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Documentation Strategies at Butser Ancient Farm

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Butser Ancient Farm has been at the forefront of experimental archaeology in Britain for more than 45 years. The pioneering work of its first director Dr Peter Reynolds in the evaluation of Iron Age structures and agriculture demonstrated beyond doubt the importance of experiment in archaeology in the UK and international experimental archaeology work. Butser Ancient Farm has focused particularly on archaeological reconstructions in more recent years, while both expanding and extending its scope beyond the Iron Age. The expansion began in 2003 with a Romano-British villa and has proceeded since 2014 to encompass the Neolithic and Anglo-Saxon periods. The site now has 12 major experimental buildings with numerous ancillary structures.

The pace of expansion has necessitated the careful consideration of strategies to document, record and store key information about the archaeology from which the buildings were derived; the rationale and processes involved in their construction; practical and financial aspects of construction; interpretation and usage of the buildings; recording of subsequent phases of research including the documentation of their decay and of archaeology derived from their demise. Beyond the obvious material considerations, we are also developing methodologies for capturing the experiential impressions of those involved in the construction and later use of the buildings. Key to this process is our newly implemented digital storage file protocol, the objective is to allow users to store data with consistency, clarity, ease of use and organised in such a way that search and retrieval is intuitive and efficient. This brief paper aims to provide an illustration of the system with the ambition of contributing to the discussion of implementing a system to store and share information on a broad, consistent, international platform.

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Introduction

Butser Ancient Farm is an independent experimental archaeology site, located in the central south of England, near the city of Portsmouth. Butser was established in 1972 under the directorship of Dr Peter Reynolds. The site's initial focus was on the agriculture and buildings of the British Iron Age.

Butser continued its research into the British Iron Age for many years, expanding to include the Romano-British period with the initial construction of an experimental hypocaust system, then in 2003 a full-scale building based upon the archaeological excavations of Sparsholt villa, near Winchester in Hampshire, England (Johntson and Dicks, 2014). Peter Reynolds' numerous experiments, publications, and speaking engagements had a significant and continuing influence on the understanding of the Iron Age (Much of his work is accessible via the EXARC website: https://exarc.net/history/butser-archive). Sadly, Peter died unexpectedly in 2001 and the subsequent restructuring of Butser disrupted both data collection and publication.

Butser's building chronology has expanded in recent years to encompass the Neolithic and Early Medieval periods. Since 2014, the study of prehistory and history from the 'Stone Age' to Britain's Early Medieval periods has been included in the English primary school curriculum. Specifically, the curriculum covers an age range from 5 – 14, though our largest numbers of school visits are in the age range of 7 – 11 years. As a result, the Farm has dramatically expanded its educational program. Primary school student educational visits are now a major component of the Farm's income. Prior to the restrictions necessitated by COVID 19, approximately 35,000 school children explored their curriculum topics in an archaeological setting. Butser now has 12 major structures and a number of ancillary buildings on site, ranging in date from the British Neolithic to mid-Saxon (ca. 8th century).

Butser has approximately 40 people working as paid employees. However, around 25 to 30 workers are on the education team and not directly connected with our experimental work. There are at any time perhaps two or three people involved in the documentation of experimental structures, among numerous other duties. The restricted capacity of this small team, combined with a backlog in recording the experimental archaeology created from our rapid expansion, has meant it was necessary for staff at Butser Ancient Farm to reassess the methods in which documentation of experimental construction is collected and stored to ensure both the efficient capture of data and facilitate future retrieval. The first part of this presentation deals with the processes we have implemented to achieve these objectives. The second section discusses what we record and concludes with some brief speculation on how the scope of experimental data recording and retrieval might be expanded in the future.

Information Storage and Retrieval

The following is the computer/cloud-based structure for recording experimental (typically construction) projects recently implemented at Butser Ancient Farm.

Storage and Retrieval Considerations

Our database of experimental projects is uploaded to Microsoft's 'OneDrive' cloud-based storage system. This is a convenient platform as it is integrated with other Microsoft products, in particular Word and the Excel spreadsheet software that we use for almost all documentation aside from images. Documents can be created in Word or Excel and saved directly into the OneDrive directory, including in PDF as well as Word format. Once this is done the default setting is for all changes in the document to be instantly and automatically saved to the cloud. Automatic saving is a desirable feature in any editing process to avoid lost, unsaved data. Cloud-based storage systems are considered safe and robust, being less vulnerable to data loss than storage in a single location (such as a hard drive or a local server).

To date OneDrive has proven reliable. However, I suggest that our current system is, while good, not optimal. It is my recommendation that any data be saved in identical versions in at least two locations, for a number of reasons. Firstly, it is necessary to have a reliable internet connection to save and retrieve from cloud-based storage. Secondly, no single storage system can be expected to be perfectly reliable or fool proof at all times. Thirdly, if access codes, passwords or similar necessary access information is lost at an institutional level it may prove impossible to retrieve data from a cloud-based server.

I must point out that as an organisation we do not have dedicated Information Technology (IT) staff. The limitations of our system are due at least in part to this fact. We have taken steps to partially rectify this shortcoming by saving documents to local hard drives in addition to the cloud-based server. However, this is not an ideal solution. Microsoft Word does not appear to allow the simultaneous saving of file information to OneDrive and another destination (e.g. hard drive). This means that it is possible to create multiple versions of a file with identical names - if the operator neglects to manually save the changes to all storage locations. This is a source for potential confusion and is best avoided. The optimal solution is to have a system whereby any changes made to an open document are simultaneously and automatically saved to every storage location. This way the user can have confidence that, regardless of where they access the file (e.g. accessing from a hard drive while working offline), any changes will subsequently be made to all versions of that the file, regardless of where and how it is stored. This must be an achievable goal but, as yet, it has not been possible for us to achieve it.

Another shortcoming of this system is that it is not inherently 'future-proof'. In other words, should software, hardware or storage systems change in the future the data may no longer be retrievable. This has been a major challenge to institutions since digitisation from the mid-twentieth century. Large institutions spend considerable sums in tracking the evolution of technology changes for this reason. It has also proved a potent argument for permanent maintenance of hardcopy records, despite the difficulties that can present. Obviously Butser - like most institutions - cannot devote more than minimal resources to this problem, however an advantage of such a simple system as ours is that much of the management of upgrading and software changes will happen externally. The use of industry-dominant software from Microsoft, integrated with Microsoft's own cloud-based storage shifts much of the onus of upgrading and compatibility to the Microsoft corporation. Historically Microsoft's back-compatibility has been relatively good. By that I mean, when a version of their software (Word, for example) is superseded the newer version of the software will still recognise and open earlier files. There are usually limitations to that compatibility, but these rarely compromise the retrieval of data. It can be expected that OneDrive updates will integrate with other Microsoft products in a similar fashion. It should be noted that this is not a particular recommendation for Microsoft corporation. Nor is it necessary to use a PC platform - Macintosh machines have the capacity to run the same software configurations.

These are not perfect solutions, but they appear to me to be the best option for small organisations. It has been my experience that niche software/hardware configurations may cause enormous difficulties when external hardware or software platforms are altered. My experience is that the most convenient and economical system for use and to avoid redundancy is to rely upon major manufacturers. It is also apposite to reinforce the value of publication, such as with EXARC, tDAR, etc. Although publication of this sort will not preserve complete archives it will capture major aspects of the work and store it in another location, while simultaneously ensuring the dissemination of the work across the archaeological community.

Our System

This system establishes a simple directory (or 'folder'). hierarchy for the storage and retrieval of data. Figure 1 illustrates the system graphically. The overarching design rationale is to ensure simplicity in operation. The intention is a system easy to implement with a self-evident structure and nomenclature. The system will ensure rapid storage and ease of retrieval neither of which tasks should require specific training beyond basic computer literacy. The critical importance concerns any operator unfamiliar with this system should be able to navigate through its storage protocols intuitively.

The Organisational Structure

System hierarchy is documented, below, in descending order. At the top of the hierarchy, and containing ALL subsidiary folders/directories, is the:

1. **Master Directory**
   The name of Butser Ancient Farm's current Master Folder is **Archaeological Structures.** This is exclusively for the storage of the records of the building of archaeological structures including houses, latrines, grain stores, ditches but not including the non-structural experiments, for example, earth-fired pottery or smelting (these non-building related experiments would be assigned their own logically named master folders. The directory hierarchy and recording process is analogous).
2. **Primary Directory**
   These are broad, period specific folders, at this point including **Neolithic**, **Iron Age**, **Roman**, and **Anglo Saxon**. The folder naming convention is important for the directory's search functions and named accordingly to be obvious to all anticipated users.
3. **Secondary Directory**
   The secondary directory refers to specific building projects. At Butser Ancient Farm, these titles are derived from the archaeological nomenclature adopted during the recording of the original archaeology of the structure. For example, **Llandygai** (Welsh, Neolithic)**, CS1** (Danebury, England uses the abbreviation of 'Circular Structure 1', Iron Age)**, Little Woodbury** (England, Iron Age)**, Villa** (England, Romano-British)**, Anglo Saxon House A1, Anglo Saxon House A2** (England, early-middle medieval, stratigraphic level A, structures 1 and 2), and so on.
4. **Additional Sub-Directories and their content**
   Relevant information for each build is entered into a named directory in the appropriate secondary directory. This directory includes the archaeology on which the structure is based, written accounts, reports, images and so on. This directory folder would be called

logically **Archaeology** (and best appended with the title of the secondary directory where it is located for ease of later searching and to provide less ambiguous naming, for example, **Archaeology Reports (Building Name)**). Another folder could include reporting on the construction itself (see notes in the following section). To use the same example, this would be named **Documentation of Construction of (Building Name)**. Documentation of the experimental process containing photographs, illustrations, etc. might be better included in a separate folder titled, for example **'Photographs and Illustrations of (Building Name)'**. This method would be preferable to prevent confusion and lend consistency to the filing methodology. Other folders could include, where available, any documents that relate to planning permission, costs, materials used, grant applications. These files would logically be titled, for example, '**Finances', 'Grants' 'Government Planning**', **'Costs'**, etc.

It is important to note that the more structured the organisation and naming of materials is, the more readily it can be located in future searches.

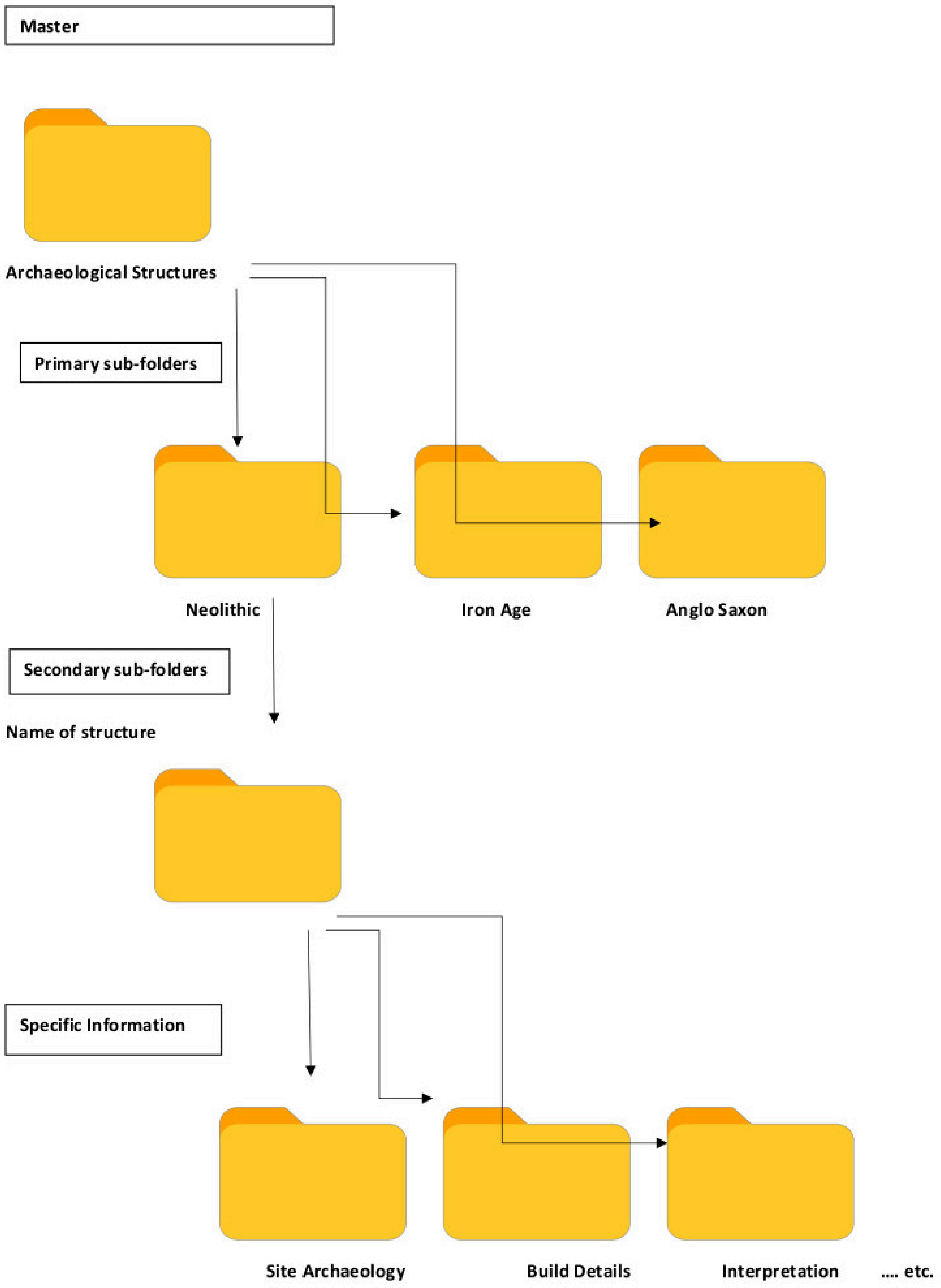

FIG 1. FLOW CHART FOR THE ORGANIZATION OF MATERIAL.

What Should be Included in Documentation

Documenting the Experimental Process

It is vital to document the process and the methods of construction thoroughly. In effect this creates a future use instruction manual, as well as a resource to draw from for later publications. These folders are included within the relevant secondary directories. These files are named logically with all data included within them. The following is a list of the folder/directory titles and documentary methodology adopted at Butser Ancient Farm for the key component of experimental documentation, this list should not be considered exhaustive.

Building Rationale

Interpretation and construction of buildings on the basis of archaeological history, to include:

- Why we constructed the building the way we did. Reference must be made to the above ground form of the experimental structure, in particular when there is no clear evidence from the archaeology, nor any surviving analogous structure (for example, why choose a gable roof or hip roof when we have only post-holes?).
- Which materials were chosen, used and the reasoning.
- Highlight any archaeological deviations and justify the reasoning. For example, if doorways are widened to accommodate easier access, or structure is modified to enhance future durability. Also a comparison of the site chosen for the experimental construction should be made to note similarities and/or variations from the original. This should take into consideration chronological variations like climate, in addition to topographic and geological differences or similarities.

The Building Process

- Materials. What materials were chosen, how much was used?
- How long did it take?
- Which tools and fastening techniques were used and the reasoning. If rope is used, for example, in a Neolithic build, it might be justified from determining it is a convenient analogue for possible Neolithic fibre fastenings. If screws are used in the Neolithic build, these should be highlighted and justified as, for example, used for speed/practicality/economy. Jointing and fastening are of particular interest. If modern tools are used, they might be justified by convenience and should include these remarks. Any use of modern materials and tools/equipment should, if possible, be justified archaeologically. For example, ‘modern axes were used but the experiments proved similar results were achieved using appropriate tools of the period’. In this case, note whether those experiments were conducted as part of the building process or elsewhere, in the notes, cite these observations.

- How many people were involved and in what capacity?
- What decoration, if any, was used and why.
- Is there any relationship between this build and any other at your site? For example, at Butser Ancient Farm, Anglo-Saxon structures A1 and A2 have a similar orientation to each other, while a Roman latrine abutting the Roman British villa is used for demonstration/educative purposes and is not related to the original villa archaeology.

Interpretation

By interpretation is meant, any materials produced to explain the building for the visiting public. Written and/or illustrative interpretation of any of the structures for use on site (for example, as didactic panels), could be put into its own folder (e.g. **Interpretation Building Name)** and placed within the appropriate folder/directory.

Public Response

- This could include subsequent public responses to the structures such as press/journal articles. A questionnaire or interview process designed specifically to capture public responses would be of great value.
- This could also include any data gathered, academically or anecdotally on responses to the building.

Accompanying Material

- A photographic record should be mandatory, ideally including video. This file should include all phases of construction: site preparation, stages of the build and completion. Where it is of significance to the project, it should also include materials acquisition. The storage of materials should include names of the individuals involved if possible. Detailed images of such features, such as joints, specific materials, and any other unique or particular aspects of the build are worthwhile for inclusion. Illustrations are beneficial in many circumstances.
- All photographs and illustrations should be individually titled and stored in the appropriate directory/s. Their identification must be unambiguous. A brief description of the image should be attached to that image – e.g. as the file name of the photograph. This file name containing:
  - The project name for image reference.
  - The content or intent of the image is (e.g. 'illustration of mortice and tenon joint, South-eastern corner post).
  - This labelling should include the date, even though this information is incorporated into the metadata of any digital image.

- If it is not feasible to name all image files with these recommendations, the unnamed files should be grouped thematically and placed within a folder titled accordingly (for example **Photographs of (Building Name) roof construction**. This methodology should be considered the **minimum standard** and avoided in preference to naming the specific file name wherever time permits. To be avoided are untitled illustrations or generic, camera generated file designation (such as 'DSC 10000023', for example) and placed into folders missing explanatory titles. Future researchers will have difficulty reconstructing the context of images stored in this manner.
- Social media, blogs and vlogs form an important component of any documentation (Cox 2020).

Post-construction Documentation

- Record repairs and renovations, considering any or all of the points above, written and photographic.
- Record any processes of decay and the rates of decay.
- Written and photographic record of major interventions, such as structural post replacement.
- Record demolitions, written and photographic.
- Record archaeological investigations of residual postholes, fire scars, any other relevant physical traces using written, photographs and illustrations (see, for example, Lehnhardt and Solleder 2020).

Concluding Notes on Storage and Data Usage

Two key reasons for the collection and storage of experimental data are: facilitate future retrieval for research and act as the comprehensive and a comprehensible basis for the report production. The methodology we adopted at Butser Ancient Farm is well-suited to both these purposes.

There are other factors that are not to be considered in detail here, but must be addressed to ensure the long-term functionality of any documentation system. These factors are important for files and directories termed 'live' – reports being edited, on-going documentation of processes of repair and decay, and so on.

- A process for the control of on-going documents. There might be a way of monitoring the initiation of any document and the rights of modifying it. This is recommended to be restricted, however this process might be decided for each project, the concern is unrestricted editing! How and to whom privileges of editing are given is a decision for the individual organisation. In our institution, a single editor is decided in consultation with Butser's senior staff archaeologist. Any work that is produced by that person is reviewed by others during the editing phase but the authority to make changes remains with that person alone.

- Similarly, a form of version-control could be enabled. Where it may be desirable to have multiple versions of a document on file (for example, earlier drafts and subsequent edits), it is essential that the most recent and, presumably, most comprehensive/accurate versions are clearly identified including date of revision.

It is desirable to separate documents subject to editing, such as reports in preparation, on-going experimental monitoring documents, etc., from final forms of documentation. For example, two folders might be created called '**Preliminary Reports'** and '**Final Reports'**. Any material for editing could be placed within a protected folder/directory accessible to designated editors. Widely accessible materials could be protected against unauthorised editing. For example, the widely used Microsoft Word file format is edited easily. Using an Adobe PDF file has the advantage of being both readable across a wide range of devices and is less editable. A PDF file is a standard file format for academic material and should be considered preferred to a Word document for the storage of any finalised, widely accessed data.

The issues of version control and editing privileges are of greater concern for individual institutions than for the considered central storage repository (such as tDAR, the Digital Archaeological Record), where only finalised forms of documents could be lodged. However, standardised recording procedures at individual organisations will greatly benefit the storage, security, and retrieval of materials that may be located with more widely accessible – 'universal' - storage platforms.

Questions Arising and Possible Future Research Directions – Personal Thoughts

The following thoughts are a brief, speculative and open-ended conclusion to this discussion and distilled into the following three questions: which aspects of the conduct or outcomes of the experiment were unexpected or surprising, what questions were generated during the experimental process and can novel avenues for future research be identified as a result of the experimental process? It is important to note these may relate to field, or theoretical archaeological/anthropological as much as experimental questions.

The limit of documentation of individual involvement in experimental work seems often to extend only to the recording of the obviously empirical, 'how much', 'how long', 'what product/s' and so on. I suggest that less quantifiable aspects of the human experience of experimentation are worthy of recording. These aspects might be categorised as 'experiential' or 'phenomenological'.

The conditions under which experimentalists work I term 'experiential', for example, what did workers find challenging (cold, heat or physical difficulties) what did they find enjoyable and why. An example, two separate but related instances where the capture of such information proved valuable at Butser Ancient Farm occurred when mosaic artists and a weaver worked under restricted light conditions imposed in the case of the mosaic artists simply from the nature of the buildings in which they worked as the weaver was pursuing her own experimental agenda (Creighton, forthcoming see notes below). In each case, it was clear for optimum production efficiency, artificial light became a requirement. These types of observations seem obvious, yet the recording and interpretive elaboration of such experiences hold potential for interpreting the archaeological record, and for enhancing our understanding of the circumstances of human production within otherwise lost societies. In the case of the Butser Ancient Farm weaving experiment significant new insights were revealed concerning the material circumstances and labour requirements of textile production in the British Iron Age (Poulter 2019).

Less easy to quantify, certainly more academically controversial, but fascinating, are the implications that 'experiential recording' might include to gain insight into the lived experience of the original research subjects (i.e. the people whose material evidence we study through experiment). An approach perhaps more properly termed 'phenomenological'. Archaeological Phenomenology has a well-established theoretical base in the UK, most widely associated with landscape archaeology and associated with the human experience of 'being'. In broad terms, phenomenologists maintain that individual sensational experiences in the present are relevant to the interpretation of experiences and motivations of past individuals (Ingold 1993; Tilley 1994, 2008).

How, precisely, phenomenology can be related to experimentation, and vice-versa, I am unable to say with depth or clarity. However, my interest arose serendipitously from this realisation during experimental work where I was involved. The use of reproduction Neolithic axes in timber cutting generated an intriguing 'sound-scape,' that must have been replicated many thousands of times through the millennia. I would like to briefly explore possibilities for extending experimental archaeology via the medium of the production and recording of sound.

It is possible to conceive of experiments designed specifically to explore potential relationships between sound-scapes generated as a by-product of functional activities (e.g. chopping wood) and the creation of music and melody. Another example of sound-scapes involves the location-specific production of stone tools. Experiments conducted in archaeologically identified locations, for example, flint tool production sites. Sound-scapes generated through the production of stone implements might yield new insights into the significance of the locations of flint industry sites, insights beyond purely functionalist views of site production.

We are presented with the potential to explore new avenues of experimental design, recording and interpretation. We acknowledge the caveat that these observations are more speculative than empirical studies. However, our research can be grounded in the existing and expanding fields of both acoustic archaeology and archaeological phenomenology, as well as within experimentalism.

The recording of data that might be considered extraneous or irrelevant to the immediate purpose of 'the experiment' such as can be acquired through video-logging and the experiential writing of experimentalists and of the audio recording of experiments should be a necessity. At a bare minimum, the recording of sound offers a potential educational tool facilitating the connection of a present day audience with the soundscape of a vanished past. This is a worthy objective for extending the reach of experimental archaeology to contemporary audiences, insensitive to the sounds of the 'everyday'. Additionally, an excellent tool for the visually impaired to experience prehistory more profoundly than the visual apprehension of any process we as the sighted engage in or any building might produce. My experience is that each experiment generates more questions than answers. To limit our data gathering is to limit the potential for the exploration of the unforeseen.

Conclusion

I hope that section one provided a useful basis for discussion on how we collect and store data from the archaeological experiments. The model I have outlined is not innovative, nor is it necessarily the best. Its significance, at least beyond Butser Ancient Farm, is that it contributes to the wider discussion about the collection, storage, and dissemination of experimental data on a global basis. This significance, from an archival perspective and in terms of access to relevant material, will allow us to extend our experimental research, rather than unnecessarily repeating work that others have already done.

As to which data we collect, I hope that section two provides a valuable, if partial, outline. Perhaps section three, renders the assessment of which data are relevant less, rather than more, clear. I hope, it may stimulate or contribute to some on-going discussion about the expansion of research objectives within experimental archaeology. The expansion of future research questions necessitates that experimentalists be alive to the possibility of the unexpected at the very earliest stages of their projects and be willing to collect, store, and interpret as much data as possible even where its immediate relevance to the experiment at hand may not be obvious.

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archaeological open-air museum

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