PERSEPOLIS FORTIFICATION ARCHIVE PROJECT

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The Persepolis Fortification Archive (PFA) Project strives to build a comprehensive primary record of a unique source of information on the art, languages, society, and history of the Achaemenid Persian Empire; to compile the record in a form that accurately represents the Archive's exceptional combination of complexity and integrity; and to distribute the record in forms that will support research for years to come. Elements of the record include digital images of thousands of tablets and fragments; editions of thousands of texts in Elamite, Aramaic, and other languages; collated drawings of thousands of distinct seals represented by impressions on the tablets; and detailed observations that tie these elements together. The greatest value of this source lies not in its pieces, extraordinary as they sometimes are, but in the web of connections among them that represents the dense texture of ordinary ancient reality. As of mid-2012, the PFA Project has made usable records of more than 9,000 items, and has made more than 5,000 of them public through two online applications, InscriptiFact (http://www.inscriptifact.com) and OCHRE (http://ochre.lib.uchicago.edu; see the report on *OCHRE Data Service* in the Research Support section of this volume).

PFA Project editor Mark Garrison (Trinity University, San Antonio) visited the Oriental Institute six more times during 2011–12 to collect and record the seal impressions of the PFA. With the assistance of summer workers Jenny Kreiger (University of Michigan) and Erin Daly (Cornell College), he surveyed about 800 more boxes of PF tablets and fragments and selected about 600 more sealed, uninscribed tablets (abbreviated PFUT) for cataloging and recording (fig. 1). These are the inconspicuous tasks that must be done before the record can be made: examining all the fragments in the boxes, selecting notable items, doing preliminary cleaning and repair, recording identification numbers, boxing and labeling the individual items, filing them with previously selected tablets, and selecting pieces with seals of exceptional stylistic, iconographic, and/or thematic value for high-quality imaging.

Daly, Kreiger, and post-doctoral researcher Sabrina Maras (University of California, Berkeley) helped Garrison compile the initial catalog of PFUTs. This stage of the process requires greater immersion in the application and imagery of the seals: recording on a paper fiche for each tablet the shape, dimensions, locations of seal impressions, identification of known seals, assignment of numbers to newly recognized seals, sketches of impres-

Figure 1. Erin Daly and Mark Garrison select uninscribed Fortification tablets (PFUTs) for cataloging and imaging

sions of newly identified seals, and creation of online OCHRE entries for each item. During the past year, Garrison's group identified more than 130 previously unattested seals and made final collated drawings of about twenty. After surveying about four-fifths of the boxes, they have selected about 3,300 useful tablets and fragments, far surpassing initial estimates of the size of this corpus. Daly came back to the Oriental Institute during summer 2012 to help complete the survey of the boxes and continue the catalog.

Garrison and graduate student Tytus Mikołajczak (NELC) verify and record seal impressions on tablets with Elamite texts first recorded by the late Richard Hallock now being revised for final presentation by
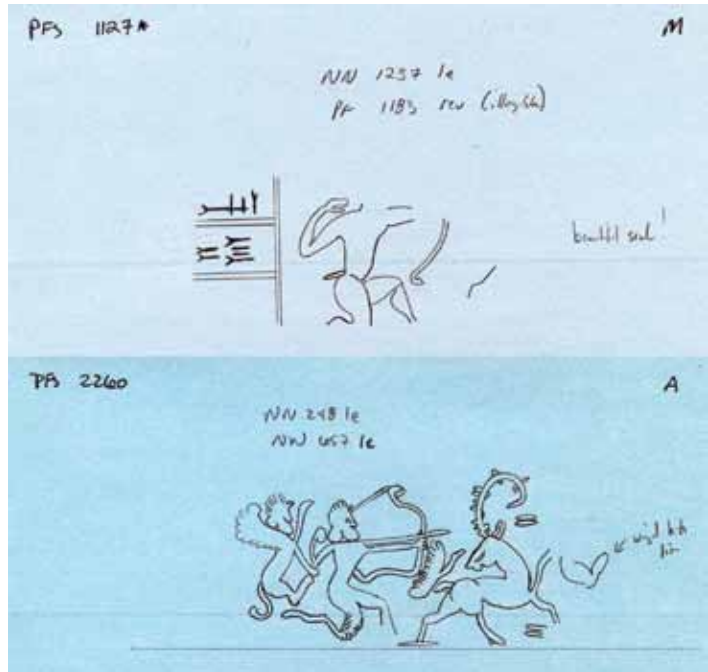

Figure 2. Preliminary records of seal impressions on unpublished Elamite tablets. Above, new impression of known, previously illegible seal. Below, newly identified seal

PFA Project editor Wouter Henkelman (Deutsches Archäologisches Institut, Berlin). This yields not only new seals, but also newly legible impressions of previously known but obscure seals (fig. 2). During the past year they identified more than fifty new seals on about 250 of these tablets, making sketches and compiling catalog information for all and final collated drawings of a few.

PFA Project editor Elspeth Dusinberre (University of Colorado) visited the Oriental Institute four times in 2011–12 to work on the seal impressions on Aramaic Fortification tablets.

Figure 3. Emily Wilson enters data on seals on Aramaic tablets (PFATS) in OCHRE

Adapting the general procedures developed to record and classify seal impressions on other classes of tablets, Dusinberre and graduate student Emily Wilson (Classics) made records of seals on about 200 more Aramaic tablets, completed measured templates, and collated drawings of more than 320 of these seals (abbreviated PFATS), revised and updated OCHRE information on seals on the first 530 Aramaic tablets, entered new information for about 200 more tablets, and uploaded final inked drawings of twenty of the seals for release on OCHRE (figs. 3–4).

The large and still growing corpus of seals represented by impressions on PFA tab-

lets is a treasury of ancient imagery, craftsmanship, and style that reveals the taste, status, and behavior of the individuals and offices who made and kept the tablets. It also reveals some of the social and organizational traits that lie behind the archive, sometimes balancing impressions drawn from the texts alone. For example, to record administrative acts there are about six or seven times as many documents in Elamite as in Aramaic, but to identify seal owners, the frequency of languages is different: of the 5–8 percent of all seals that have inscriptions, about half are inscribed in Elamite, and most of the rest are inscribed in Aramaic.
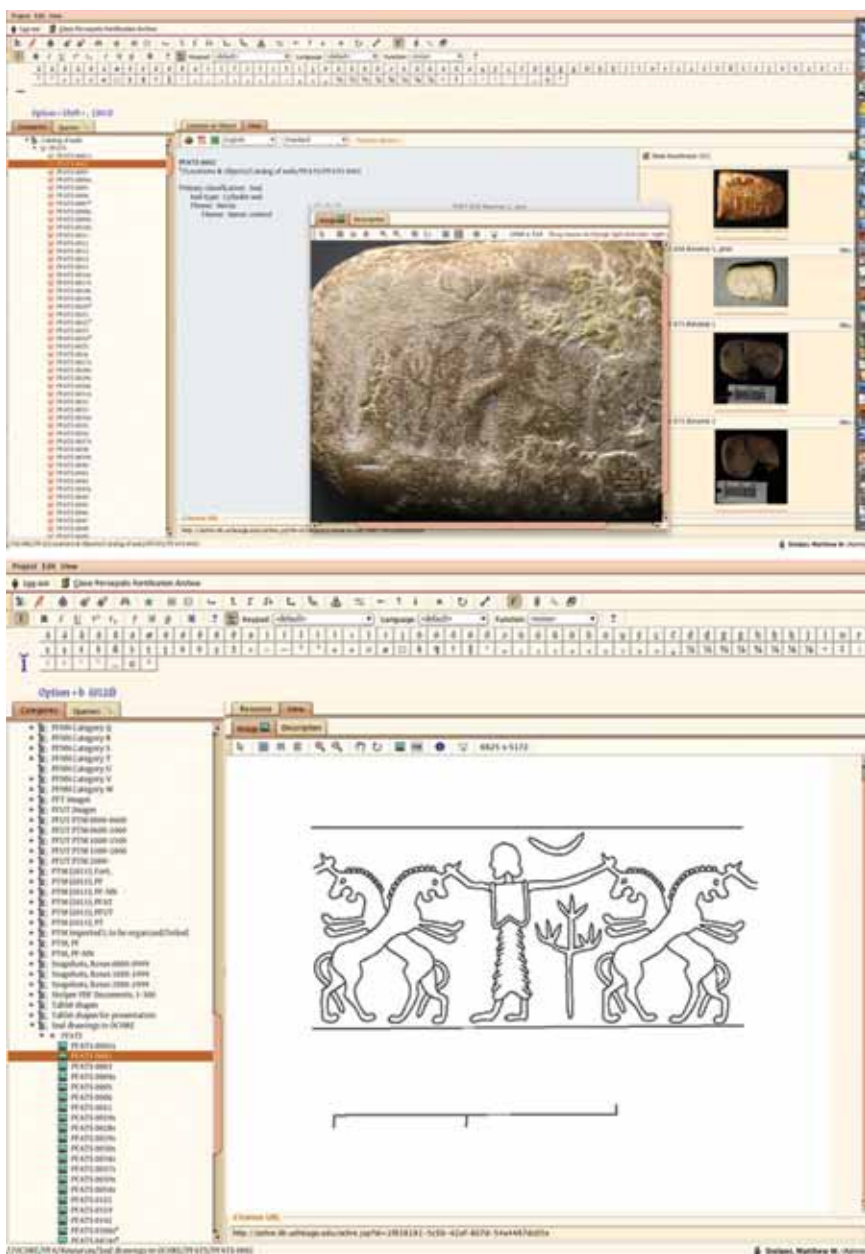

Figure 4. Seal PFATS 0002 on Aramaic tablets in OCHRE. Above, catalog of occurrences, thumbnails of image, PTM image of partial impression. Below, collated final drawing

Of the first 2,800 analytically legible seals, a little over 20 percent were stamp seals, rather than cylinder seals, but the frequency of the stamps varies among the document classes: less than 15 percent on Elamite documents, about 30 percent on uninscribed tablets, and almost 40 percent on Aramaic documents. Only about 130 seals, less than 5 percent, were impressed on more than one class of tablets, and only fifteen, scarcely 0.5 percent, were impressed on all three classes — Elamite, Aramaic, and uninscribed. Many of the identifiable users of these crossover seals are supply officers or offices, very few are officials of wide regional competence, and none are among the highest-ranking personnel of Persepolitan administration and society. These crossovers mark personal connections among three distinct administrative streams; how to understand the procedural and functional connections among these streams is one of the leading problems posed by the PFA.

During five visits to the Oriental Institute in 2011–12, PFA Project editor Annalisa Azzoni (Vanderbilt University) processed texts on about fifty newly identified monolingual Aramaic tablets and fragments, bringing the running total to about 790 items. She also recorded about twenty newly identified Aramaic epigraphs on tablets with Elamite texts, bringing the running total to about 240 items. Azzoni catalogs these texts, enters them with preliminary readings in OCHRE, and then begins the exacting process of epigraphic scrutiny, comparison, classification, and interpretation. Many of the new monolingual Aramaic tablets were not noticed before because they have faint or fragmentary texts, valuable for paleographic study and for assessing the frequency and range with which Aramaic was used in the multilingual milieu of Persepolis, but requiring disproportionate amounts of effort to classify (fig. 5).

Dedicated PFA Project conservator Robyn Haynie, supported by a grant from the PARSA Community Foundation, treated more than 200 tablets and fragments, mostly new items with Elamite texts (abbreviated Fort.), including some with new Aramaic epigraphs (PFAE). Similar notations, consisting of a few words or a couple of lines in Aramaic added to larger documents written in cuneiform, are well known from Babylonian and Assyrian tablets. The PFA has already yielded far more of them than any single Assyrian or Babylonian archive. This component of the PFA reflects another aspect of ancient information handling; the scribes who maintained the Archive had to be at least passively proficient with several written languages, and actively proficient enough to mark their handling of Elamite records with notes in Aramaic.

During three visits to the Oriental Institute, PFA Project editor Wouter Henkelman finished collating the roughly 2,600 texts from Richard Hallock's draft editions and re-collated almost 400 of them. He concentrated on the journals and accounts, generally large and formally complex documents from the last directly attested stage of information processing in the PFA. Their format,

Figure 5. BetterLight scan (with polarized light and infrared filter) of two lines of an Aramaic epigraph on reverse of a previously unrecorded Elamite tablet, Fort. 2132-103, recording a deposit of fruit. "(Belonging) to [Personal Name], pomegranates, year 23" (see also fig. 5 in the Conservation report)

contents, and state of preservation require disproportionate time and effort for restoration, verification, and cataloging. Henkelman also made final translations of about 400 of the PF-NN texts, to be synchronized with OCHRE for public release (fig. 6). I continued to record new Elamite tablets and fragments, also concentrating on journals and accounts. I added draft editions of about 280 more in OCHRE (for a running total of more than 1,000, almost
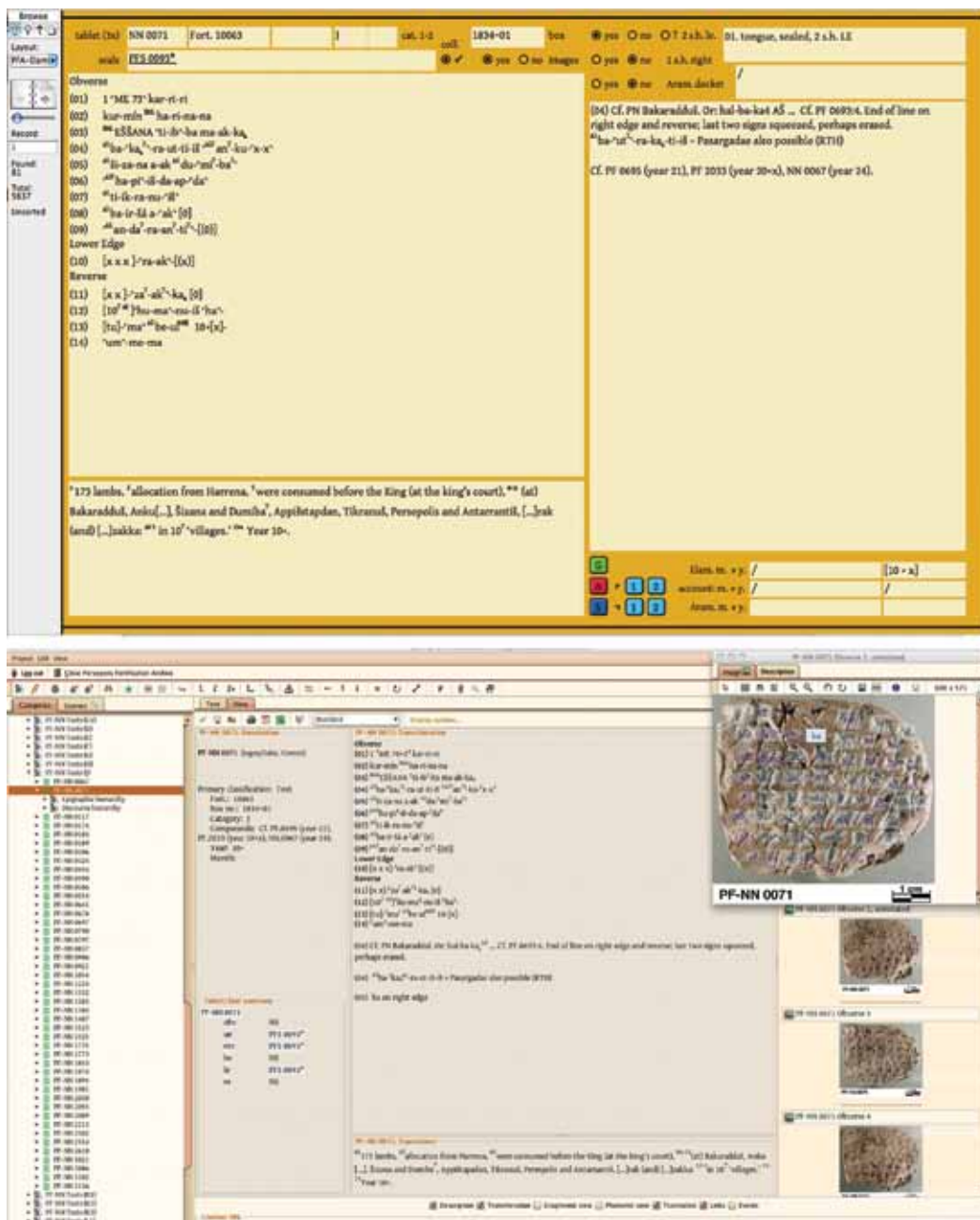

Figure 6. Wouter Henkelman's final edition and translation of PF-NN.0071 (a record of livestock issued for consumption by the royal court). Above, FileMaker record; below, OCHRE display, with thumbnails of images and photograph of obverse with overlaid transliteration

half of them journals and accounts) and reviewed about fifty of them with graduate student Tytus Mikołajczak, verifying seal identifications in connection with his ongoing research on seal use on PFA journals and accounts.

The staff of the Project's high-resolution imaging lab went through an almost complete turnover. Project veterans Clinton Moyer, John Walton Burnight, and Joseph Lam left to take up post-doctoral fellowships or tenure-track academic posts. Veteran Miller Prosser (PhD NELC) brought post-doc Arne Wossink (PhD Leiden University) and graduate students Ben Thomas and Tate Paulette (both NELC) and Jason Hermann (University of Arkansas) into the production line. This phase of the Project, carried out in collaboration with the West Semitic Research Project at the University of Southern California and funded by grants from the Andrew W. Mellon Foundation, made about 6,100 Polynomial Texture Mapping (PTM) sets and about 4,100 BetterLight scans to record about 600 new tablets and fragments and supplement records of about forty others with improved techniques. With student workers Megaera Lorenz (NELC), Amy Genova (History), and Dan Whittington (Classics) doing local post-processing of PTM sets to supplement the work done at the University of Southern California by student workers Bekir Gurdil, Claire Shriver, and Kristin Butler, about 4,400 PTM sets and 210 BetterLight scans were processed for distribution. At InscriptiFact, Marilyn Lundberg and Leta Hunt cataloged and uploaded more than 10,000 new images of more than 800 tablets and fragments for public release. Very high-quality images of almost 1,600 Fortification tablets are currently available to InscriptiFact subscribers.

About four-fifths of these are monolingual Aramaic tablets (PFAT) and uninscribed, sealed tablets (PFUT/PFAnep), document types that were absent from the published record of the Archive when the Project began. Presenting them in this way allows students and scholars to download and manipulate the images, to scrutinize Aramaic epigraphy and Achaemenid iconography in a way that conventional print publication cannot enable.

Veteran student photographers and editors Greg Hebda (NELC) and Joshua Elek (Divinity) left the Project during 2011–12. Megaera Lorenz, Dan Whittington, Ami Huang (NELC), Matt Susnow (alumnus, NELC) carried on conventional photography of newly selected Elamite tablets and fragments (about 250 items), and supplementary photography of previously recorded fragments (about 285 items).

Post-doctoral Project Manager Dennis Campbell, assisted by student workers Özgun Sak (History) and Seunghee Yie (NELC), formatted, parsed, glossed, and linked about 750 new Elamite texts in OCHRE (again concentrating on the time-consuming large-format journals and accounts) and reviewed and copy-edited about 2,000 previously entered transliterations. Before his work was interrupted by a medical leave of absence, Jay Munsch (Divinity) tagged about 300 conventional photographs of Elamite texts to allow OCHRE display of overlaid transliterations, linked to editions. Campbell and Azzoni prepared formatted, parsed, and linked OCHRE editions of more than 200 of the Aramaic epigraphs that accompany Elamite cuneiform texts, about half of them made public.

Full documentation of Elamite and Aramaic texts in OCHRE includes morphological parsing, marking grammatically meaningful elements of words so that users can search, for example, to determine which verbs are attested in which conjugational forms. Campbell is now taking advantage of the hierarchical data structure of texts in OCHRE to develop a way of marking up syntax as well, so that users can explore, for example, which pronouns are used with which conjugational forms, or find the implicit referents of pronouns or verbs.

The OCHRE record of the PFA now includes entries for more than 4,700 Elamite texts, more than 700 Aramaic texts, and about 2,500 uninscribed tablets, along with almost 20,000 conventional images, 10,000 high-resolution BetterLight scans, and 15,000 screen-resolution PTM sets. Completing these entries with full epigraphic, editorial, iconographic, and cataloging detail is a daunting task, made more so by the feedback effect, as new data need to be integrated with old results before public display or redisplay (fig. 7).

OCHRE designer and Oriental Institute Research Database Specialist Sandra Schloen and PFA Project post-doctoral worker Miller Prosser extended OCHRE functionality to integrate more project data, gathering the spreadsheets and databases maintained by individual team members and groups in a common framework. A new data-importing tool allows an external data source, such as a spreadsheet or database maintained for convenient personal use by one of the Project members to be synchronized with corresponding items or related data within OCHRE. Under the rubric of OCHRE Data Services (see separate report), Schloen and
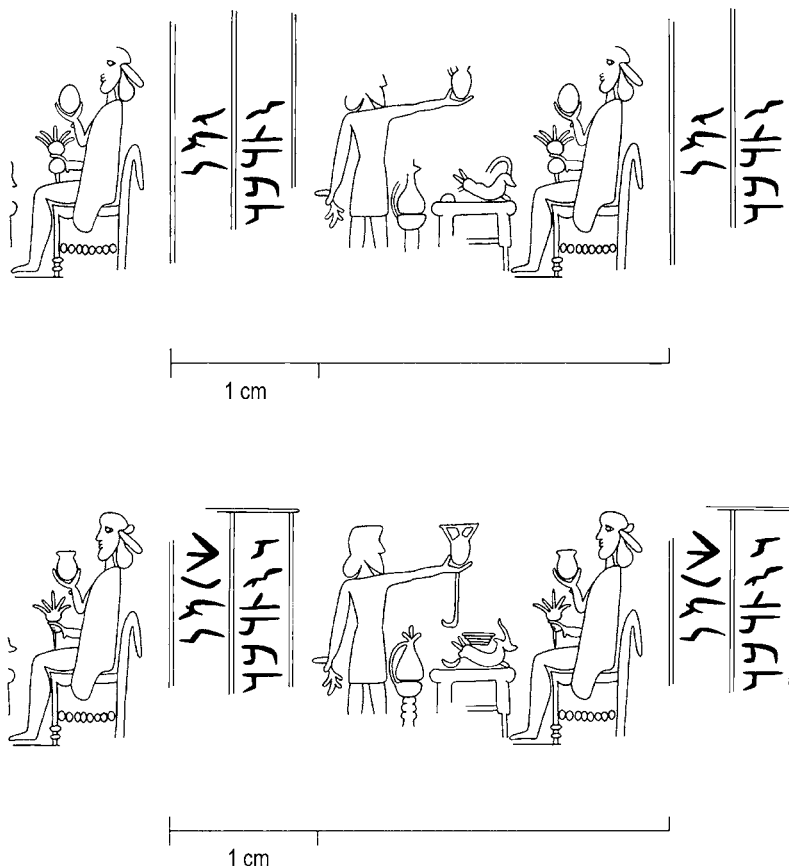

Figure 7. Integrating new information with old: collated drawings of PFS 0535*, a detailed representation of court ceremonial. Above, based on impressions from published Elamite tablets alone. Below, based on additional impressions on Aramaic, uninscribed and new Elamite tablets. Additions and corrections include (right to left): Aramaic inscription; face of seated figure; cup in seated figure's hand; dish and theriomorphic stand on table; bridge-spouted pot in standing figure's extended hand; vessel on censer in front of standing figure; standing figure's head and hair

Prosser also began to work with Charles Blair, of the Digital Library Development Center of the University, to create self-documenting archived data sets in OCHRE and to move Project files to permanent archives at the University of Chicago Libraries.

The PFA and the Project were featured in a cover story of the general-audience magazine of the Archaeological Institute of America, *Archaeology*, in Jan./Feb. 2012 (available at the Suq of the Oriental Institute). At the Project's weblog (http://persepolistablets.blogspot .com/) and Facebook page (http://www.facebook.com/pages/Persepolis-Fortification-Archive -Project/116290391782963), maintained by Charles E. Jones (Institute for the Study of the Ancient World, New York University), more than 12,000 unique visitors viewed thirty-four new posts during the year.

To promote awareness of the PFA, Project members gave about twenty academic presentations and invited lectures during the year. Among others, Mark Garrison and I presented papers on current results at a panel honoring David Stronach, the dean of Iranian Archaeologists in America, at the Annual Meeting of the American Schools of Oriental Research in San Francisco. On the local scene, I discussed progress at the University's Humanities Day; Sandra Schloen and I gave talks in the autumn on image-capture and data-handling at the Laboratory for Advanced Numerical Simulation at Argonne National Laboratories (thanks to an invitation arranged by PFA Project alumna Siwei Wang, now a post-doctoral appointee at the Mathematics and Computer Sciences division of Argonne), and in the spring, joined by Miller Prosser, Sandra Schloen and I gave poster presentations at the Knowledge Fair in connection with the University's Alumni Weekend. In the wider world, and in response to the more demanding imperative to prepare new scholars who can take advantage of the Archive's possibilities, Wouter Henkelman gave intensive master-classes on the contents, language, and implications of the PFA at the Dutch Institute in Istanbul in the autumn and at Wolfson College, Oxford, in the spring. To the same effect, Garrison's and Henkelman's contributions to new academic reference works (for example, Garrison's chapter on "Royal Achaemenid Iconography" and Henkelman's on "The Persepolis Archive and the Archaeology of the Achaemenid Heartland," both forthcoming in the *Oxford Handbook of Iranian Archaeology,* New York: Oxford University Press) stand out among more than fifteen PFA-related publications submitted by Project members this year. They make the Archive part of the common and general conversation of research and learning.

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