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Report of the SAA Task Force on Guidelines for Promotion and Tenure for Archaeologists in Diverse Academic Roles

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SOCIETY FOR AMERICAN ARCHAEOLOGY

EXECUTIVE SUMMARY

1. Archaeologists often work in multidisciplinary departments in colleges and universities where the diversity of archaeological scholarship is not well understood. **This document is a guide to current practices in archaeological scholarship.** It should be read by archaeologists in academic settings who are seeking tenure and/or promotion, tenure and promotion committees, and academic administrators.

2. **Candidates for tenure and promotion are advised to discuss with their department chair (or equivalent) the expectations of their department and institution as early as possible in their careers.** This discussion is especially critical for those candidates engaged in public archaeology, digital archaeology, cultural resource management archaeology, and/or longer-term research, which each require sustained scholarly effort and yield products that are often peer reviewed but may not be viewed as “legitimate scholarship” by departments. Often this critical work is a precursor to larger peer-reviewed publications or scholarly products; such work is important and should “count.” The candidate has an obligation to clearly explain this work and to request that it be evaluated by someone who is familiar with both content and media. This document can be used as a resource in that discussion.

3. **Archaeologists are expected to pay particular attention to ethical, legal, and regulatory requirements** when planning, conducting, and reporting their research, including the following:

- The secure, long-term preservation of material objects, research records, and research data
- The stewardship of the archaeological record—a nonrenewable resource that can be affected by the actions of researchers
- Respect for, and consultation with, descendant communities and other stakeholders
- All applicable regulations and laws concerning archaeological research

- Maintenance of standards defined by professional bodies and learned societies

It should be noted that archaeologists who are asked to teach a field school will be actively teaching at least eight hours a day, five days a week, and often longer. Furthermore, they will be undertaking research, and therefore all of the attendant responsibilities will persist well past the actual dates of the teaching assignment, and may well be more time-consuming than the teaching.

4. **Archaeological research encompasses a number of general approaches.** Some archaeologists and some research projects will incorporate more than one approach. These approaches include the following:

- Various kinds of fieldwork (e.g., excavation, survey, remote sensing)
- Analysis of materials recovered by oneself or others (“laboratory work”)
- Compilation and analysis of data created by oneself and/or others, increasingly in digital formats
- Modeling and simulation and the use of other digital tools
- Development of new analytical methods and new theoretical approaches

It is important that at least some of the candidate’s external referees have expertise in the kind of research in which the candidate specializes.

5. **Archaeological research can be time-consuming, resulting in delays in publication.** Some of the reasons for this include the following:

- Multiple stakeholders must be consulted (and multiple permissions obtained) before a research project can be initiated.
- There is an increasing trend toward team-based research. The team is only as fast as its slowest member.

- Fieldwork may only be possible at certain times of year, and may be delayed by a wide range of factors outside of the researcher’s control (e.g., unusual weather, civil unrest, change in land ownership).
 - Manuscripts may have to be approved by external agencies (e.g., tribal councils) before publication.
 - Some regulatory agencies require research results be reported in a predetermined format by a certain date; such reports must take precedence over academic publication when continuation of research is conditional upon reports being submitted.
6. Archaeological research has impact on the academic and professional communities, descendant groups, and the general public. As a result, **dissemination of archaeological research can take many forms**, including the following:
- Articles in refereed journals (international, national, and regional)
 - Books and book chapters
 - Conference proceedings
 - Online databases and archives
 - Digital models and virtual reality
 - Digital tools
 - Museum exhibits and other forms of public education
- Regardless of format, peer review is expected, and the nature of peer review should be made explicit.** Candidates should discuss their anticipated modes of dissemination and peer review early in their careers.
7. The impact of research can be measured in many ways. Bibliometric data should be used carefully when evaluating the impact of archaeological scholarship. **Candidates should discuss appropriate impact measures early in their careers.**
8. As in other disciplines, archaeologists may be appointed in a range of educational institutions with different priorities and missions; archaeologists may also be cross-appointed in other institutions (e.g., museums, government agencies). In some institutions archaeologists also have responsibility for managing revenue-generating resource management operations. **Considerations for tenure and promotion should reflect the context of the appointment.** Candidates should discuss the expectations of the institution early in their careers.

I. PROLOGUE

At its Fall 2015 meeting, the SAA Board established the SAA Task Force on Guidelines for Promotion and Tenure for Archaeologists in Diverse Academic Roles. The task force was charged with producing a statement for academic departments, schools, and administrators in the United States and Canada to assist in their understanding and evaluation of diverse archaeological activities that comprise scholarship. (We do not expressly deal with pedagogy and teaching.) The task force reviewed guidelines established by the American Anthropological Association, the Archaeological Institute of America,

and other relevant organizations and attempted to produce a succinct and broadly informative statement. The task force included archaeologists with academic administrative experience in tenure and promotion who represented the diversity of academic settings, along with a junior scholar who had experience in a relatively new domain in archaeology, digital scholarship.

The task force met primarily via Internet media and email, with one face-to-face meeting at the SAA Annual Meeting in Orlando, Florida, in April 2016.

II. OVERVIEW AND RATIONALE

Tenure and promotion decisions are made at the department, college, and university levels by scholars and administrators differentially familiar with the broad archaeological enterprise. Within an academic environment, archaeological research may take many forms. As the [Archaeological Institute of America \(AIA\) notes for classical archaeologists](#), archaeological research may involve data collection in field contexts that are difficult to access; it also requires large blocks of funding and time. Obtaining research permits—often a complex, time-consuming political process—is also typically required. Funding sources are diverse and often small, and scholarship is typically collaborative, resulting in multi-author publications. The pace of research may appear slow, for all of the preceding reasons. Further, citation indices, often used as a performance metric, canvas only a small portion of the reputable venues in which archaeologists publish. Finally, young scholars are typically men-

tored into leadership roles for large, complex field operations and may not assume those roles until later in their careers. In addition, scholars involved in practice-based, community, and heritage management research devote considerable time and effort to cultivating and maintaining relationships with a diverse set of stakeholders; manage critical ethical concerns; engage in outreach to a variety of publics; and prepare students with technical and political skill sets.

The guidelines presented here are intended to be useful to candidates for reappointment, promotion, and tenure; to members of review committees at departmental and higher institutional levels; and to external reviewers. We present a summary of recommendations, then offer a general portrait of archaeological scholarship, reflect on aspects of this scholarship regardless of the particular archaeological profile, and finally offer guidance on specific aspects of archaeological scholarship.

III. GENERAL RECOMMENDATIONS

Because the archaeological enterprise takes many forms, our document is lengthy. We present general recommendations here and suggest that individual sections relevant to a particular candidate be consulted.

Candidate Responsibilities:

- **At the time of hiring, candidates should seek clarification on specific assessment criteria and document this in writing. This action cannot be overemphasized, especially for scholars engaged in newer forms of scholarship.**
- As most archaeological scholarship is collaborative, candidates should make their scholarly contributions clear.
- Frequent, multi-way communication between candidates and their departments or units about efforts, collaborators, stakeholders, and funding is essential.
- Candidates will be judged on the significance and impact of their work, and this is assessed via peer review. Because of the collaborative nature of archaeological research, which typically involves multiple stakeholders each with their own needs, and proceeds in a deliberative fashion, candidates must anticipate the relatively slow pace at which products from their research activities may become available for peer review and should plan accordingly.
- Candidates engaged in digital scholarship should consider having digital object identifiers (DOIs) assigned to their products where possible and should send such DOIs to an institution like [Altmetric](#) as soon as possible after publication. Where DOIs can be created, candidates will have a way to demonstrate usage of digital products when those are not in peer-reviewed, indexed publications.
- Most archaeological work involves issues of curation and sustainability. Field archaeology involves the destruction of nonrenewable deposits, and thus stewardship of field specimens, records, and databases is critical to ethical archaeology. Digital scholarship has its own sustainability needs. Both the candidate and the institution should demonstrate that they have attended to these critical matters.

Departmental Responsibilities:

- Because expectations for the form and nature of archaeological scholarship may vary dramatically, **it is critical that the candidate and the institution agree on those expectations well before the promotion and tenure process begins. The department and institution must establish expectations prior to hiring the candidate**, addressing all of the following.
- Archaeological specialists who share the theoretical, technical, or geographical expertise as well as the kind of assignment (e.g., teaching-intensive, museum-based, Cultural Resource Management-focused) possessed by the candidate **MUST** be part of the evaluation process. External evaluators might require specific instructions on how to review candidate scholarship, for example, that it be viewed in its native form or that certain technology is required to view digital products.
- The impact of scholarship must be assessed via a variety of measures, not just through the quantitative assessment of citations. We provide an overview of a variety of measures tailored to particular scholarship profiles. For conventional publication, we recommend Google Scholar Citations as the most inclusive and appropriate source of summary bibliometric measures for archaeologists under review for tenure and promotion, with the addition of altmetrics for those producing work not usually captured in Google Scholar.
- The department should consider and decide on whether or in what form any of the following potentially impactful forms of scholarship will be considered as contributing to a strong tenure dossier. Besides publications, how will permit applications, proposals, fieldwork data, fieldwork reports, conference presentations, final reports, student products, public presentations, and digital products (GIS data, archived databases, 3-D models, software and other digital tools, constructed virtual and augmented environments) be considered? These expectations must be communicated to candidates early in their careers.

- Owing to the collaborative nature of archaeological research, which results in multiauthored scholarly products, departments must develop the means to recognize and assess individual effort.
- Because field archaeology involves the destruction of nonrenewable deposits, stewardship of field specimens, records, and databases is critical to ethical archaeology. Digital scholarship has similar concerns for curation and sustainability. Both the candidate and the institution should demonstrate that they have attended to this matter.
- Archaeological scholarly products take a variety of forms, from monographs, to museum exhibits, to digital products, to detailed reports for contracting agencies. It is imperative that each product be viewed and evaluated in its native form.
- The candidate must be apprised by the department and institution how each of the various forms of scholarship will be weighted in the tenure review.
- Evaluations of funding success should focus on the competitive nature of the funding and the role it plays in supporting research.
- Engagement via community and public archaeology is increasingly valued. The candidate and department should agree on how this activity will contribute to a strong tenure dossier.
- Digital scholarship in archaeology is on the rise, but the means for evaluating its significance and impact are still developing. Candidates and departments should be aware of this situation and proactively address how candidates engaged in digital scholarship will be evaluated for promotion and tenure.

Society for American Archaeology Responsibilities:

- The Society should solicit comments from the membership on this document.
- When and if released by the Society, it should systematically collect information on its impact.
- Since forms of archaeological scholarship are rapidly evolving, the Society should revisit this matter in five years.

IV. THE NATURE OF ARCHAEOLOGICAL SCHOLARSHIP

Archaeologists document and try to understand human and pre-human behavior primarily through the study of the material remains found in surface or geological contexts. Although some archaeologists devote their attention to the theories, methods, and simulations that link material remains to human behavior, many archaeologists study objects such as stone tools and manufacturing debris, pottery, buildings, seeds, charcoal, bones, and shells. They use these to develop both a narrative account of the past and theoretically embedded explanations for temporal or spatial variation in human activities. Both data and narratives are disseminated via conventional publications and, increasingly, via digital media.

For some archaeologists, the materials they study are recovered through active participation in fieldwork, often divided into survey (locating and documenting archaeological deposits on landscapes) and excavation (revealing and recovering material remains). Various forms of remote sensing and geophysical work may help detect traces of past human behavior. Other archaeologists, specialists in particular classes of materials, collaborate with field archaeologists, and work on analysis of materials recovered through fieldwork. In the laboratory, recovered specimens are described and analyzed; data are compiled and synthesized. Even quite modest archaeological excavation and survey projects can produce thousands of specimens for study, and these can generate tens of thousands of observations that must be recorded, organized, managed, and curated. Large excavations can easily produce millions of individual observations that may be organized into complex relational databases. Increasingly, archaeologists also draw upon archived and curated materials from earlier projects and on the extensive databases that hold information about previously recovered and described material remains. In addition, the virtual representations of archaeological specimens themselves now serve as data sources.

Because archaeological deposits are a nonrenewable resource, archaeologists in universities and colleges now conduct fewer excavations for the sake of “digging and discovery” than in previous decades. In many parts of the world there is a priority to excavate sites that are in danger of destruction owing to various causes (e.g., road construction). Some of this work may be done by for-profit and nonprofit organizations (increasingly including tribal

councils), but some of it may be undertaken by academic archaeologists who either work independently or in conjunction with such external organizations.

In spite of some ethical concerns, the organization of an archaeological “field school,” where students learn through experience and gain credit toward a degree, is still common. Today, field schools are often integrated with research projects or Heritage or Cultural Resource Management (CRM) projects. The latter refers to legally mandated archaeological investigation that must meet particular government agency standards. Thus, the controlled destruction of archaeological deposits by students can be justified by the increased knowledge that results from the excavation.

Publication is one means of disseminating information about archaeological finds and results, but, over the last decade, other means have become available. Several general digital repositories—[Open Context](#), [The Digital Archaeological Record \(tDAR\)](#)—along with specialized, project-based repositories, are now available (sometimes for a fee) to house data, manuscripts, computer programs, and other content. Thus, archaeological specialties have expanded again to include a variety of scholars with other digital skills, including but not limited to web management, data management, and immersive, virtual, and augmented technologies.

There are many ways to measure the impact of archaeological scholarship. Simplest and longest standing is to count the number of peer-reviewed publications and possibly the number of publications in other categories. Many tenure and promotion documents specify a minimum number of peer-reviewed publications and sometimes ask for the acceptance rate of each venue, as a rough measure of quality. In Appendix A, we provide an overview of the most common bibliometric measures. Based on our analysis and collective experience, we ultimately recommend Google Scholar Citations as the most inclusive and appropriate source of summary bibliometric measures for archaeologists under review for tenure and promotion, with the addition of altmetrics for those producing work not usually captured in Google Scholar or other bibliometric engines. Importantly, digital scholars will need to proactively find and present evidence for the impact of their scholarship, which is otherwise not yet readily captured by conventional means.

V. COMMON ASPECTS OF ARCHAEOLOGICAL SCHOLARSHIP

Below, we profile several kinds of archaeological scholarship and offer guidance on how to evaluate each. No matter the form of archaeological scholarship, there are several commonalities:

Challenges of the Field – In common with other field disciplines, field-based archaeological data collection is place based. The place or region in which data collection occurs will pose its own unique environmental, political, and physical challenges, which should be taken into account in the review process. External reviewers who can speak to the challenge of fieldwork in a particular geographic setting are critical to the review process.

Collaboration – Almost without exception, archaeologists work in teams, and the product of the team is much larger than the simple addition of individual efforts. Collaboration has several impacts on and implications for scholarship. First, the synergistic interaction among team members is a major generator of new knowledge, and candidates will need to be prepared to discuss their role in contributing to the team’s productivity. Second, that the archaeological candidate is a member of a functioning group is tacit acknowledgment of their expertise and can be seen as a kind of positive peer review. On the other hand, as noted by the *AIA*, collaborative archaeological research can take a very long time to bring material to publication, because the analysis that takes the longest will set the timeline for the entire project. The candidate must anticipate this delay and develop coping strategies. Both candidates and evaluators should formally recognize that conference papers represent a critically important strategy for timely but incomplete presentation of long-term project results. Conference papers can, therefore, play an important role in early performance and initial tenure decision-making. Finally, much archaeological work is published by groups of scholars, and in this respect archaeology resembles the sciences more than other social sciences and humanities disciplines where single-author publication is more common and highly valued. Departments will have to determine whether and how to recognize multi-authored scholarship.

Communication – Candidates must be prepared to educate a variety of institutional, stakeholder, and other au-

diences about the significance of their work, their role in a larger, team-based effort, and how their work relates to the larger trends of scholarship in their field.

Evaluation of Scholarly Products in Native Form – Archaeological scholarly products take a variety of forms, from monographs, to museum exhibits, to digital archives, to detailed reports for contracting agencies. It is imperative that products be viewed and evaluated, each in its native form.

Grants and Contracts – Traditionally, academic archaeologists fund their research programs extramurally through three means: competitive grants, contracts, and ‘challenge cost-share’ agreements with government agencies. Some archaeologists support their research through endowment funds or one-time gifts from private donors.

For archaeologists, competitive grants come from either government-funded agencies (e.g., National Science Foundation [NSF], National Endowment for the Humanities [NEH]) or private foundations (e.g., Wenner-Gren Foundation for Anthropological Research, National Geographic Society [NGS]). Typically, amounts funded are relatively small when compared to other sciences: \$100,000 to \$200,000 per year from NSF or NEH, for example, or \$10,000 to \$30,000 from Wenner-Gren or NGS. For NSF and NEH, indirect costs are included, while most private foundations do not allow them. Despite the relatively small amounts of these awards, promotion and tenure committees should consider them very important components of faculty dossiers because in the archaeology profession, these grants are very competitive; success is a prime indicator that candidates are conducting theoretically and methodologically sound research considered significant by their peers. For American archaeologists working in international settings, competitive grants are virtually the only way to fund their field-based research.

Academic archaeologists also fund their research through extramural contracts often tied to Heritage or CRM goals. Successful contract applications are fiscally competitive and meet compliance needs of government agencies and developers, but they also need to present a

well-reasoned research design. This is certainly the case with contracts that require excavation and the analysis of excavated materials; however, even ‘Phase I’ surveys sometimes require the development of sampling strategies that are research based. Even though many contracts have significantly larger budgets than competitive research grants in archaeology, if they are presented in candidates’ dossiers, university reviewers should consider whether they are research driven (with a clear research design) and are important components of the candidate’s long-term research plan. Moreover, they should consider placing more weight on contracts that present significant research, measurable from the project’s products (i.e., publications). The amount of direct and indirect costs in this respect is less important. Obviously these contracts are an important mechanism by which archaeological research occurs domestically within the United States and increasingly in other countries.

Some archaeologists fund their research through ‘cost-share’ programs sponsored by government agencies, for example, the USDI National Park Service and Bureau of Land Management, the USDA Forest Service, and state historic preservation funds often administered through State Historic Preservation Offices or SHPOs. These programs provide academic archaeologists with ‘bare bones’ funding support that facilitates fieldwork as well as educational opportunities for college students (e.g., field schools). Typically, they are not competitive but develop through partnership between the land manager and academic archaeologist, often with funds being transferred to the university. The land manager can use the program to meet important management objectives, while the archaeologist can get into the field with students to conduct research. Salary for the academic PI is rarely included, so these small grants (in the range of \$10,000–\$30,000) should be valued according to their research design, significance, and products, as well as the opportunities they provide students.

Endowment development is becoming increasingly important in academic archaeology. Research endowments provide sustained funding for the professors who manage them; however, existing endowments are typically directed at senior (i.e., tenured) professors, while more junior (untenured) professors have not yet developed the reputation to earn endowed positions or to develop new ones. Thus, endowments rarely will be important components of tenure decisions but could come into play with associate to full professor decisions. Other archae-

ologists receive one-time (non-endowed) funds from private donors, and this may occur at any career stage.

Long-Term Projects – Fieldwork of and by itself is time-consuming. In addition, it is important to bear in mind that because of the quantity of artifacts and related data collected, for each field season it may take two to five years (or more) of analysis to prepare materials for dissemination. Again, candidates must anticipate this as they prepare the dossier for promotion and tenure. The task force suggests that the summary reports required, received, and accepted by granting and permitting agencies, along with conference presentations (which are often preliminary reports), should be considered as scholarship; some of these scholarly products are substantial in and of themselves, but they may also form the initial steps toward peer-reviewed publications in journals or edited volumes.

Multiple Stakeholders – Archaeology involves places and material culture to which others (descendant communities; museum review boards; local, state, federal, or international agencies) have either legal or traditional ties. Thus, archaeology is of necessity a political endeavor and the archaeologist must attend to the requirements and needs of the stakeholders. Activities include building rapport and maintaining open lines of communication, sometimes under fraught circumstances. The candidate will need to articulate the significance of this activity to their research.

Publication and Its Evaluation – Archaeologists in North America publish in a variety of contexts, including scientific journals, single-authored or multi-authored books, edited books, and reports generated through CRM/contract projects and/or for granting agencies. **Note:** Digital scholarship, with its own set of concerns, is treated elsewhere in this document.

Scientific Journal Articles – In recent years, archaeologists’ promotion and tenure packets commonly have centered on publications in peer-reviewed scientific journals. Although different programs weigh the caliber of these journals in different ways, typically top-tier journals are interdisciplinary in scope, reaching a broad scientific audience (e.g., *Science*, *Nature*, *Proceedings of the National Academy of Sciences*), or they are highly ranked disciplinary journals (according to Scopus; e.g., *Journal of Archaeological Science*, *Journal of Anthropological Archaeology*,

Evolutionary Anthropology, *Current Anthropology*, *American Antiquity*). Publishing in second-tier journals (e.g., *Plains Anthropologist*, *Arctic Anthropology*, *Geoarchaeology*, *PaleoAmerica*) is also important, in that it is often necessary for professional archaeologists to report research findings to a regional audience or to share results or ideas with colleagues working in the same subdisciplinary specialty.

Archaeologists who work outside the United States in countries whose first language is not English are generally expected and sometimes required to publish in the national language, and such publications should also be considered in tenure and promotion cases. Additionally, permit requirements sometimes dictate when, where, and what a scholar must publish. It is the candidate's responsibility to explain these requirements and to provide an indication of standards and standing for the journals or other venues.

In contemporary archaeology, few published articles reporting new scientific results are single authored. Instead multi-authored works are the norm. Articles reviewing research in a special problem or region are, however, often single authored, as are published essays that are theoretical in nature. Publishing in important journals is a sign that the faculty member is conducting research relevant to a large body of contemporary archaeologists, and hence, evidence that the researcher is making a significant contribution to the field.

Books – Archaeologists typically present two different kinds of books in their dossiers. On the one hand, the North American profession puts much weight on publishing reports of excavations, often with university presses or in museum or departmental series. These are typically multi-authored, or single authored with contributions by research team members. They also constitute significant investments in time, not just for research and writing but also management of other contributors' research. These reports are important primary research contributions to the field.

On the other hand, some academic archaeologists publish single-authored books that review special problems in the field, again with university presses but also with other academic publishers or larger commercial publishing houses. Publication of such books is typically a sign that candidates are able to synthesize research in their subdis-

ciplines, are making important theoretical contributions, or are recognized as leaders in their areas of study.

Occasionally, pre-tenure archaeologists author textbooks intended for classroom use. Textbooks are a form of secondary scholarship, but a successful textbook can be highly influential in recruiting and beginning the training of the next generation of archaeologists. Pre-tenure faculty considering writing a textbook should consult with their department about the weight such a publication would carry in the tenure decision and should not invest time in such an effort without some assurance that it will be highly valued.

Edited Books – Archaeologists in North America regularly produce edited books that focus on a specific topic or region, and these are often products of important conference symposia and published by university presses or other academic presses. Typically, these are academic books that pass through peer review similarly to journal articles, often twice—first with individual reviews of each contributed chapter, and second with collective reviews of the book. These publications are considered to be important, certainly as important as some journal articles.

By editing such books, candidates for promotion and tenure demonstrate their ability to organize and synthesize new research occurring in their areas, as well as their emerging recognition as leaders in the field, often nationally or internationally.

Heritage or Cultural Resource Management Reports – Many academic archaeologists in North America participate in contract archaeological projects, often directing them. These can be important vehicles through which new research can be designed, funded, and carried out. As such, they can facilitate faculty research. In these contexts, final project reports of substantial projects can and should be considered as publications, especially if they are peer reviewed and formally made publicly available, either in printed or electronic formats. Peer reviews of such reports may be managed by SHPOs, and production and publication is often funded through the respective contract. As with other archaeological publications, these are often multi-authored works, typically with the PI as sole editor.

Because of the variable trajectories in professional academic publishing, it is important for faculty candidates to consult with their departments and personnel committees to determine how publishing in these different

contexts will be weighted during review for reappointment, promotion, and tenure. Some programs will desire candidates for promotion to associate professor to focus publishing in highly regarded journals while others may expect a book or edited book. If contracting reports and/or foreign-language publications are to be presented as part of the publishing dossier, the candidate and committee should determine in advance the degree to which these products will count. Candidates should also confer with their department heads and promotion and tenure committees about the appropriate quantity of different kinds of publications as well as the variable weight placed on sole- or lead-authorship as opposed to coauthorship. These discussions should occur well in advance of reappointment and promotion reviews.

Evaluating Publication Impact – Appendix A addresses the issue of scholarly impact more fully in terms of appropriate bibliometrics. Given the wide range of archaeological scholarship, we find that Google Scholar Citations is best suited for finding and reporting the impact that particular items of scholarship have had.

Stewardship – Because field archaeology involves the destruction of nonrenewable deposits, the stewardship of items, records, notes, images, measurements, assessments, and databases is critical to ethical archaeology. The candidate, the department, and the institution should be aware of the resource demands of curation and be prepared to demonstrate that they have attended to this matter.

VI. GUIDANCE FOR EVALUATING ARCHAEOLOGICAL SCHOLARSHIP BY RESEARCH PROFILES

What follows is more specific guidance for the evaluation of archaeologists with specific scholarship profiles.

A. Guidelines for Evaluating Digital Scholarship

Digital scholarship is considered difficult to evaluate because it crosses traditional disciplinary lines, often involves large-scale collaboration, uses nontraditional methods as scientific research tools, and results in nontraditional products with ongoing iterations. New measures of peer review and conceptions of scholarly work are necessary along with promotion and tenure guidelines for digital scholarship. Professional organizations including the Modern Language Association, the American Historical Association, the Society for Architectural Historians, and the Archaeological Institute of America are working to develop such guidelines; however, archaeology is unique in requiring specific evaluation criteria and promotion and tenure guidelines. The unique status of digital materials in archaeology results from the destructive nature of archaeological investigations, described above. Increasingly, archaeological field recording is “born digital” in that the data are digital photographs, 3-D measurements from photogrammetry or “laser” scanning, and the like; many excavations are even dispensing with handwritten notes in favor of observations recorded directly on tablet computers in the field. As a result, the digital products of archaeological investigations must be preserved along with the physical objects, and both must be accessible to future scholars and other interested parties.

In the professional evaluation of the digital products of any archaeological effort, the first assessment must be a determination that these products are both preserved and accessible. To meet these two evaluative criteria, the digital products should be placed in a recognized digital archive, either one of the disciplinary ones (see below) or one developed by the university or institution. Individual websites or other similar self-archiving strategies do not meet these guidelines. These digital data become the primary record from the investigations, and a key

metric of their value is the number of times the data are accessed and, most significantly, used and/or reused in other scholarly products. Candidates for reappointment, promotion, and tenure should provide documentation of these as part of the review package.

1. Common Types of Digital Scholarship with Assessment/Evaluation Suggestions

Online Databases/Archives of Archaeological Materials – Published and shared through either university/museum/etc. servers or data repositories such as [tDAR](#) and [Open Context](#), these databases (including text, images, etc.) offer access to materials and knowledge often impossible to fully publish in manuscript format, providing large and important quantities of data to archaeologists that were previously inaccessible; such datasets make large-scale or regional analysis and new forms of collaboration possible.

Assessment/Evaluation: The excavation, recording, and detailed publishing of primary archaeological materials involve evaluation and interpretation at every step and should be considered research output for promotion and tenure. The further creation of online databases/archives to host these data and make them reusable should be considered in promotion and tenure. The design and development of databases/archives should be considered scholarly research. Scholars should provide database schema for reviewers to evaluate for tenure and promotion.

Geographic Information Systems (GIS) – GIS data are compiled from legacy maps, satellite imagery, field survey, excavation, ground-penetrating radar, airborne LiDAR, and other methods that record archaeological landscapes and contextualize sites and materials within a georeferenced coordinate system. The creation of this type of data often necessitates the contribution of a variety of scholars with various technology skill sets; multilayered digital mapping with GIS allows large quantities of data at multiple resolutions to be combined, queried, and analyzed in ways previously impossible to undertake. GIS data take time and funds to create and are integral to spatial analyses, and thus their creation

can be seen not simply as digitization of existing records but also as the creation of new digital data, particularly via innovative spatial analysis.

Assessment/Evaluation: The creation of new GIS data, whether from digitization of legacy data, collection of new data (e.g., GPS, airborne LiDAR), or spatial analysis, should be valued as research products; however, scholars should note the process used to develop their GIS data. GIS data should include metadata and be made accessible when possible; due to the sensitive nature of many archaeological datasets, though, scholars should not be penalized for not making GIS data readily available. Regardless, scholars should have a strategy for the long-term sustainability of GIS data.

3-D Modeling – 3-D modeling involves the creation of archaeological objects (sites, structures, artifacts) in three dimensions, including X, Y, and Z coordinates. Such data include reality-based modeling (laser scanning, photogrammetry, etc.) and reconstruction modeling (often hypothetical reconstructions of damaged or disappeared archaeological structures or objects). Reality-based models offer access to materials and knowledge often impossible to fully publish in manuscript format, also allowing scholarly access to materials inaccessible to others. Reconstruction models present argumentation about the possible form or appearance of materials in the past, allowing scholars to test theories regarding concepts of visibility, human perception, or embodied human experiences in space in ways generally impossible in reality. While 3-D modeling involves the creation of new archaeological data, it should in some way be linked or referenced to source data.

Assessment/Evaluation: 3-D models should include some form of metadata (describing data sources, methods, and technologies) and paradata (scholarly decisions made in the creation of the 3-D model). Such documentation can take different forms, for example, white paper, appendix, and/or associated linked data (e.g., a linked database). 3-D models should be evaluated in terms of their intended purpose, for example, as a product of scholarly research, education/pedagogy, and/or public outreach. Ideally, 3-D models will have a UOI—Unique Object Indicator—that allows scholars to cite 3-D models; however, as this practice is in its formative stages, scholars should not be expected to provide reuse statistics for 3-D models.

Virtual Reality (VR) – VR includes a simulation of a real or reconstructed environment and is a method to organize, synthesize, and visualize hypotheses and interpretations using 3-D data. It is a method to help archaeologists understand human behavior. VR relies heavily on 3-D modeling and visualization and as such also leads to the creation of new data and new knowledge.

Assessment/Evaluation: As for 3-D models, virtual reality environments should include some form of metadata and paradata. Similarly, VR environments should be evaluated by experts in regard to their intended purpose and should be accompanied by a peer-reviewed evaluation. Given that such peer review is currently in development, peer reviews may be sought by the candidate as “support” letters rather than through more traditional publication review.

Digital Toolsets – Employing digital technologies, archaeologists have been active in adapting and creating new digital tools to address problems specific to archaeology. It is important to state that while many proprietary software programs exist that can be used for archaeological recording or analysis, these were not designed primarily with archaeological problems in mind, and they often lack functions to address historical datasets (temporal aspects of data, uncertainty, missing data, ancient languages/scripts). The creation of tools specifically designed to function for archaeological datasets is vital to the larger field and offers new research opportunities. The development of digital tools, software, code, etc. should be weighed in promotion and tenure evaluations.

Assessment/Evaluation: While digital tools may not necessarily be peer reviewed before “publication,” they can be evaluated in the following ways: (1) digital tool development requires funding—scholars should consider successfully funded proposals as positively peer reviewed; (2) digital tools should be evaluated by experts and accompanied by a peer-reviewed evaluation (in the same vein as print publications; however, in this case, the tool, program, or code itself is evaluated); (3) beta-testing by users with feedback from survey results can be a form of evaluation; and (4) in some cases, metrics such as web usage statistics (e.g., Google Analytics) **might** be available. Caution is suggested here, however, because many tools, software programs, and computer codes are downloaded for desktop use, copied unofficially on hard drives, etc., and thus their analytics are not recorded. This makes the metrics of impact difficult to measure.

Online-only peer-reviewed journals and conference proceedings – With fewer print publications, online-only publications are rapidly increasing. Online-only peer-reviewed journals and conference proceedings are not only appropriate venues for publication but are also necessary to make available research results in a timely manner in a rapidly changing technological environment.

Assessment/Evaluation: Peer-reviewed conference proceedings should be given appropriate weight based on venue. Scholars could include an explanation of venue and publication specifications (e.g., double-blind peer review, etc.) and the need to publish in a timely manner, particularly as technology undergoes rapid development and change. Online peer-reviewed journals should be given the same weight in tenure and promotion decisions as equivalent print journals. Furthermore, many online journals and conference proceedings are indexed and/or citations to them appear in citation indices.

2. Best Practices

Metadata – Archaeological information needs to have complete and appropriate metadata attached; metadata may take the form of textual descriptions of original archaeological context, geographic coordinates, citations, images, etc. Metadata should be linked as closely and clearly as possible to the presented information. Evaluators should note that scholars may be limited in the types or extent of metadata available to them when dealing with primary data, as archaeological fieldwork frequently takes place in an international setting, and there are often limitations imposed on scholars by foreign governments, antiquities associations, and museums. Scholars should clearly explain what information is available and what is inaccessible.

Paradata – Some forms of digital scholarship ask scholars to make a series of choices in visualizing or presenting data. Such choices (i.e., “paradata”) should be understood as a form of scholarly interpretation and thus documented fully. Paradata should be linked as closely and clearly as possible to the presented information.

(Open) Access – Published digital work should strive to make archaeological information as accessible as possible; however, restrictions include current computer memory, freely available software programs, concerns about the safety of archaeological sites, and the wishes of community stakeholders. While certain types of data

(GIS maps, satellite imagery analyses, 3-D models, etc.) are frequently created in expensive, proprietary software programs, scholars should attempt, if possible, to publish digital outputs in more accessible formats. The simplification of data or loss of resolution in such publications should be made clear by the scholar.

In addition to domain archives such as tDAR and Open Context, a number of universities and institutions are developing their own archives. Evaluators should ensure that whatever archive a candidate uses provides for accessibility and preservation. Accessibility is made possible through the use of proper metadata and software tools (e.g., [DSpace](#), [FEDORA](#), [CONTENTdm](#), etc.) that expose the metadata and data to searching and retrieval. Preservation is achieved through institutional commitments of staff and resources. Examples are institutional adoption of the [ISO-OAIS certification](#) as a “Trusted Digital Repository” or other similar strategies.

Interoperability and Sustainability – Scholars should strive to make their data as interoperable as possible, both to make it easily sharable with other scholars in the field, and as a strategy for data sustainability. This means exporting data in proprietary or uncommon data formats into standard or commonly used formats in the field of study. The simplification of data or loss of resolution in such publications should be made clear by the scholar. Scholars should also work closely with librarians, publishers, and others in order to plan for how their digital outputs will be curated, archived, and updated as software and hardware change. Moving data into interoperable and sustainable formats can be time-consuming and expensive, and scholars should make such work a part of their original project plan. Long-term projects using a local web service or other individual strategies that do not meet these criteria should not be viewed as favorably in the evaluation process.

Credit – Digital projects are almost always collaborative, and scholars should make clear who contributed to the project and in what manner. Credit should be given to students, technologists, librarians, etc.

Explanation – When publishing a digital project, scholars must make clear the goals of the project, its timeline, level of funding, intended audience, technological choices made in creating the project, and the limitations of the project. Without such information, evaluators cannot make a fully informed peer review.

3. Guidelines for Evaluation of Digital Scholarship in Archaeology

Medium of Review – Scholarship should be evaluated in the original and/or published format; digital work is frequently dynamic, spatial, layered, dimensional, and/or includes color, sound, and motion. Digital scholarship should be reviewed electronically, and those evaluating it must have the proper software/hardware and learn any necessary interface to make a responsible evaluation. Scholars must provide clear instructions (or directions to existing instructions) on the minimum hardware requirements (including browser compatibility, computer memory, graphics cards) and the use of said interface. Evaluators should consider the compromises scholars must make in publishing digital work originally created in proprietary software programs, as migration to free web-based publication platforms frequently necessitates the simplification of data and the loss of resolution.

Evaluator Expertise – The review of digital archaeological scholarship may be outside the expertise of the scholar’s home department. In that case, reviewers should be sought further afield. As stated by the [Modern Language Association](#): “Faculty members who work in digital media or digital humanities should be evaluated by persons practiced in the interpretation and development of new forms and who are knowledgeable about the use and creation of digital media in a given faculty member’s field. At times this may be possible only by engaging qualified reviewers from other departments, divisions, or institutions”.

Data Sustainability – Scholarship should demonstrate that the curation and preservation of the data has been considered and attempts made to maintain the accessibility and interoperability of the data for as long as possible. Evaluators should consider that granting agencies (such as the NSF and NEH) have made data plans an important part of evaluation, and scholars are required to spend time and effort on meeting minimum standards in a rapidly changing digital landscape. The preservation of digital data is expensive, and formatting data for archiving and interoperability is time-consuming. Additionally, versioning, i.e., major revisions of software, are often not backward compatible, requiring much time, effort, and funds to make them compatible. Scholars should address this in their dossiers. That digital scholarship necessitates this type of work should be given credit and consideration by evaluators.

Awards and Professional Recognition – Many digital projects have been rigorously evaluated by a panel of peers with both subject area and technological expertise by granting agencies (such as the NEH and NSF) or professional societies at various points prior to publication. Evaluators should take the receipt of major awards and other forms of recognition into consideration as evidence for the merit of the project and as a form of peer review.

Long-Term Projects – Archaeological work on a project or site may last decades, and digital publishing platforms are therefore an especially appropriate venue for the field, as they allow for the continued gathering and integration of information. Thus, many digital projects are not fixed or “done” at the point of a scholar’s review. Scholars should report on where the current product lies within the overall life of the project. Evaluators should review the digital work for its existing merits, without expecting a “finished” product.

Innovation – Many digital projects not only offer advances for performing traditional recording or curation of archaeological materials but also offer innovative ways of analyzing, visualizing, and understanding archaeological information. The creation of new techniques for data recording or analysis and the use of existing digital tools in new ways, as well as other forms of innovation, should be recognized by reviewers. Scholars should make clear when they have developed new techniques/methods for visualizing, analyzing, and understanding new information.

Limitations of Current Publishing Venues – Few existing peer-reviewed journals have transitioned fully to dynamic online publication. In many cases, scholars are forced to publish aspects of their digital work in print journals, or online as static PDFs, which lack interactivity, layers, and full multimedia capabilities. The full publication of complementary research materials may lie elsewhere, presented through an independent website, library archive, etc. Evaluators should take into consideration the limitations that the current publishing model imposes on those disseminating digital work, including fewer opportunities for peer review in native digital context (e.g., virtual environments, GIS, databases, etc.).

Collaboration in Digital Scholarship – Digital research and publication in archaeology necessitates new forms of collaboration between scholars and librarians, technologists, publishers, students, etc. Scholars should

be clear about the processes and time involved in creating, preserving, and publishing their digital scholarship, as well as creating new infrastructure for research and distribution of scholarship, and evaluators should take into account the complexities of these processes versus the publication of a traditional manuscript. Digital works frequently necessitate many times the effort of a traditional publication, and the contribution of each person in multiple-authored works should be made clear and credited appropriately. The size, complexity, and technological expertise necessary to create any digital research project should be taken into consideration.

B. Guidance for Evaluating Scholarship Involving Public and Community Archaeology

In the United States and in many areas of the world, archaeology is usually publicly funded and requires engagement of the community in which the archaeologist works. In addition, the general public is fascinated by the subject and wants to know what archaeologists are finding and what these finds tell us about the past. These factors provide the responsible archaeologist with an obligation to keep the public informed about archaeological work, and an ethical obligation to encourage sound stewardship of the past. Public archaeology refers specifically to archaeological work focused on and tailored to the general public, while community archaeology includes public work but is more specifically focused on the particular community in which the archaeologist works. Communities may be Native American tribes, towns and villages, or other stakeholders. Community archaeology is time-consuming and requires time to build local rapport, efforts to include the community in activities, and responses to community requests and needs. The archaeologist who does community archaeology has ethical obligations to the community, and these obligations can sometimes require adjusting the priorities of research. Community archaeology is seen as an ethical obligation to collaborate with the community in designing, carrying out, and interpreting archaeological research.

Archaeologists have long conducted public archaeology, giving talks to community groups, working with teachers, and giving tours of excavations. In recent years, however, the necessity and obligation to focus on the public has increased, and public archaeology has become more professional, planned, and tied to research.

None of the activities associated with public or community archaeology should be seen as simple public talks: This is time-consuming work that is critical for successful archaeological research. The tenure applicant whose position requires either public or community archaeology has an obligation to put together a strong case for why this work constitutes research and goes beyond simple engagement responsibilities.

1. Common Types of “Scholarship” in Community and Public Archaeology

Public Presentations – The most common kind of public activity, these talks, demonstrations, and tours are based on ongoing archaeological research and require significant amounts of time and care. Universities tend to count such talks as “engagement.”

Creation of Games and Digital Applications – A number of archaeologists have developed educational games and applications that work on smartphones. These are often place-based applications that educate the user about the site and/or landscape. Items such as virtual reality games and tours can also be considered in this category. In evaluating these items for scholarship, the role of the archaeologist should be determined—design, software, content, etc.

Creation of Websites – Websites are increasingly used by archaeologists to communicate with broad publics. These sites may be project-based, topically based, etc. Websites often include blogs that are designed to educate the public about archaeological topics. Documentation of the number of hits, references to the site by others, and recognition by others can help provide ways to independently evaluate the work.

Displays and Exhibits – This category includes everything from simple displays in public places, museum exhibits, and interpretive materials for archaeological sites and parks. Development of such materials is time-consuming, and requires intimate familiarity with the archaeological research.

Peer-Reviewed Articles – There are a variety of peer-reviewed archaeological and anthropological journals that regularly publish articles focused on public archaeology and community archaeology. If an archaeologist publishes in these peer-reviewed journals, the work should be counted as research and not engagement.

Production of Booklets and Informational Materials

– The creation of booklets, pamphlets, and other types of informational materials is sometimes required by local communities or by funders. Such items are generally the result of the archaeological research, and are carefully written for a variety of reading levels.

Teaching Materials and Lesson Plans – Development of lesson plans requires archaeological knowledge as well as knowledge of classroom criteria and requirements. These materials are generally reviewed by teachers and schools, and usually treated as engagement.

2. Assessment/Evaluation

Presenting a talk to the local community or state museum should be counted as “engagement,” but there is another level at which this work can be seen more broadly and also count as scholarship. If a significant portion of a scholar’s work includes public or community archaeology, the archaeologist has an obligation to make a case for this work, and the institution should find reviewers who can evaluate it. **It is unlikely, however, that a scholar can meet tenure requirements solely based on public or community archaeology, even if the work constitutes a significant portion of the appointment.**

3. Guidelines for Evaluation

Medium of Review – It is important to review the item in the form in which it was originally developed. Therefore, if it is a website, it should be evaluated as a website. If it is a display or exhibit, then an evaluation of the exhibit should be made.

Evaluator Expertise – Because there are so many different kinds of public and community archaeology projects, it is impossible for a faculty committee to be well-versed in each form. Evaluators should be sought who are known for their expertise in the particular area as well as their ability to determine the broader impacts of the work.

Innovation – While a list of presentations and programs is impressive, a successful candidate for tenure should also attempt to articulate that which is novel or innovative in their public and/or community archaeology.

Awards and Professional Recognition – For the categories of public and community archaeology, national

and international awards are important, but equally important are regional and community awards since these reflect the evaluations of those who are most directly affected by the work.

Long-Term Projects – Evaluation of public and community archaeology should take into account whether or not the archaeologist is developing a long-term project or a short-term one. Long-term projects require more preparation and community work, and are less likely to result in immediate successes.

Limitations and Delays of Current Publishing Venues

– There are relatively few peer-reviewed journals that publish public and community archaeology. There may be significant delays in publication; acceptances and successful publication should be rewarded as research. At times, archaeologists publish preliminary results of investigations or general overviews in local outlets, such as county or regional journals. These should be evaluated as equivalent to contract reports (see above).

Funding Sources – External funding and funding outside the normal field school model indicates recognition of the significance of the work.

C. Guidance for Evaluating Scholarship at Liberal Arts Colleges

The evaluation of faculty performance as it relates to retention, tenure, and promotion at liberal arts colleges varies in some significant ways from the criteria at larger institutions. The student population at liberal arts colleges is generally composed of undergraduates, with the exception of a few institutions that offer graduate degrees (typically, MA or MS). In addition, the number of students at such institutions tends to be quite small; some have enrollments of less than 1,000, while many fall in the range of 1,400–2,000. The liberal arts colleges generally are private, and so total student costs run high; for example, the comprehensive fee (including tuition, room, and board) at the College of Wooster in Ohio for 2015–2016 is \$55,600; the cost at other schools exceeds \$60,000. All of these institutions tout the low student-to-faculty ratio and close collaboration between teachers and students as major selling points. As a result, liberal arts colleges all stress teaching as the primary criterion in evaluating faculty. By necessity, research is given secondary, but still important, status in examining faculty performance.

Teaching loads at small liberal arts colleges vary between five and eight classes per year. The general expectation is that all classes, including those at the introductory level, will require a substantial amount of writing and reading. A number of institutions have added the requirement of a writing-intensive class for first-year and sophomore students in order to enhance this skill. Most of these schools also have a senior capstone experience; several make it a requirement for each student to complete a senior thesis. The supervision of these projects is at times factored into the total teaching load, but not always. In addition, each faculty member is expected to act as the advisor to a number of students and to track their progress through their respective programs. As a result, teaching involves a substantial amount of individual mentoring in the liberal arts environment.

1. Common Types of Scholarship with Assessment Suggestions

Faculty at liberal arts colleges engage in the same range of scholarly work as do archaeologists at large research institutions (see other relevant sections). An important difference between the two types of institutions, however, is the amount of time that faculty are able to devote to their research activities. The heavier teaching loads at liberal arts colleges limit to some extent the amount of fieldwork that can be undertaken by faculty. The priority that is given to teaching also imposes some other strictures. While summer break may offer similar lengths of time for all faculty, the key difference may be in how much time can be devoted during the school year to the analysis and write-up that produces articles and books.

2. Guidelines for Evaluation

For the Evaluator – Since teaching is central to the liberal arts experience, field schools and other research in which students participate with faculty should be viewed as extensions of the classroom. Liberal arts colleges place high value on contact time with students; in field settings, faculty members interact with students virtually around the clock. In addition to fieldwork during typical seasons (usually summer), some faculty conduct field investigations near campus during the academic year on weekends. This has tremendous benefits for students who gain practical experience, but imposes an additional time burden on faculty and should be weighed appropriately in any evaluation.

For the Scholar – Candidates under review should be certain to carve out sufficient time to undertake research. This can be a challenge when teaching new classes, participating in departmental and college affairs, and advising students, but it is possible. Seek the assistance of senior faculty in the home department or elsewhere who have mastered the system. Since liberal arts colleges highly value collaboration between students and faculty, take advantage of opportunities for mentoring students; taking students to the field may also provide the faculty member with funds for travel and support. Seek out programs that make it possible for students to work closely with you as research assistants; once trained, students can both expedite the analysis of certain materials and train their peers. Let your department chair and people in higher administration (deans, provosts) know what you are doing; they may be a source of some funding, and a way to increase your visibility on campus. Public presentations at your institution and in the community help create the linkages that liberal arts colleges seek, and these are also good venues to try out some ideas as you prepare material for publication.

As one [website](#) notes, “Majority of the faculty at LACs [liberal arts colleges] are student-focused and teaching-oriented.” When it comes to decisions concerning reappointment, promotion, and tenure at liberal arts colleges, teaching is given priority, with research/scholarship secondary but important, and service as another factor. At some schools, service—especially on elected college-wide committees—is viewed as at least as important as research, and can be the basis for tenure and promotion to full professor for an individual with a modest number of publications. Research is becoming an increasingly important evaluative criterion as liberal arts colleges try to raise their regional and national profiles in order to compete for students in what has become a very expensive academic market. The pressure to prepare some publications while at the same time maintaining excellence in teaching generates significant pressure on junior faculty, particularly those who come to a tenure-track position with little prior experience in the classroom. Mentoring of junior faculty by their senior colleagues can go a long way toward informing candidates for reappointment and tenure how best to navigate the passage toward stability in an academic position. It is critical that younger faculty clearly understand the balance to

strike between teaching, research, and service, especially as the ratio of these factors will vary from institution to institution.

Overall, demonstrated excellence in teaching is fundamental to successful evaluation at liberal arts colleges; scholarship, research, and contributions of general value are also essential activities in which a candidate's performance will be evaluated. Since the expected level of achievement in any of these is not predetermined and

will vary by department, a candidate should consult with the chair about the department's expectations for the different areas of one's work.

Note that some schools (e.g., the College of Wooster in Ohio) distinguish between scholarship and research. Specifically for archaeology, scholarship can be in the form of conference presentations, or participation in professional workshops, whereas research is the culmination of an active investigation resulting in a publication.

VII. ACKNOWLEDGEMENT

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VIII. REFERENCES

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APPENDIX A. EVALUATING ARCHAEOLOGICAL PUBLICATION

Publications are not the only measure of success for scholars under review for tenure and promotion, but they have traditionally played a predominant role in many fields and institutions. This section focuses on the measurement of the impact of scholarly products, especially publications.

There are many ways to measure publication productivity. Simplest and longest standing is to count the number of peer-reviewed publications and possibly the number of publications in other categories. The raw numbers might be modified by culturally shared norms about the status/value of different publication venues and types (e.g., *Science* vs. *Archaeology of Eastern North America*, journal article vs. book chapter vs. book). Many tenure and promotion documents specify a minimum number of peer-reviewed publications and sometimes ask for the acceptance rate of each venue, as a rough measure of quality.

However, over the last half-century, bibliometricians have developed a growing number of quantitative measures. Below, we define the most common bibliometric measures. An individual's score on these measures depends on which method is used to aggregate and assess the data. For further information on these measures, this [Research Guide from the University of Illinois Library](#) offers an excellent start.

Following is a review of major sources of bibliometric data from the perspective of archaeologists under review for reappointment, tenure, and promotion.

1. Common Bibliometric Measures

Impact Factor – Impact factor is the founding ancestor of bibliometric measures. It was invented by the founder of ISI (Institute for Scientific Information, now owned by Thomson Reuters), and it is ISI that measures and assigns impact factors. This measure applies to journals, not books or other products, nor does it measure individuals. It is only measured for journals indexed by ISI. There is a good explanation of impact factors [here](#).

Impact factor measures how often articles from the previous two years of an indexed journal are cited in the subsequent year. The MSU page linked above offers a very clear example.

There are many factors that influence a journal's impact factor (see MSU webpage). If impact factors are used, they need to be viewed in the context of other journals in the same field. For instance, the leading medical journals have impact factors >30 (the highest is 144). In contrast, the top archaeology journal for the most recent year was *Journal of Archaeological Research* at 2.5; *American Antiquity* is at 1.329.

H-index – H-index is often considered the most effective existing, citation-based measure of an individual's academic standing. It is defined as the highest number of articles by an author cited at least as many times as the rank order. For instance, an h-index of 10 means the author has 10 articles cited at least 10 times each. An individual's h-index depends in part on how the data are aggregated. H-indices calculated by ISI are generally lower than those calculated by Google Scholar. The h-index is cumulative, so that it can increase but never decrease; the h-index of deceased authors often continues to grow.

i10-index – i10-index is the number of publications by an author with at least 10 citations. Like the h-index, the i-index is cumulative.

Google Scholar Citations (see p. 21) provides both cumulative and last 5-year h- and i-indices; the 5-year version is a partial antidote to the unidirectionality of the standard h- and i-indices.

ResearchGate (RG) Score – RG Score is a recent measure from the website ResearchGate.com. ResearchGate is a platform for scholars to upload their publications (one can load just the citation, add the abstract, or, according to the publisher's copyright policy, the full text). RG Scores are calculated from journal impact factors, scores of followers on one's RG page, and other metrics for user interaction with an author's posted content. The site also indicates one's RG Score percentile in the universe of RG users.

Academia.edu – Academia.edu is another platform for scholars to upload their publications (one can load just the citation, add abstract, or, according to the publisher’s copyright policy, the full text). Academia.edu provides a variety of metrics including usage percentile compared to other users over last 30 days, number of views, downloads, and unique visitors for 30 days and 60 days; and total number of followers, people followed, and views.

2. Where to Find a Scholar’s Scores

There are a growing number of sources for aggregated bibliometric scores. The most commonly known and used are ISI Web of Science, Google Scholar, ResearchGate, and Academia.edu. We discuss them from least to most effective for archaeologists being assessed for tenure and/or promotion. We also cover Altmetrics, which can track a broader range of scholarly products.

Academia.edu – Data on a user’s Academia.edu page are loaded by the user, and it is unclear whether any of the data are vetted. If an author’s work is accessed frequently enough in the last 30 days, a percentile (e.g., top 0.5%) appears on the author’s Profile page. Academia.edu also tracks number of views, downloads, and unique visitors for 30 days and 60 days on the author’s Analytics page. On the author’s Profile page, the site shows total number of followers, people followed, and views. Academia.edu is free but offers a premium version for pay that offers a “suite of exclusive features that allow you to learn more about your readers, get more out of your analytics, and improve your Academia experience.” Academia.edu Premium is currently in beta-testing and not widely available.

ResearchGate (RG) – Data on a user’s RG page are loaded by the user, and it is unclear whether any of the data are vetted. There is little information on how exactly the score is calculated. Therefore, it is hard to know what it means. RG also calculates h-index and h-index minus self-citations. RG explains that it calculates these h-indices only on articles in a user’s profile, but it doesn’t say where it gets the citation data. ResearchGate is free. Because of the unvetted author control of content and the lack of transparency in how scores are calculated, this site is not recommended for tenure and promotion decisions.

ISI Web of Science (WOS) – WOS started the whole bibliometrics movement and has long been the standard

source. It offers a comprehensive list of citations to any work by an author, as long as that work was cited in an ISI-indexed journal. It is possible to sum citations and calculate h-index and i10-index using the Cited Reference Search; this will include every citation in an indexed journal but will require the user to compile these data from the raw listings. The Basic Search function will compile number of citations, citations per article, citations per year, and h-index, but only for articles published in indexed journals (i.e., a subset of all possible cited works). Recently, ISI has added conference proceedings and even more recently some books; to include these sources in the Basic Search summaries, one has to select “All Databases” (vs. the default “Core Collection”). Access to ISI requires an institutional subscription. Because of the restriction to citations in indexed journals (Cited Reference Search) or to articles in indexed journals (and indexed books and conference proceedings using All Databases: Basic Search), ISI is not the most effective measure for archaeologists given that publishing opportunities in our field expand beyond standard, indexed, peer-reviewed publications.

Google Scholar Citations – Google Scholar Citations is becoming the new standard for bibliometrics. It pulls data from the web from a wider variety of sources than WOS or RG (or publisher proprietary databases such as Scopus). According to the “about” page for [Google Scholar](#), sources include “articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites.” Google Scholar provides guidance for individual authors, university repositories, and journal publishers on how to make their publications visible to, and counted by, Google Scholar. This allows authors both to “stack” publications (like RG) and to put nontraditional work into the index. Unlike RG, Google Scholar also lists and ranks authors’ contributions by number of citations, so regardless of origin and type of work cited, there is a metric for use; presumably, citations come from the sources included in the database, so both the sources and the citation lists are more inclusive than WOS.

A Google Scholar Citations page for an author lists the following metrics in two columns, for all time and for the last 5 years: citations, h-index, and i10-index. As indicated earlier, because of the larger database, citations and h-indices are almost always higher in Google Scholar Citations than in WOS. Cited publications are listed in rank order by number of citations. Authors can have Google

Scholar Citations make a public profile (vetted by reference to the author’s email address). Google Scholar Citations is free to use or view, but summary data for other authors are visible only if those authors have agreed to make their profiles public.

Altmetrics – Altmetrics represents an effort to measure usage and impact of nontraditional digital products. Two good guides to altmetrics are on the [University of Maine library website](#) and on the [University of Michigan library website](#). According to the University of Maine document, “Altmetrics serve as a complement to traditional metrics (e.g., citation counts) by incorporating statistics regarding usage, capture, and mentions of scholarly works in online environments. Examples of alternative metrics include number of clicks, views, and downloads, as well as social media mentions and news coverage.” There are several sources of altmetric data (see the University of Michigan page); [Altmetric.com](#) is a primary source, which uses DOIs (Digital Object Identifiers) to gather data. If a digital product does not have a DOI, the author

should seek to have one assigned. One route is to put the product in a digital repository that assigns DOIs.

For those who produce scholarly work in nontraditional digital formats, altmetrics is probably the best way to track them. This requires that authors make certain that their work has a DOI as quickly as possible.

Like ResearchGate, Academia.edu, and to a lesser degree other citation aggregators, it is possible to game Altmetric.com and other altmetric programs. See the pages noted above for discussions of the advantages and disadvantages of using altmetrics.

3. Recommendation

Considering the above information, we recommend Google Scholar Citations as the most inclusive and appropriate source of summary bibliometric measures for archaeologists under review for tenure and promotion, with the addition of altmetrics for those producing work not usually included in Google Scholar, WOS, RG, or Academia.edu.