Diachronic Research on the Decomposition and Preservation of Buried Human Remains in the Soil of Flanders

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Aim

Is there a diachronic constant between the preservation or degradation of buried human remains in specific soil types of Flanders?

Introduction

Why is a research project on degradation and preservation important?

1. It gives a clear view of the taphonomic processes; to distinguish natural, universal processes and processes of human origin.

2. To estimate Time Since Death/Postmortem Interval (PMI).

3. The DVI** from the Belgian Federal Police asked for this research; what is the chance of a complete or partial recovery in specific soils?

4. To predict the degradation of archaeological skeletal remains; excavating or preserving them as national heritage.

5. To investigate the right locations to plan a cemetery; some cemeteries found decomposition problems in specific soils.

Applied Method

Although the same preservation of bone seen on macroscopic level can show a different preservation on microscopic level, this research took place on individual case studies that described macroscopic preservation. So this research served as a preparatory study for further and more detailed survey.

- Sources: Excavation reports, publications and conversations with archaeologists and DVI.

- Criteria for the excavations used as case-study:
  - Only buried remains.
  - Only inhumations, no cremations.
  - Existence of Lambert co-ordinates to locate the site.
  - Sufficient and adequate information about the preservation or degradation.
  - Cases needed to be spread over different agricultural regions of Flanders (figure 1) and through different periods.

- Method and Material

- Restrictions

  The ideal situation is to work with bone samples on a microscopical level and soil samples. So:

  1. Collecting bone samples from different soil types would take years and would be ideal for a long-term research.

  2. Bones out of storage depots don’t serve the purpose because fragile bones or ghost burials are not stored.

  3. Most excavations don’t take soil samples.

  4. The anthropological reports of the VIOE*** express the preservation in quantity rather than in quality.

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- Results

  1. Cases classified by soil type based on texture. Sandy textures (Z-S-P), loamy textures (L-A), clay in the polders (POLO/POLM) and contaminated soil (KUNST).

  2. Classification of drainage conditions (b-d).

  3. The agricultural soil regions give no predictions about decomposition.

- Discussion

  - More research needs to be done on this topic in Belgian soils.

  - During the DVI there is a need for more research in contaminated (city) soils.

- Conclusion

  - Texture, drainage and pH affect the qualitative preservation of bones within a PMI of more than 100 years.

  - During the initial decomposition local factors predominate, but when the bulk of soft tissue decay has ended, general soil chemistry has a greater direct effect.

  - 'The more fragile the bones, the older they are' is not true: it depends on the

- Table 2: Overview classified by soil type

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Number of Sites</th>
<th>Number of Burials</th>
<th>Description of Burial</th>
<th>Decompositional Rate</th>
<th>Preservation of Soft Tissue</th>
<th>Preservation of Bone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandy Texture</td>
<td>21</td>
<td>5</td>
<td>Strong</td>
<td>Fair</td>
<td>Poor or no preservation</td>
<td>Full preservation</td>
</tr>
<tr>
<td>Loamy Texture</td>
<td>18</td>
<td>4</td>
<td>Average</td>
<td>Fair</td>
<td>Poor or no preservation</td>
<td>Full preservation</td>
</tr>
<tr>
<td>Clay</td>
<td>9</td>
<td>2</td>
<td>Strong</td>
<td>Poor</td>
<td>Poor or no preservation</td>
<td>Very poor preservation</td>
</tr>
<tr>
<td>Contaminated</td>
<td>4</td>
<td>1</td>
<td>Weak</td>
<td>Poor</td>
<td>Poor or no preservation</td>
<td>Very poor preservation</td>
</tr>
</tbody>
</table>

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** Disaster Victim Identification Team Belgium

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