The End of GI-GO? On-site prioritization of archaeological material recovery: marine shells as an example

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‘The excavator’s task is to produce new evidence that is as free as possible from subjective distortions, and to make it quickly and widely available to other specialists in a form they can use with confidence in their own research.’
- Barker, 1982

‘The solution is to concentrate on collecting data relevant to the research design of the project, while adhering to accepted standards of recovery for materials that might be of interest to other researchers.’
- Dibble *et al*., 2005

This paper’s title incorporates the term ‘GI-GO’, a computer science acronym which probably originated in the 1950s, which stands for ‘garbage in: garbage out’: if the data are biased or incorrect, no amount of programming can prevent unreliable conclusions. This is equally true for archaeology: if the fieldwork collection strategy produces biased archaeological assemblages, no amount of work by curators can prevent unreliable archaeological conclusions.

The call for papers for this CifA Archaeological Archives Group March 2019 conference included a conclusion from previous work by the Group that ‘… rationalisation of museum archaeology collections is not a cost-effective way to increase storage capacity.’ While that statement is true given archivists’ present resources, it may lead to archivists abandoning something that they may need to do. Firstly, rationalisation does increase storage capacity, and (since archival shelf-space is already the factor limiting the discipline’s productivity, and is getting rarer) existing stores’ capacity may have to be increased even if the cost for the curators isn’t effective. Secondly, rationalisation can make an archive accessible: deciding what to retain requires the identification and cataloguing of the archive contents, which makes knowledge of those contents available to researchers (so they know which archives to access, and can justify getting funding to access them); and following rationalisation the contents are definitely useful for research, are in fewer bags, and those bags are in fewer boxes.

Thirdly, a cost-effective policy has already been framed for one type of bulk find: marine shell. A retention policy drafted by the author was adopted by the Sussex Museum Group in 2013. This policy is being modified for the Musuem of London in consultation with Historic England’s science advisor. The policy has survived academic review (Campbell, 2015) and forms a chapter in a recent synthesis de-mystifying archaeological shell studies (Chapter 16 in Allen, 2017). The published policy includes guidance for fieldwork, and is based on three guiding principles, which could act as a basis for framing fieldwork and archiving policy for other archaeological materials (the principles might be ‘generalize-able’).

(1): *The first principle* is that excavators must retrieve the full range of materials discarded by past peoples, not just what is visible to the excavator during excavation. For marine shells, this requires wet-sieving to fine mesh (1mm routinely, 2mm in emergencies): the domination of large oysters (in finds-trays and archive-boxes) is an illusion caused by hand-retrieval, which misses the smaller and more fragile consumed shellfish and the very small shells which live on and amongst them, which are the best indicators of the habitats exploited.

This principle does 'generalize' to other materials: sieving has long been known to be necessary for the unbiased recovery of pottery, animal bone, and lithics (the classic references are Payne, 1972; Levitan 1982, but each material has an old and large literature on the consequences of failing to sieve). This has a clear implication for each of the three groups of archaeologists:

A) *Curators* need not be very attached to the hand-retrieved material that forms the great bulk of their collections, nor are they really required to accept any more; they should anticipate its gradual replacement by sieved assemblages;
B) *Fieldwork staff* (AifAs, MIfAs) must recognise that it was shown long ago that much of the assemblage is simply not visible to the eye, and expect to sieve fairly regularly;
C) *Statutory archaeologists* (ALGAO members) must recognise that the true archaeological potential of deposits yet to be excavated is that they still contain the full range of materials used by past peoples, unlike those that have been excavated already.

(2): *The second principle* is that there is a minimum and maximum useful number of objects from a context, whether in the ground or on the shelf. For marine shells, a good working minimum is 200 identifiable items: this is the minimum to ensure a type of shell being absent from the assemblage means it is negligible (less than 2%) in the context. A good working maximum is 600 items: composition percentages are accurate to within 4%, and excavating more sediment to increase the assemblage risks the assemblage becoming unworkably time-averaged ('the archaeologist's dilemma').

There are good reasons for keeping shells recovered in small or large numbers from any context, whether in the ground or on the shelf (they are: artefacts; from shell-sparse periods; unusual types of shell for a period; have statutory protection (World Heritage sites, Scheduled Monuments); or were sieved). However, *curators* do not need to retain shells from contexts with few shells (less than 200 identifiable shells) or with many shells (over 1000 identifiable shells) unless there is a good reason.

This principle also 'generalizes' to other materials: it is already done with small objects that accumulate rapidly (pollen, insects, plant macros, terrestrial snails, which seek upper limits of 1100 items), but is somewhat trickier with larger objects that are discarded less frequently than marine shells (pottery, bones of large animals, coins), which might need to be considered phase by phase, rather than context by context.

Nevertheless,

A) *Curators* can retain assemblages from a context only if they are quite likely to be useful (a statistically useful count, or are modified, rare, or protected);
B) *Fieldwork staff* must recognise that they must excavate deposits so they supply assemblages in useful and consistent numbers to materials specialists;
C) *Materials specialists* must recognise that there is *some* count of their material's assemblage in a context that makes that assemblage unuseable:
   - so small that it means that their material is uninformative or as likely to be residual or intrusive as contemporary with the context, or
   - so large that as likely to be hopelessly time-averaged by field techniques.

(3): *The third principle* is that there is an order of priority for deposits in the usefulness of their shells for answering archaeological questions. It is neither practical nor necessary to sieve all the deposits. For shells, the priority ranking from most to least useful is:

1) *Discrete shell-rich scatters: a* single basketful of shells
2) *Homogenous masses:* a few dumps of shells
3) *Middens:* repeated dumping of shells
4) *Oddballs:* unusual shell-types for the region
5) Shell-bearing deposits from shell-sparse periods
6) Shell-rich deposits from shell-rich periods
7) Shell-poor deposits from shell-rich periods

High-priority deposits (1)-(3) require dissection using incremental samples of known volume; mid-priority deposits (4)-(6) require whole-earth bulk samples; low-priority deposits (7) require only hand-retrieval of shells, principally for field staff to assess during excavation whether those deposits are in fact higher-priority deposits of types (1)-(6), and as a crude record of their shell-content.

This third principle also is likely to 'generalize'. It appears that the deposits were ranked according to what palaeontologists call their *fidelity:* 'How well does a deposit's assemblage preserve the living community?' (Kidwell & Bosence 1991). All materials specialists want their materials to have as high a fidelity as possible, so they mirror past human activities as closely as possible. Archaeologists initially use the physical proximity of objects within a deposit or parts of a deposit to assess fidelity (or at least contemporaneity of discard), whether those objects are a mixture of materials or of a single type. Only fieldwork staff can directly observe the level of proximity in the ground, during excavation; it is not possible for the materials specialist to reconstruct the fidelity level from the context's assemblage in post-ex. Therefore field staff (and only field staff) can rank deposits according to their fidelity, and give priority to those with high fidelity. So 'context' (the close physical proximity of archaeological objects which allows reliable mutual interpretation like dating or function) can be smaller than 'deposit' (the stratum containing the objects): rich accumulations require dissection ('excavation by bite-sized pieces') to minimise time-averaging.

It is high time for the discipline to release itself from the thinking that insists we continue to over-stuff archives with assemblages that have no better intellectual value than the assemblages already archived. It is necessary (whether our archives are full or not) for all of us to take up the practice of **'hi-fi' archaeology**:

A) *Materials specialists* should make it clear that the quality of their answers to archaeological questions depends on the fidelity of their assemblages, whether in the ground or on the shelf, and
   - they should accept that some assemblages have too low a fidelity to provide answers of quality.
B) *Curators* should move from the strategy of 'discard' or 'retention' to a strategy of 'replacement':
   - they should prioritize assemblages according to their fidelity;
   - they should make space for new higher-fidelity assemblages by replacing those assemblages in their collections which have lower fidelity.
C) *Fieldwork Staff*
   - should use their observations in the field to rank deposits by their fidelity,
   - should concentrate effort on deposits of higher fidelity, and
   - should use fieldwork methods that retain that fidelity while producing interpretable numbers of objects (by incremental dissection if concentration is very high);
D) *Statutory archaeologists* should frame WSIs that prioritize excavation by deposit fidelity, rather than prioritizing archaeological sequence (which targets feature intersections, where intrusiveness and residuality is greatest).

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