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The *Pharaonic Textiles* database:
a new tool for recording archaeological textiles from Egypt

Introduction

The study of Pharaonic Egypt has long been distinguished by the exceptional preservation of organic remains, especially well represented in burial archaeology. Textiles are particularly plentiful in the context of mummification, which saw the use of numerous fabrics for wrapping dead bodies. From the beginning of scholarly explorations in Egypt, textiles have therefore been the constant companions of archaeologists, conservators, and art collectors. Despite the quantity of material available, which is in some cases preserved to an astonishing degree, this treasure trove of information has long remained inaccessible in global textile research. However, recent efforts have seen the growth of research projects and field studies which are producing increasing quantities of data on ancient Egyptian textile production. However, these different bodies of data remain fragmented according to sites, time periods, and/or researchers.

Inspired by the recent systemisation of textile analysis methods, the project reported here intended to create an easy-to-use tool for the recording of Pharaonic textiles, which would be open to any interested party working on this type of material. The objective was to unify the data entry system under a common workflow and terminology so that systematic data with opportunities for comparisons and collaborations could be offered. The *Pharaonic Textiles* database was conceived to be as holistic and exhaustive as possible by documenting technical characteristics (such as the manufacture of the fabric) as well as different aspects relating to the original function and reuse. In addition, the project planned to produce a tool that could be easily adapted by the users and could function in different settings – from a single-object study in a museum to vast quantities of items to be registered in the field.

The relational database was developed at the Centre for Textile Research (University of Copenhagen) from 2021, as part the *EgYarn* project (MSCA grant agreement 890144, Spinazzi-Lucchesi 2021), which investigated textile production and consumption in Egypt during the New Kingdom. The structure was built by Chiara Spinazzi-Lucchesi and Elsa Yvanez, and designed by Obaida Hanteer of the University of Copenhagen's DataLab, using the Base software of LibreOffice. This software was selected for its flexibility, its resemblance to many other well-known database systems, and its compatibility with open access standards. It was tested in subsequent years in both field and museum contexts by recording Egyptian textiles dated to the Middle Kingdom, New Kingdom, and first half of the first millennium BCE (2000–500 BCE), during eight field seasons and one museum project. Depending on access to electricity and other logistical issues, the textiles were recorded directly in the database or on a paper recording form and later entered in the database during the post-excavation phase.

Installing and using the database

The database files are available for download at the following URL: 10.5281/zenodo.17542485. Download and save the entire folder on a computer. Moving or renaming individual files may break the internal links between tables, so it is important to move the entire folder as a unit if relocation is necessary. Once downloaded, the database is opened directly in LibreOffice©, freely available to download online (see www.libreoffice.org).

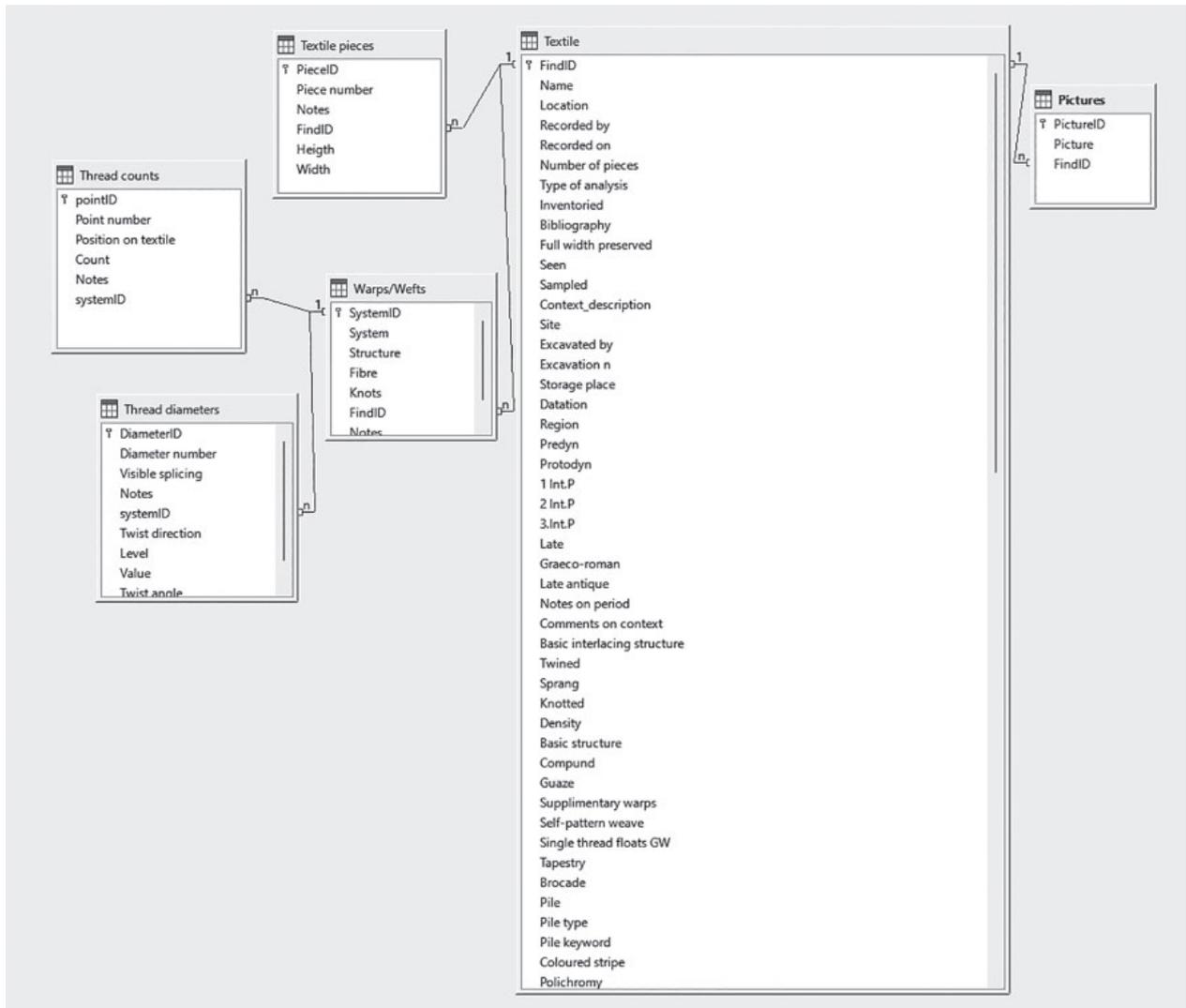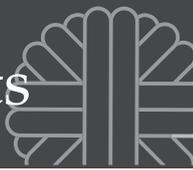Some users may experience difficulties with macros

Fig. 1: Entity relationship diagram (ERD) of the *Pharaonic Textiles* database showing how the different entities are structured and related to each other (Image: Chiara Spinazzi-Lucchesi)

when first opening the database, depending on their local security settings or software version. Since the database uses a small number of macros to automate navigation and data-entry functions, it is important to enable macros on opening it. If the programme blocks them by default, users should follow the software's security prompts to allow trusted content, or adjust the settings to permit macros from reliable sources.

Structure of the database

The database rests on six distinct but related tables, linked through the object unique identifying number (fig. 1). For ease of use, the information from these different tables is assembled into a form (fig. 2) which is divided into three main areas: one dedicated to the basic information about the textile artefact (number,

provenance, measurements, description); one to its woven or non-woven structure and decoration; and one to recording the warp and weft features.

Basic information and context of the textile

This section constitutes the core of the database, where each textile or textile-related object is first entered. It includes fields for the object name or identifier, as well as metadata concerning authorship and date of data entry, allowing users to trace who created or last modified each record. Additional tick boxes enable users to indicate which types of study have been carried out on the textile:

- Bibliographic study – whether the object has been published or discussed in secondary literature;
- Direct examination – whether the textile has been

personally inspected or analysed by a researcher;
- Sampling – whether physical samples have been taken for fibre, dye, or other forms of laboratory analysis.

These indicators provide a quick overview of the available documentation and the research status of each object, helping users to identify which materials have been examined in detail and which remain to be studied further.

Textile pieces

This section contains detailed information about the individual textile fragments or, when applicable, sets of related fragments that form part of a single object record. Each entry includes measurements (such as length, width, and thickness), as well as a descriptive field for recording observable characteristics such as weave structure, thread count, colour, and condition of preservation. A bibliographic field links each textile piece to relevant publications, excavation reports or catalogues in which it has been previously described

or illustrated. This ensures that every record can be traced back to its documented sources, facilitating cross-referencing and scholarly verification.

Weave

The weave section (fig. 3) records the fundamental structural characteristics of each textile. A drop-down menu allows users to select the basic interlacing structure, distinguishing between woven and non-woven techniques such as sprang or knotted fabrics. Within the woven category, a further drop-down menu specifies the basic weave type, including tabby and its known variations, which are especially relevant for Pharaonic textiles. As mentioned in the introduction, the database has been designed with flexibility in mind and can be easily adapted to other cultural or chronological contexts. Additional tick boxes provide information on more specific structural features such as twining, single thread floating, and pile weave (with a dedicated section for detailed description). Together, these options allow users to capture both the standard
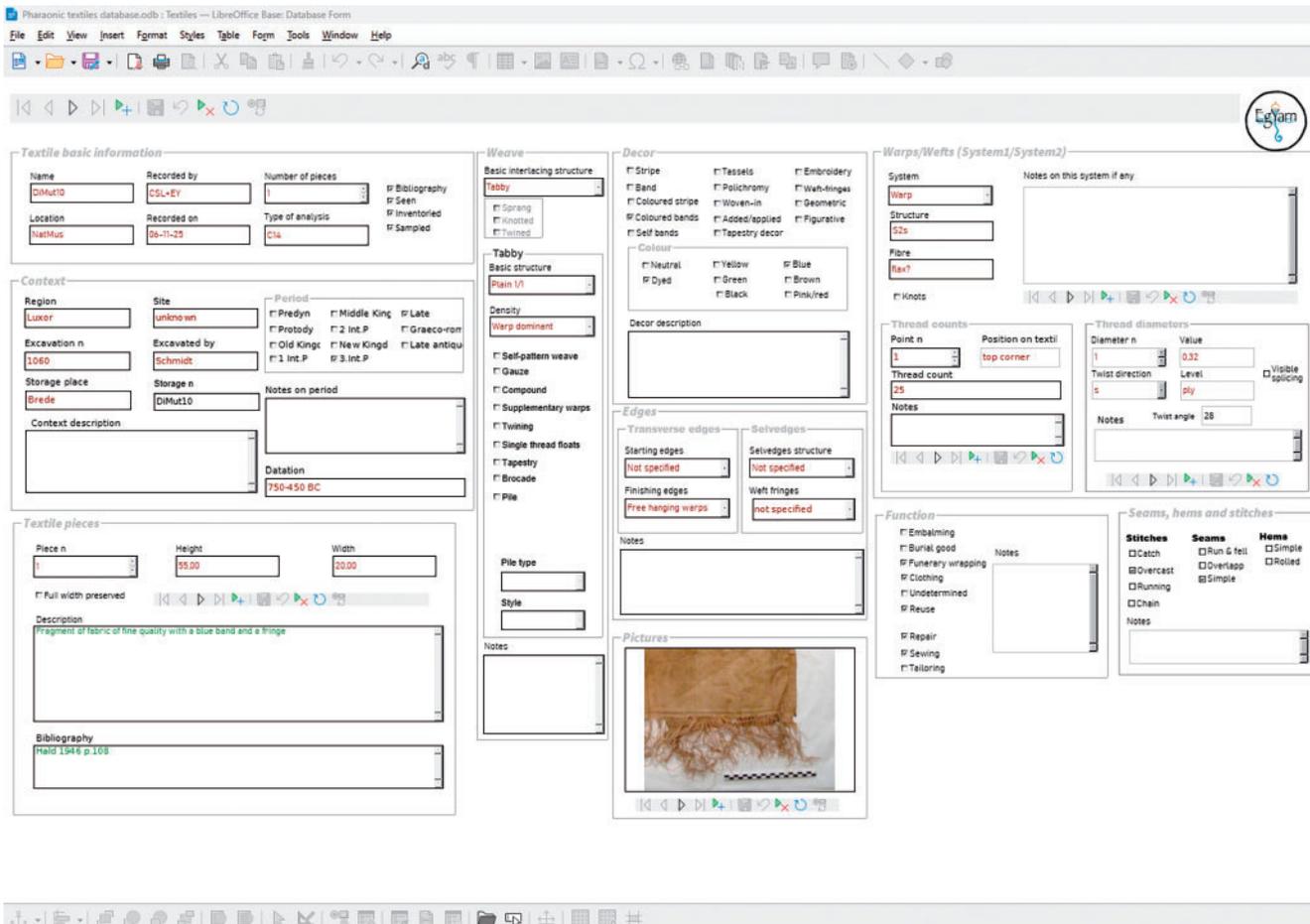

Fig. 2: View of the database in the "form" mode, offering an easy overview of each record (Image: Chiara Spinazzi-Lucchesi)
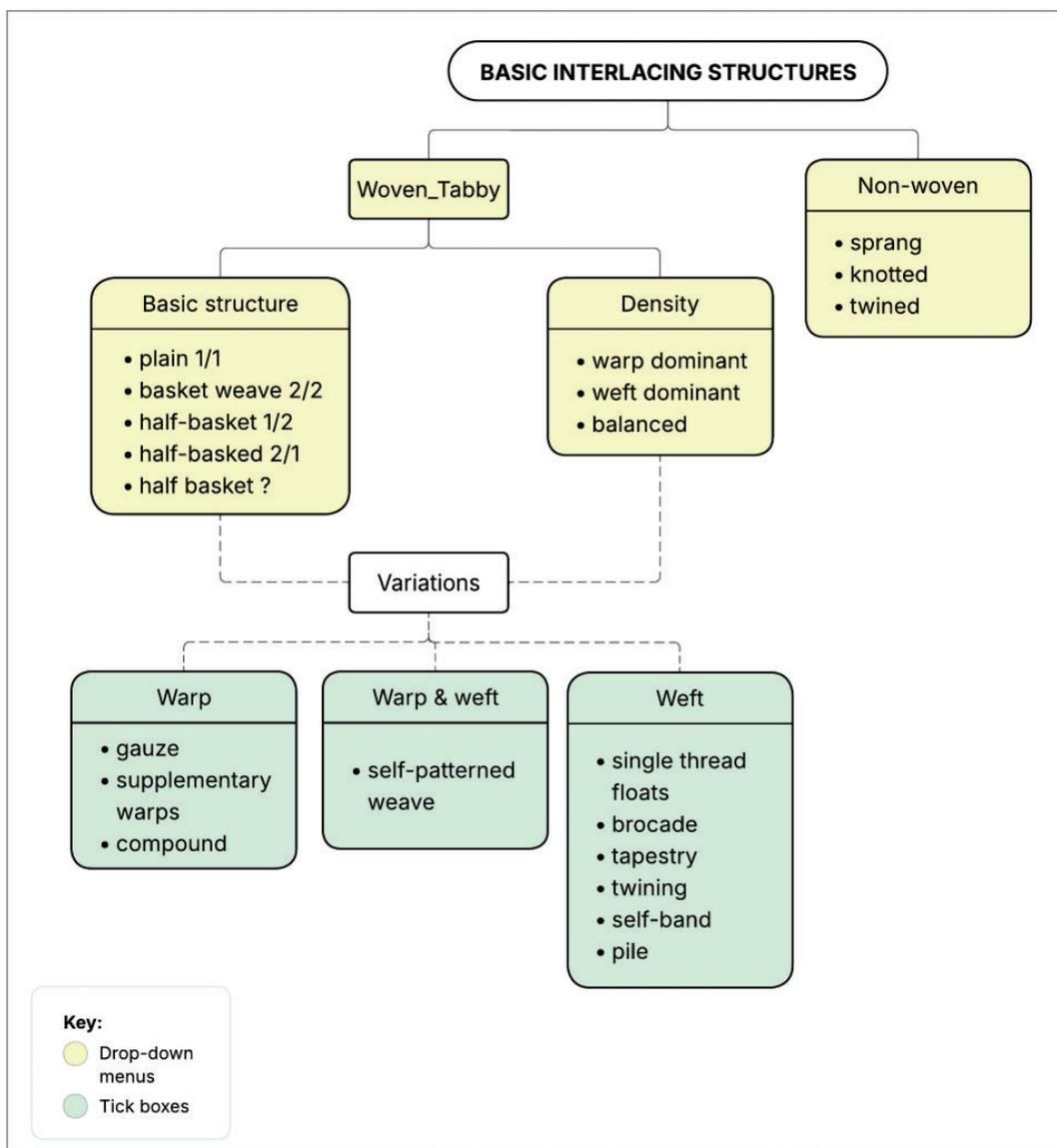
Fig. 3: The categories and terminology used in the weave section (Image: Elsa Yvanez)

and exceptional aspects of textile construction in a systematic and comparable way.

Decor
The decor section records the decorative features of each textile, whether woven or non-woven. A series of tick boxes allows users to indicate the type of decoration present, for example, patterning achieved through colour variation, weave structure, embroidery, applied elements, or other techniques. An accompanying open description field provides space for a more detailed account of the decorative motifs, their placement, and any notable stylistic or technical aspects.

Edges
The edges section (fig. 4) documents the different types of finishing elements present along the borders of a textile. Two main categories are distinguished: the transverse edges (starting and finishing borders) and the selvedges, with or without weft fringes. Each category is accompanied by a drop-down menu offering a set of subtypes, allowing users to record the specific form of edge treatment observed. The terminology follows that used by Gillian Vogelsang-Eastwood as presented in her publications on Amarna textiles (Kemp and Vogelsang-Eastwood 2001) and that developed by Ingrid Bergman in her study of Late Antique Nubian textiles (Bergman 1975). This
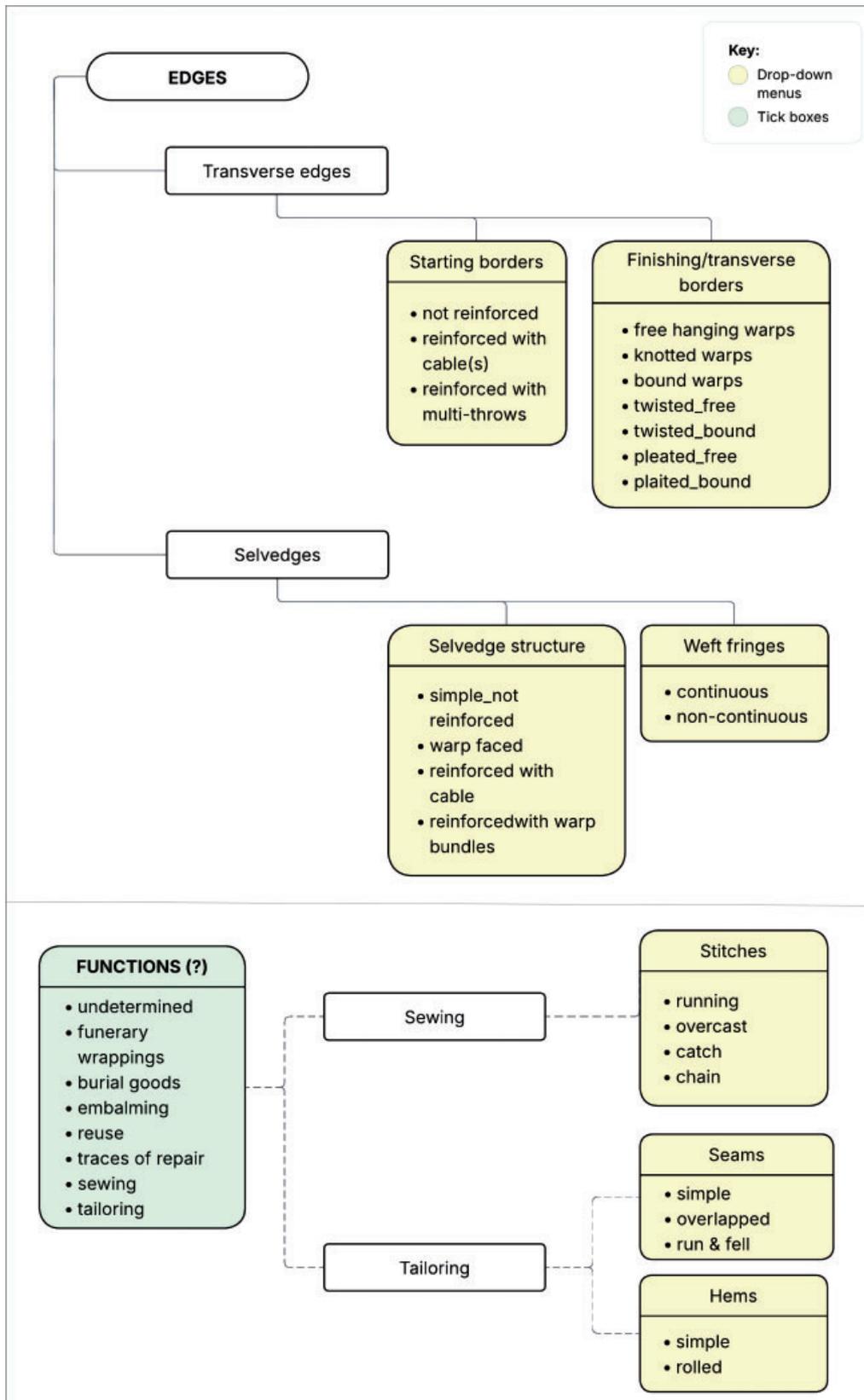
Fig. 4: The categories and terminology used in the edges and function, repairs, and sewing sections (Image: Elsa Yvanez)

vocabulary reflects the specific archaeological and cultural contexts in which the original research was conducted. Currently, the database terminology has been kept minimal and pragmatic, acknowledging both the need for consistency and the limitations imposed by the available material. In particular, the classification of weft fringes remains provisional: a more detailed and structured typology will need to be developed in future work, ideally in dialogue with more experts to include a broader comparative corpus of Egyptian textiles.

Pictures

The pictures section contains photographic documentation of the textiles and related objects. Images are stored directly in the database, ensuring that each visual record remains linked to its corresponding entry. To ensure the database remains lightweight and functional across different systems, low-resolution images are recommended. These photographs are intended primarily for reference and visual identification, allowing users to confirm object attributes, weave structures, or decorative details at a glance.

Warps and wefts

The warps and wefts section is more complex than the other parts of the database, as it was originally developed for a project focusing primarily on spinning and thread technology. Its structure allows the recording of a large variety of detailed quantitative data, enabling statistical analysis of yarn and fabric characteristics.

When recording this information, the first step is to select whether the record refers to a warp, a weft, or an unknown system (system 1 or system 2). Once this is defined, users can proceed to enter information about the fibre type (if known) and the general yarn structure, such as whether it consists of a single thread, a plied, or a cabled yarn.

Subsequent fields are dedicated to numerical data, beginning with thread counts per centimetre. The database can store up to one hundred measurements per record, each with fields for the position on the textile, the number counted, and any relevant notes.

A similar structure applies to the recording of yarn diameters: for each measurement point, users can enter the sample number, the exact value, the direction of twist, the yarn level (indicating whether it concerns a single or plied thread), and the twist angle. Additional note fields allow for the inclusion of contextual observations.

When switching from warp to weft measurements (or vice versa), it is essential to create a new record (or tab) within the upper panel and to select the corresponding system again. This ensures that the values are correctly stored and associated with the proper dataset. This structure reflects the logic of a relational database, in which each system—warp and weft—is treated as a distinct but interconnected entity.

Function, repairs, and sewing elements

The final area of the form concerns the function(s) and use of the textile. A series of tick boxes allows users to indicate whether the textile was intended for embalming, burial goods, clothing, reused, or if its function remains undetermined. Closely related to this are additional tick boxes for recording evidence of repair, sewing or tailoring. These simple indicators make it possible to identify modifications, reuse, or maintenance practices affecting the life cycle of a textile.

A separate area, again employing tick boxes, is dedicated to the documentation of stitches, seams, and hems, accompanied by a notes field for further description. Together, these elements provide a concise yet flexible framework for recording the technical and functional aspects of textile construction and reuse.

Relational structure

The relational structure of the database is intentionally simple and intuitive. Most information is connected directly to the main table, "Textile", which serves as the central node of the system. Separate tables are used in cases where multiple entries may correspond to a single textile record, allowing for more flexible and accurate data management.

These include:
- The "Textile pieces" table, which accommodates cases with multiple fragments;
- The "Pictures table", which links one or more images to each object; and
- The "Warps and wefts" table, which is further connected to its own sub-tables for "Thread count" and "Thread diameter".

This relational structure ensures both data consistency and scalability, enabling complex datasets to be queried without redundancy.

Information can be retrieved through the query functions built into the database software. Users can perform searches using any field, such as site, context, material, weave type, or function or combine several criteria to refine their results. For more advanced analysis, data can be exported as spreadsheets or CSV files, allowing integration with external statistical

or visualisation tools. Results from different tables can be joined based on their shared identifiers (for example, linking textile fragments, images, and thread measurements to a single object record).

In summary, the database permits detailed recording of all archaeological information about each textile and all technical and decorative characteristics of the fabric, including basic structure, yarn manufacture, fibres, colours, patterns, seams, etc. Queries can be generated at each information level and immediate sorting and data extraction is possible thereby producing quantitative analyses of any element of interest, such as the thread count per centimetre.

Conclusion

The *Pharaonic Textiles* database was developed for archaeological textiles from the Nile valley. It demonstrates the project team's commitment to transparent, reproducible, and cumulative research. While its structure reflects the specific requirements of textile studies in ancient Egypt, its underlying logic and relational design can be readily adapted to

other archaeological or material culture datasets. The database is conceived as an evolving platform, which will continue to grow as new data, typologies, and analytical approaches are introduced. By making it openly accessible and modifiable, the development team aims to foster collaboration and dialogue within the scholarly community, encourage users to build, refine, and expand it to address new research questions and comparative perspectives.

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