2. *Cultural mechanisms*

Categories:

1. *Long-term usage*
2. *Episodic usage*
3. *Unintentional*

Methodologies

1. LONG-TERM USAGE ASSEMBLAGES

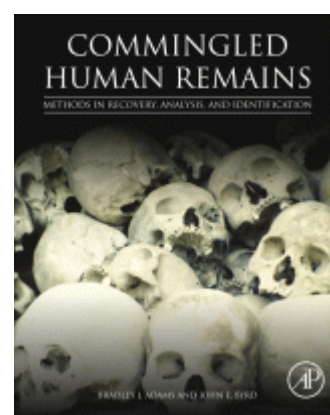


- *Used for multiple depositional episodes across generations*
- *Results of primary & secondary interments from community groups*



1. LONG-TERM

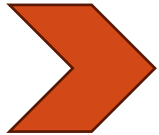
different archaeological representativeness
a. Primary assemblages



Based on:

- the placement of primary burials into a plural tomb or grave
- with the addition of more primary burials on top of previous burials

Reopening

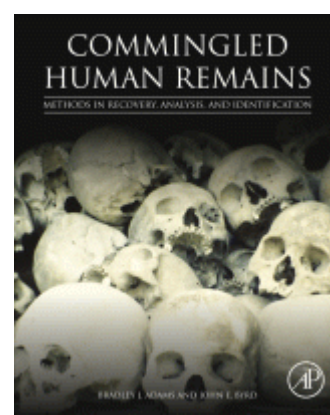


will have an adequate representation of smaller elements



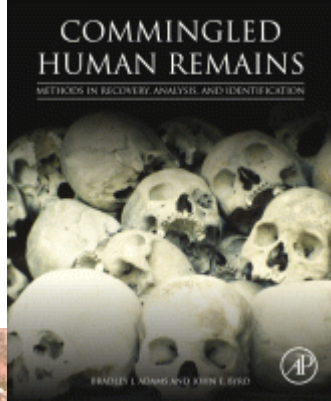
1. LONG-TERM

different archaeological representativeness
b. Secondary assemblages



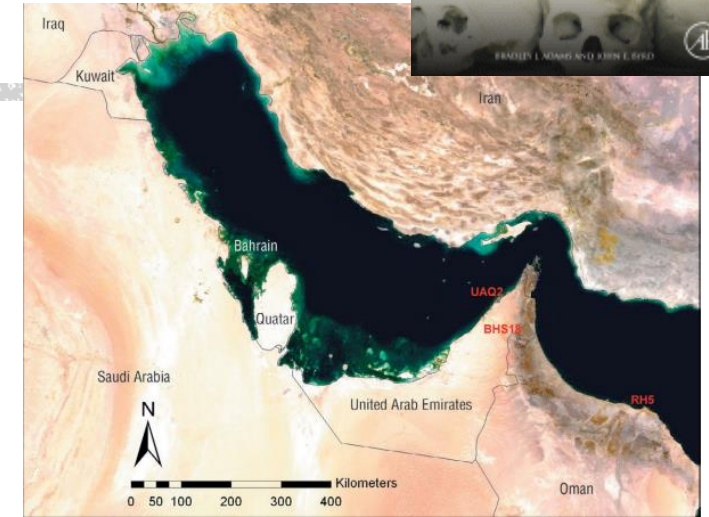
- Resulting from the gathering of skeletal elements for deposition in a **secondary burial** = fewer small elements/ difficult to recover
- Smaller elements (hands & foot bones) may filter to the bottom of the assemblage or may be poorly represented as they might not have been collected from primary burials





1. LONG-TERM USAGE ASSEMBLAGES

- Often, a mixture of primary & secondary burials will be present in a **long-term** use assemblage



- **Tell Abraaq**

- Bronze Age ossuary
- 2200–2100 BCE
- United Arab Emirates.



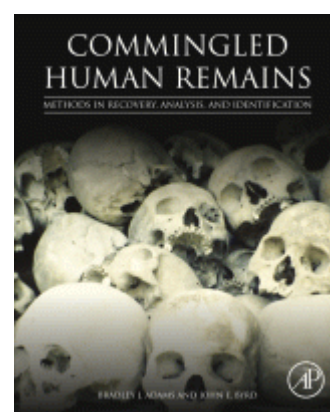
2. EPISODIC USAGE ASSEMBLAGES

- Used for a single depositional event
- Resulting from the deposition of multiple individuals at a single time in a single deposit:
- Mass graves-Black Death-Europe



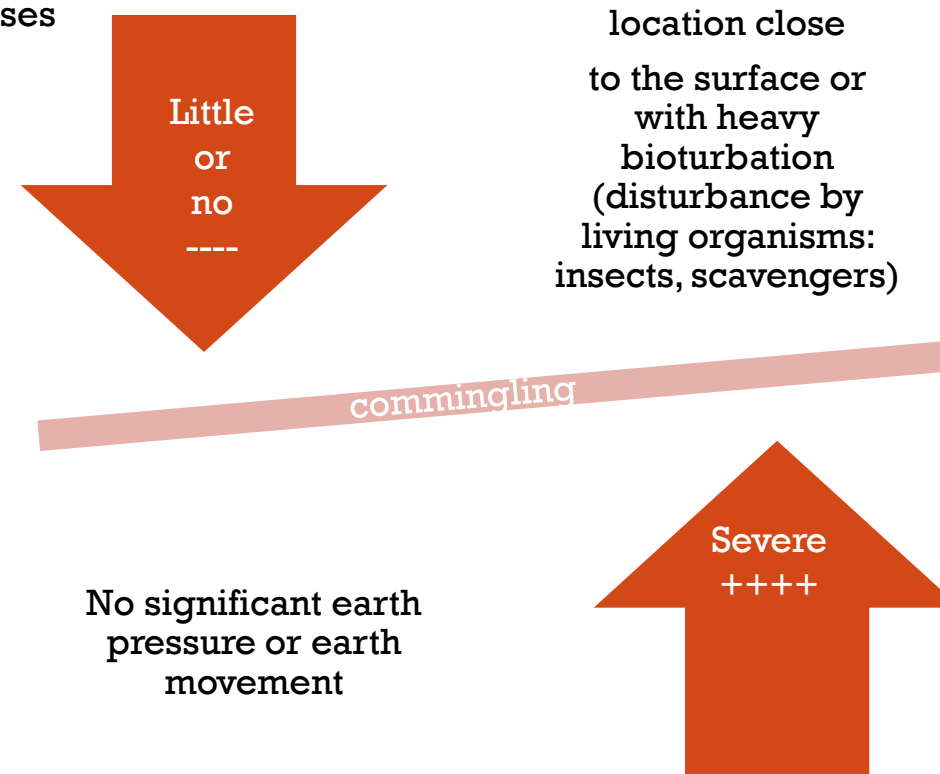
Skeletons unearthed in London Crossrail excavations are Black Death victims from the great pandemic of the 14th Century

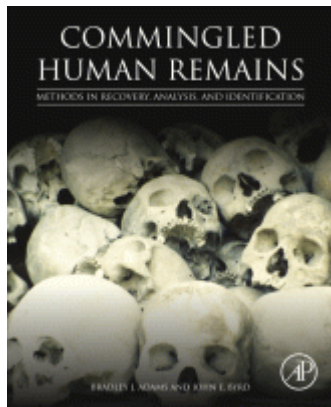




2. EPISODIC USAGE ASSEMBLAGES

- Result of plague, sacrifice, or warfare, any activity that will **result in the death of multiple individuals at a single time**
- Episodic in nature, **vs** a longer-term usage assemblages
- **Characteristics:** comingling depending on the natural processes





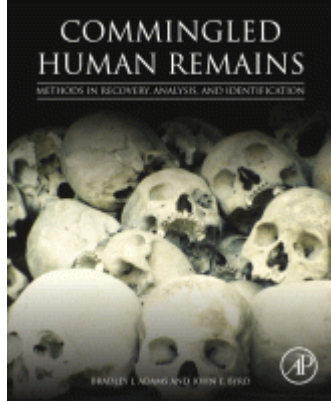
2. EPISODIC; EPIDEMICS

The way elements are represented usually aligns with the demographics of the buried population

Factors in the creation of the assemblage:

1. **Demography** : **epidemics** are expected to affect the very young & very old more than young adults
2. **Fears of contamination** : epidemic burials may only be given rudimentary burial rites:
 - placed in a communal grave without coffins
 - without any other signs of social rank (grave goods)
 - hurried and make use of existing pits or unused structures (mine shafts)

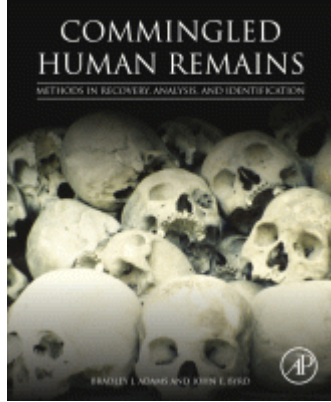




2. EPISODIC; EPIDEMICS

- 1,500 Human Remains
- 19th -Century
- Osaka Burial Site
- Victims of Historic Epidemic





2. EPISODIC; EPIDEMICS

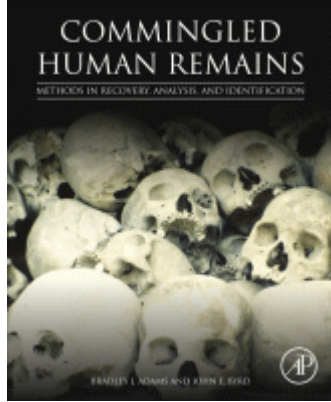
- Haman Mangha settlement site in northeast China
- 97 individuals in a small dwelling
- Bodies placed in the dwelling before it burned
- Cause of death: epidemic or disaster

The skeletons in the northwest are relatively complete, while those in the east often [have] only skulls, with limb bones scarcely remaining, "..... "But in the south, limb bones were discovered in a mess, forming two or three layers."



(Zhou et al. 2022. Courtesy Chinese Archaeology)





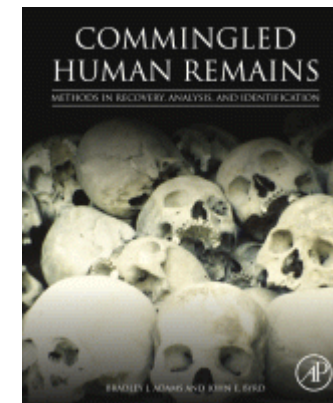
2. EPISODIC; WARFARE

- Increased levels of commingling due to intentional postmortem mutilation or processing of the remains
- Demography of such assemblages will also vary depending on combatants;
 - more adult and adolescent males than females



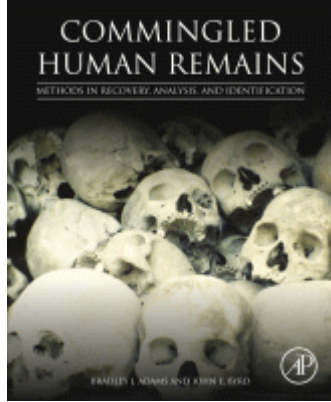
Battle of Little Bighorn/Greasy Grass (19th century, America)





Battle of Towton
(15th century, Yorkshire)





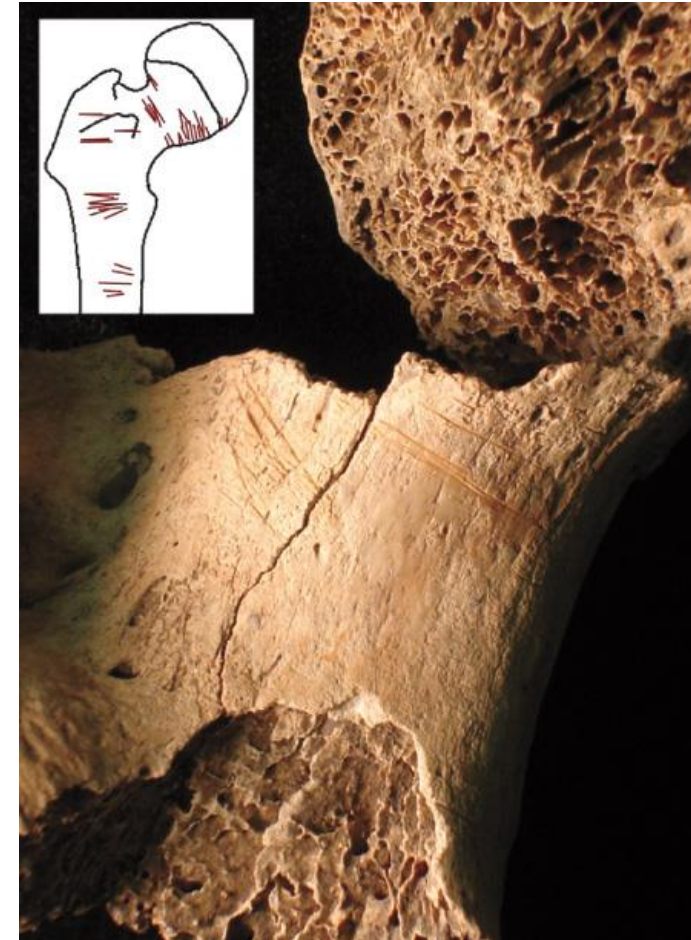
2. EPISODIC; ETHNIC CLEANSING & GENOCIDE

- *The Convention defines genocide as any of five "acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group." These five acts were: killing members of the group, causing them serious bodily or mental harm, imposing living conditions intended to destroy the group, preventing births, and forcibly transferring children out of the group (1948)*
- **Demography** = key to an identification → expected to contain all individuals /or a specific selection regarding age or sex
- Skeletons may contain
 1. perimortem injuries
 2. postmortem processing

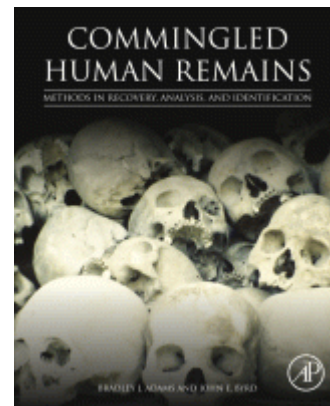


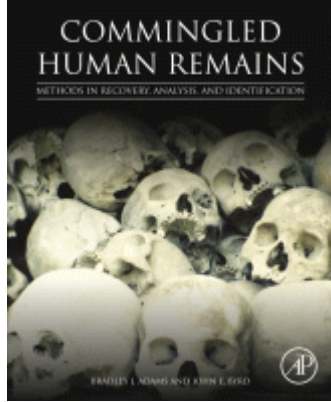
2. EPISODIC; ETHNIC CLEANSING & GENOCIDE

- case studies
 1. Man Corn: Turner & Turner's (1999)
 2. The Sacred Ridge assemblage (Osterholtz 2013)
- signs of defleshing & dismemberment
- ++ extensive commingling of individuals
- Interpreted as indicative of :
 1. cannibalism (e.g., White 1992)
 2. witchcraft executions (e.g., Darling 1998)
 3. terrorism (e.g., Turner & Turner 1999)



TOOL MARKS Bone fragments recovered from Sacred Ridge (including this hip bone) show signs of tool marks, suggesting bodies were mutilated.



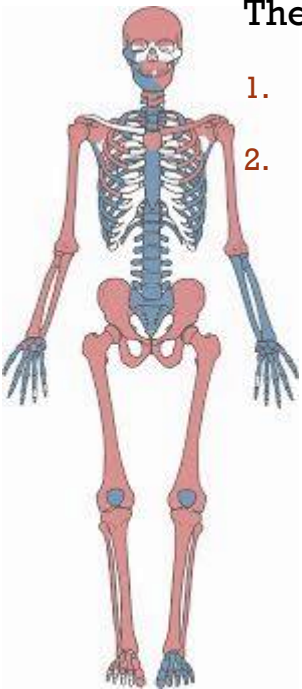


3. UNINTENTIONAL COMMINGLING

- *occurs in the laboratory or field during analysis or curation*
- loss of excavation information & context
- limited bioanthropological analysis

The use of excavation photos & notebooks can be useful in:

1. determining the degree of lab commingling
2. untangling of lab commingled deposits



LONG-TERM

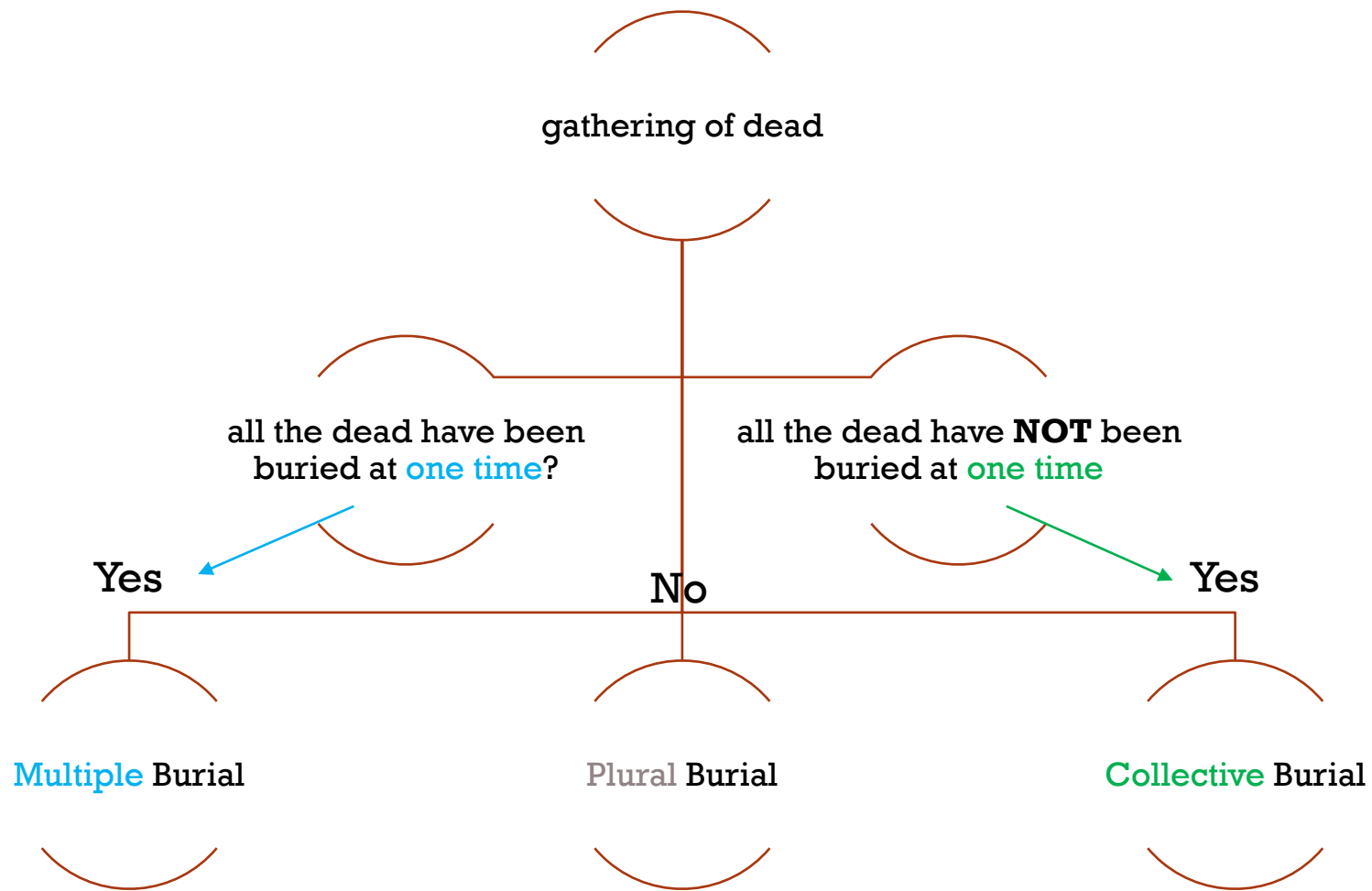
- Familial tombs
- Tumulus
- Ossuary



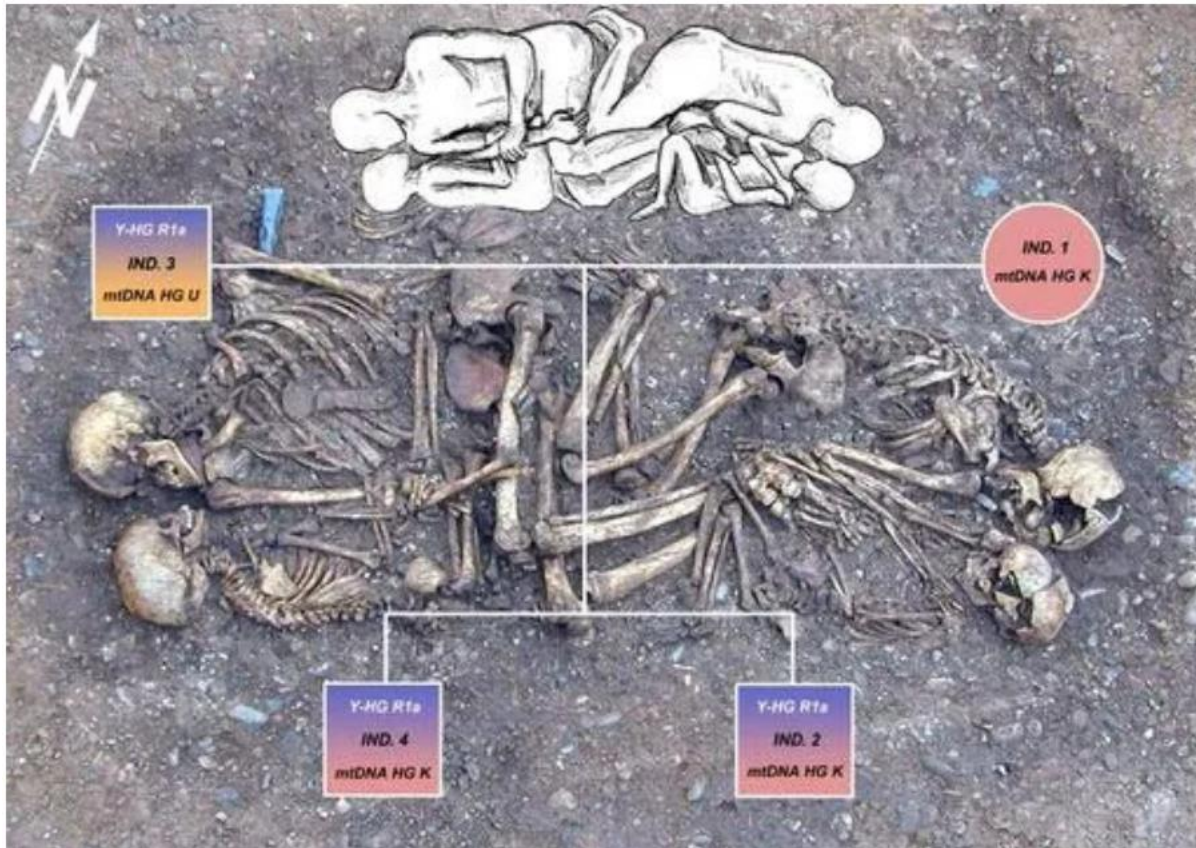
EPISODIC

- Epidemic
- Warfare
- Ethnic cleansing & genocide





GRAVE REVEALS VIOLENT DEATH OF ANCIENT FAMILY



- Germany , dated to 4,600 years ago
- Wounds on all skeletons
- Genetic analysis: The mother (right side of image) is facing her son, while the father (left) is facing the other son
- Isotopes analysis : the females spent their childhoods in different regions from the males and children in the grave, → the females "married out," moving to the location of the males for marriage

(Image credit: courtesy of the National Academy of Sciences, PNAS (2008).)

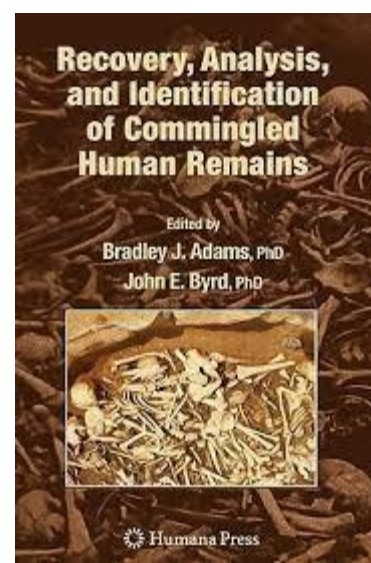


OSSUARY

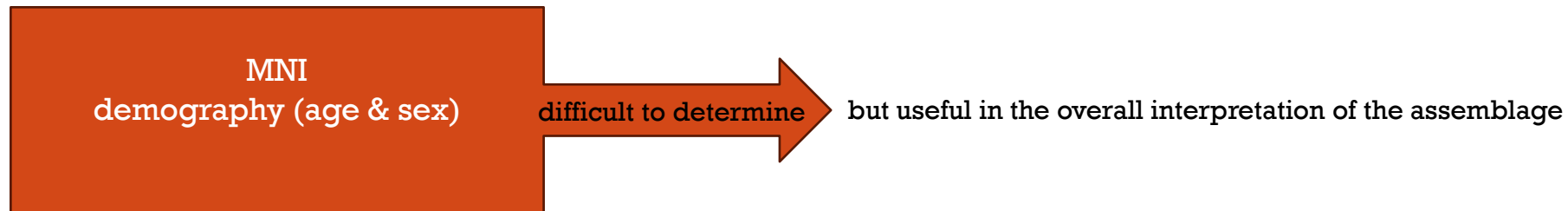


METHODOLOGIES

varies based on the research questions



- Due to the nature of the assemblages:
I. **baseline data** must first be determined



- ❖ MNI & Demography are complicated processes, particularly in assemblages with significant fragmentation

But remember!

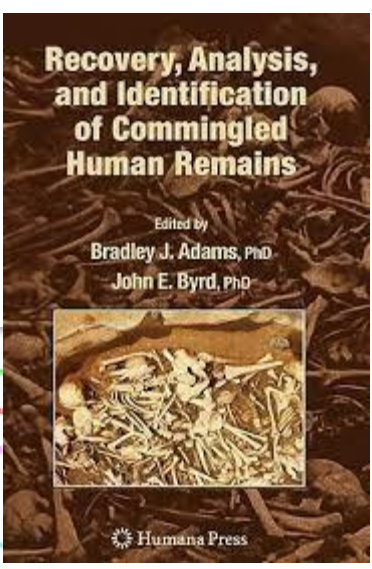
Identification of the Demography & Bioanthropology → identification of epidemic mass graves

Approximately 1/3 of the population of Europe is believed to have died during the event of the Black Death.

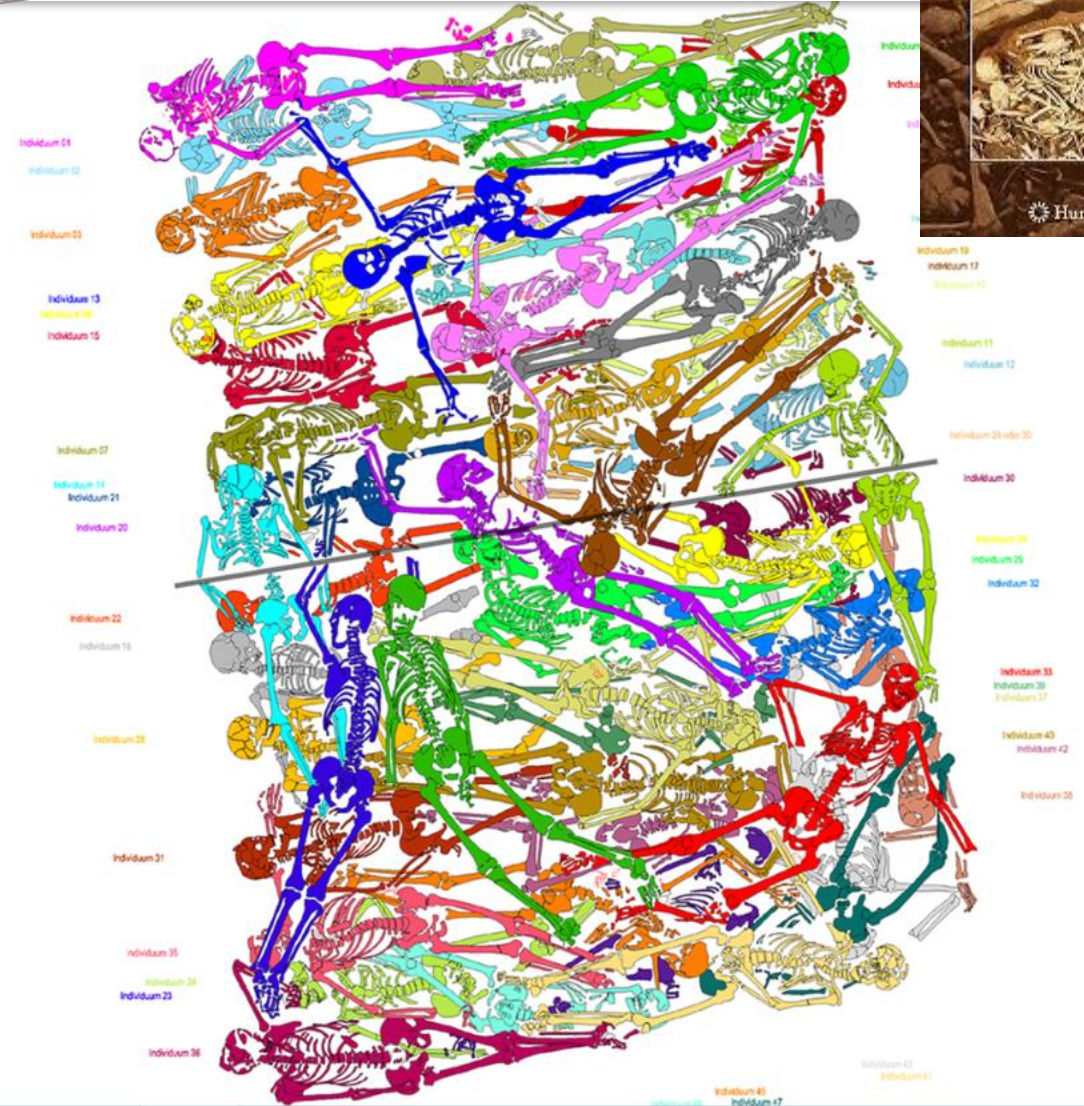


METHODOLOGIES

varies based on the research questions



- I. baseline data must first be determined
- II. then this can be used for **secondary analyses**:
 1. Non-human material
 2. Spatial analysis
 3. Visual pair matching
 4. Osteometric sorting
 5. DNA
 6. Elemental composition

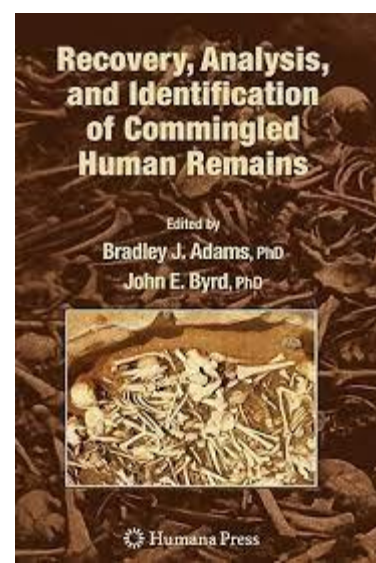


METHODOLOGIES:

1. NON-HUMAN MATERIAL

Any non-human material should be removed

- animal bone
- organic materials
- personal effects

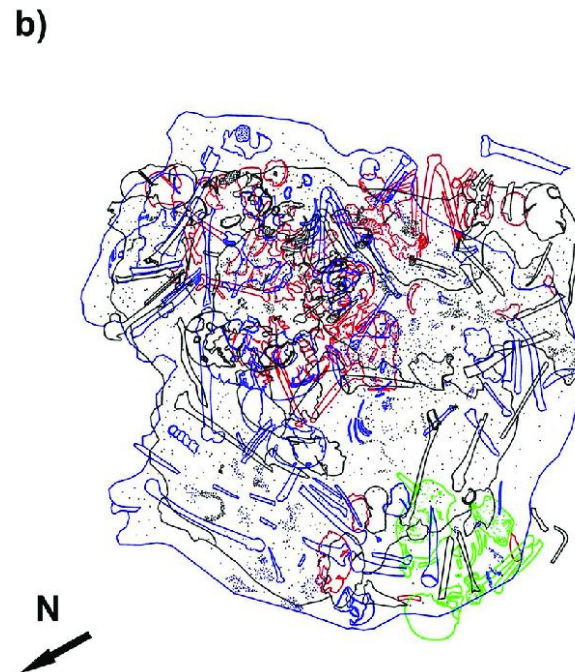


METHODOLOGIES:

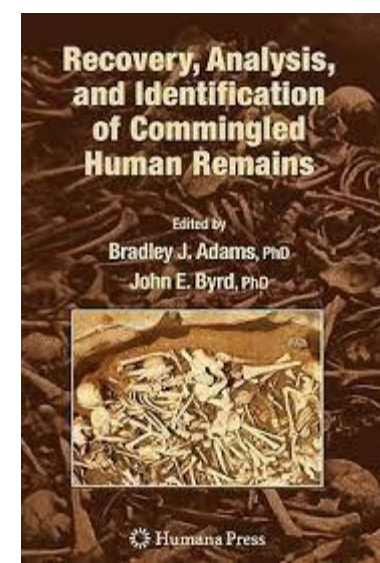
2. SPATIAL ANALYSIS

Relies on the assumption that **parts of a body will remain close to each other**

= minimum distances between matching body parts can suggest a relationship.



The Potočani mass burial. (A) The upper layers of the pit showing numerous commingled skeletons. (B) Schematics of the middle layer of the pit with different colors marking individual skeletons.
<https://doi.org/10.1371/journal.pone.0247332.g002>



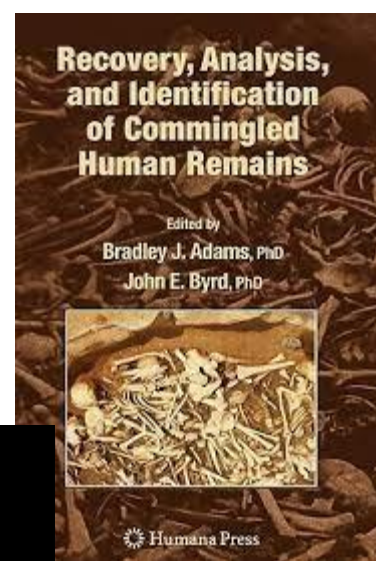
METHODOLOGIES:

3. VISUAL PAIR MATCHING

Based on the notion that bones from a given individual will show size, shape and colour similarities (long bones, most used this approach)

But remember!

1. asymmetric bones at some individuals (e.g. one leg shorter than the other)
2. the soil staining may differ across a single skeleton.

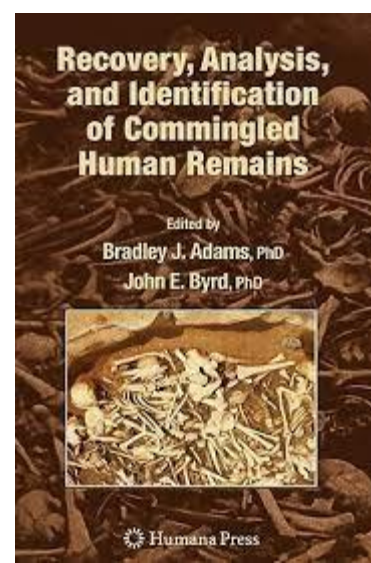


METHODOLOGIES:

4. OSTEOMETRIC SORTING

Based on that

1. The human skeleton is largely symmetrical → bones from the left and right side of the body will be approximately the same size
2. That articulating bones will be of comparable size in order to 'fit' together.

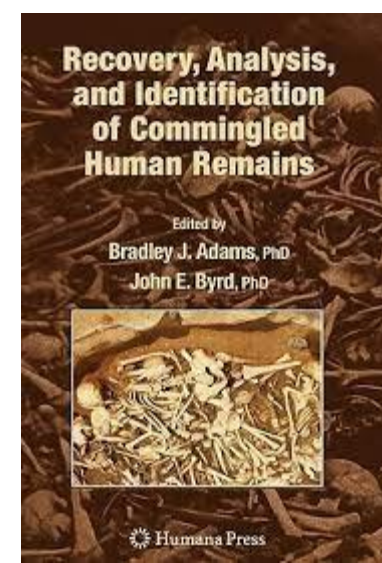
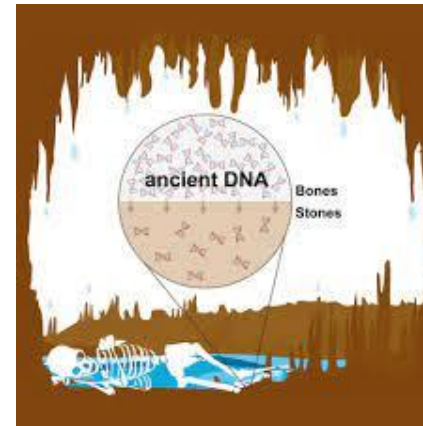


METHODOLOGIES:

5. DNA

Challenging to use due to

1. Cross-contamination
2. Expensive
3. Destructive



METHODOLOGIES:

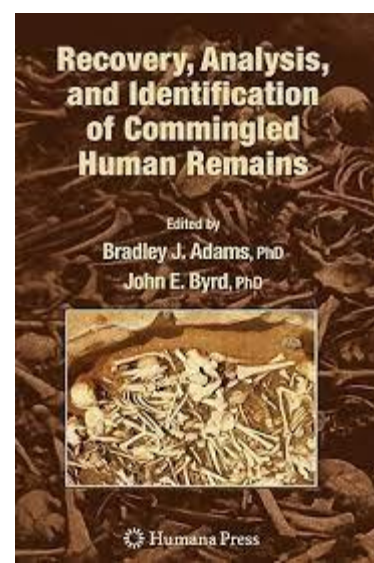
6. ELEMENTAL COMPOSITION

analysis of the distinctive chemical element compositions in bones in order to separate the bones of individuals forensic practitioners have been interested in the potential of portable x-ray fluorescence :

- + a non-destructive method
- X-ray fluorescence in a method that fires radiation into a sample and captures the energy released by the electrons from the atoms when excited
- The energy released correlates with elemental composition
- Usually a lab-based method, but the portable variety allows application in the field



Powdered bone and soil samples to test for chemical element composition using XRF.



TAKE-HOME MESSAGE



- If only one dead person has been deposited in this volume, one uses 'individual deposit'.
- If at least two people have been deposited in this volume over a same phase of use, one uses 'gathering'.
- A gathering is termed 'multiple' whenever it is possible to demonstrate that all the individuals have been gathered at the same time.
- A gathering is termed 'collective' whenever it is possible to demonstrate that all the individuals have not been gathered at one time.
- A gathering is termed 'plural' whenever it is not possible to demonstrate its multiple or collective nature, in other words if it gathers at least two people without further precision.
- In more complex commingled contexts, it would be common to use a range of methods to re-associate body parts.



READING

1. Moutafi & Voutsaki 2016. Commingled burials and shifting notions of the self at the onset of the Mycenaean era (1700–1500BCE): The case of the Ayios Vasilios North Cemetery, Laconia. *Journal of Archaeological Science: Reports*. 10. 10.1016/j.jasrep.2016.05.037.
2. Varas & Leiva 2012. Managing commingled remains from mass graves: considerations, implications and recommendations from a human rights case in Chile. *Forensic Sci Int*. 10;219(1-3):e19-24. doi: 10.1016/j.forsciint.2011.11.035. Epub 2011 Dec 20. PMID: 22192578.
3. Bourgeois et al. 2021. A four-stage approach to re-associating fragmented and commingled human remains. *Journal of Archaeological Science: Reports*, Volume 37

