News & Notes

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institute for the Study of Ancient Cultures
1155 East 58th Street
Chicago, Illinois 60637
isac.uchicago.edu

Membership Information
773.702.9513
isac-membership@uchicago.edu

Museum Information
isac.uchicago.edu/admission-hours-directions

Museum Shop
773.702.9510
isac-suq@uchicago.edu

Administrative Office
773.702.9514
isac-administration@uchicago.edu

Credits
Editors: Carter Rote & Andrew Baumann
Design & Layout: Josh Tulisiak

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On the cover: Network graph visualization of data from the Chicago Assyrian Dictionary, courtesy of the ISAC Data Research Center.

This page: Semantic energy landscape visualization of data from the Chicago Assyrian Dictionary, courtesy of the ISAC Data Research Center.

ISAC

Message from the Director



Three years ago, I had the remarkable experience of visiting two of ISAC's field projects, the Shamash Gate excavations at Nineveh in East Mosul, Iraq, and the ongoing work of the Epigraphic Survey in Luxor, Egypt. The Luxor visit included a tour of the restoration of the Taharqa Gate, part of the enclosure of the temple of Amun *Djeser-set*, the oldest monument in the sacred precinct at Medinet Habu—a project that Epigraphic Survey director Brett McClain describes in this issue. What made this experience remarkable was that we had just discovered at the Shamash Gate the remains of a stela dedicated to the Assyrian king Ashurbanipal, describing his campaign against the pharaoh Taharqa. The contrasting perspectives of these historic figures and their moment in ancient Near Eastern lore epitomize the extraordinary range and scope of the Institute's program of fieldwork.

Recent issues of *News & Notes* have shared news about exciting ISAC research initiatives in the computational and data sciences. In this issue, Foy Scalf, director of the ISAC Data Research Center (DRC), reports on another of these initiatives: "AI and Human–Environment History: Ancient Cultures, Modern Insights," which has just received a second year of seed funding as part of University of Chicago President Paul Alivisatos's AI Pillar initiative. As Scalf recounts, ISAC has enjoyed a long and distinguished history of interdisciplinary scholarship at the intersection of the humanities, social sciences, and physical sciences. At its most ambitious, this research has sought to engage the complex "grand challenges" of our day, partnering in the development of new research methods and tools, and participating in the pursuit of new frontiers of knowledge and discovery. Toward this end, I am pleased to announce that Schmidt Sciences has awarded ISAC an $800,000 grant through its Humanities and AI Virtual Institute to build an AI-assisted research platform that investigates why some ancient societies were able to weather climate shocks whereas others collapsed (bit.ly/4zn1mJx). Look for more reports on this important, developing research in forthcoming issues.

This fall witnessed the opening of the ISAC Museum's special exhibition *Hartapu: The Forgotten King of Anatolia*, featuring ISAC's newest field project in Türkiye: the Türkmen-Karahöyük Archaeological Project (TKAP). In his article in this issue, James Osborne, associate professor of Anatolian archaeology and TKAP associate director, describes the eventful and entertaining discovery of a monumental Hieroglyphic Luwian inscription, manifestly authored by the Great King Hartapu, and the launch of excavations at Türkmen-Karahöyük, one of the largest Bronze and Iron Age archaeological mounds in Türkiye, which amazingly had eluded investigation despite its enormous size and evident historical importance.

This fall also marked the appointment of ISAC's newest faculty member, Amber Jacob, as assistant professor of Egyptology. As Professor Jacob shares, her research focuses on the rich corpus of Demotic medical texts, and more broadly the study of ancient Egyptian medicine, magic, and religion. She completed her doctoral dissertation, "Medical Knowledge in Graeco-Roman Egypt: The Demotic Medical Papyri from Tebtunis (P.Tebt. Med.dem.)," at the Institute for the Study of the Ancient World (ISAW) at New York University. While at ISAW, she joined an international research collaboration called Scientific Papyri from Ancient Egypt in Cross-Cultural Perspective, which seeks to publish the wealth of ancient Egyptian scientific papyri in the Papyrus Carlsberg Collection in Copenhagen. She now plans to study the full corpus of Greek medical papyri from Egypt as well as to undertake the first synthetic study of ancient Egyptian pharmacological knowledge preserved in medical, magical, and embalming texts.

On October 4, 2026, we celebrated the sixtieth anniversary of ISAC's volunteer program. It was a warm, heartfelt gathering filled with many fond memories. Today, the volunteer program is thriving and continues to grow, as evidenced by Kate Ayres's conversation in this issue with Terry Friedman, our longest-serving volunteer, and Tim OBrien, ISAC's newest volunteer. We are deeply grateful for our volunteers' generous contributions and service.

I also wish to acknowledge the donation of 900 stereographs to ISAC's Archives by Lee Lane of Chicago. As detailed by ISAC archivist Allie Scholten and DRC director Foy Scalf, this unique and invaluable collection will support ISAC's research and teaching mission for many years to come.

Finally, I am pleased to announce the recent launch of ISAC's magnificent new website (isac.uchicago.edu), thanks to the collective efforts of many. Please explore and enjoy!

Timothy P. Harrison
Director

AI and Human–Environment History

Ancient Cultures, Modern Insights

BY FOY SCALF

ISAC wins competitive grant of $250,000 to lead a research pillar for the University of Chicago's AI initiative

In spring 2012, an interdisciplinary group of scholars supported by the National Science Foundation prepared to identify what they later called the "grand challenges for archaeology" in a 2014 editorial in the *Proceedings of the National Academy of Sciences* (Kintigh et al. 2014). Of the twenty-five challenges presented, more than half were related to how human beings shape or are shaped by their environment, including the impacts of climate change, societal responses to environmental stressors, and anthropogenic effects on the earth's natural systems. In fact, seven of the twenty-five challenges fell under a category labeled "human–environment interactions." With support from the University of Chicago's Artificial Intelligence (AI) Initiative, ISAC has begun addressing these grand challenges through an interdisciplinary collaboration applying neural networks, large language models, computer vision, and other computational methods.

The researchers of the 2014 editorial proposed central questions. For example, how do humans respond to abrupt environmental change? And how do humans perceive and react to changes in climate and the natural environment over the short and long term? They aptly described the difficulties scholars face in attempting to study these long-intractable issues:

> These challenges focus on understanding the dynamics of cultural processes and the operation of coupled human and natural systems, recognizing that humans—mediated by culture—both affect and are affected by their natural environments. . . . Although the challenges offered here situate archaeology squarely within the landscape of contemporary science, addressing them will require demanding, long-term cross-disciplinary collaborations that have the potential to yield transformative results with impacts cascading far beyond archaeology. (Kintigh et al. 2014, 879–80)

A decade later, the University of Chicago's AI Initiative created an opportunity to pursue precisely this kind of cross-disciplinary research. In spring 2025, the University released a call for competitive applications for a presidential AI Initiative with funding support for academic year 2025–26. ISAC director Tim Harrison and landscape archaeologist Mehrnoush Soroush responded to this appeal by forming an interdisciplinary research collaboration stretching across the humanities, social sciences, environmental science, climate science, and computer science. The goal of this collaboration is to address some of the most pressing issues of our time by looking to the past: Under what conditions have human societies proven resilient to environmental stresses, what infrastructural adaptations aided those successes, and how did political and social decisions lead to crises? These lines of inquiry not only offer the possibility of revealing new interpretations of the past but also may be instrumental in our future responses to environmental change.

Developing a New Research Vision and Scholarly Community

From the beginning, the University of Chicago's AI Initiative was conceived not simply as a mechanism for funding individual research projects but as an opportunity to develop new research domains. The call for proposals asked successful teams to use a year of support to formulate ambitious research agendas, build interdisciplinary scholarly communities, and identify areas in which the University of Chicago could make distinctive contributions to the future of AI. This mandate provided an opportunity to bring together several lines of research already developing at ISAC and elsewhere across the University around a larger question: How might new computational methods allow scholars to reconstruct the long history of interactions between human societies and their environments?

The initial preproposal proposed combining archaeology, philology, history, environmental and climate science, geospatial analysis, and computer and data science to investigate evidence ranging from satellite imagery and archaeological landscapes to texts, objects, and historical archives. ISAC provides an unusually strong foundation for such work. Its Center for Ancient Middle Eastern Landscapes (CAMEL) has already pioneered large-scale, digital landscape research, partnering with projects such as AI-Assisted Archaeological Remains Detection (A3RD), which was already experimenting with machine learning to identify ancient water-supply systems (qanats) and other archaeological features in satellite imagery (Soroush 2024). At the same time, ISAC's Integrated Database and major scholarly resources such as the Chicago Assyrian Dictionary represented enormous stores of structured and semistructured archaeological, linguistic, textual, and geographic information. The challenge was to determine how these resources might be brought into meaningful conversation with one another and with scientific reconstructions of past environments.

Preproposal support made it possible to broaden that conversation across campus with workshops that brought ISAC researchers into discussion with colleagues across research computing and data science, computer and geophysical sciences, spatial and urban studies, and digital humanities, including the University's Research Computing Center (RCC); Data Science Institute; Center for Spatial Data Science; Urban Theory Lab; Committee on Environment, Geography and Urbanization; Forum for Digital Culture; and ARTFL Project. Existing international collaborations through CAMEL and A3RD also connected the emerging initiative with the University of Oxford's Endangered Archaeology in the Middle East and North Africa project and France's National Research Institute for Agriculture, Food, and Environment. What began as an ISAC-centered proposal consequently developed into a much broader coalition of archaeologists, philologists, historians, geographers, climate scientists, computer scientists, and research-computing specialists. As the proposal developed, Harrison and Soroush were joined in its core leadership by Birali Runesha of RCC, Foy Scalf of the ISAC Data Research Center, and Neil Brenner of the Urban Theory Lab, creating a leadership team that itself crossed the disciplinary boundaries the project sought to bridge. The full proposal sought not simply to apply AI to ancient evidence but to develop methods capable of integrating geospatial, environmental, archaeological, historical, and textual data across very different scales of time and space.

One of the most important tasks was deciding what pitfalls to avoid. The possible applications of AI to historical research were nearly limitless, whereas the first year provided only limited time and resources. The team developed several criteria for selecting immediate pilot projects for

the research portfolio. A pilot needed to address the central themes of infrastructure, human–environment interaction, and resilience; it needed to draw on datasets held or controlled by the University, avoiding access and intellectual-property barriers; it needed to build on an established area of Chicago scholarly expertise; and it needed some existing technical proof of concept or prior research from which development could begin.

An essential part of this research program was the participation of climate and environmental specialists Alexander Arroyo, Sol Kim, Grga Bašić, and Brian Wilson. Their project, AI-Driven Integration of Archaeological, Archival, and Climate Proxy Data into Climate Models, approached the problem from the opposite direction from ISAC scholars: Rather than beginning with historical evidence and asking what environmental information could be extracted from it, the team worked to establish physically based reconstructions of past climates against which such evidence could be compared. They surveyed existing proxy records and climate datasets, developed methods for integrating new forms of evidence through climate reanalysis and data assimilation, and identified regions where archaeological and historical records were sufficiently rich to support meaningful comparison.

This work became a crucial methodological bridge between the humanities and geosciences. Climate reanalysis combines observations and proxy evidence with numerical models to reconstruct probable past conditions while explicitly accounting for uncertainty. The team generated large ensembles of climate simulations for variables such as surface temperature, sea surface temperature, sea ice, and El Niño–Southern Oscillation climate pattern variability, creating an independent environmental baseline to integrate with evaluations of historical testimony and archaeological patterns (fig. 1). The climate work thus established the physical framework needed to compare these two very different kinds of evidence without obscuring the ambiguities inherent in either one.

The resulting research portfolio consisted of complementary experiments rather than variations on a single methodological approach. Against the climate framework, A3RD approached the problem spatially, asking whether deep-learning methods could identify ancient water systems and other infrastructure across vast collections of historical satellite imagery and thereby recover landscapes that have subsequently been transformed

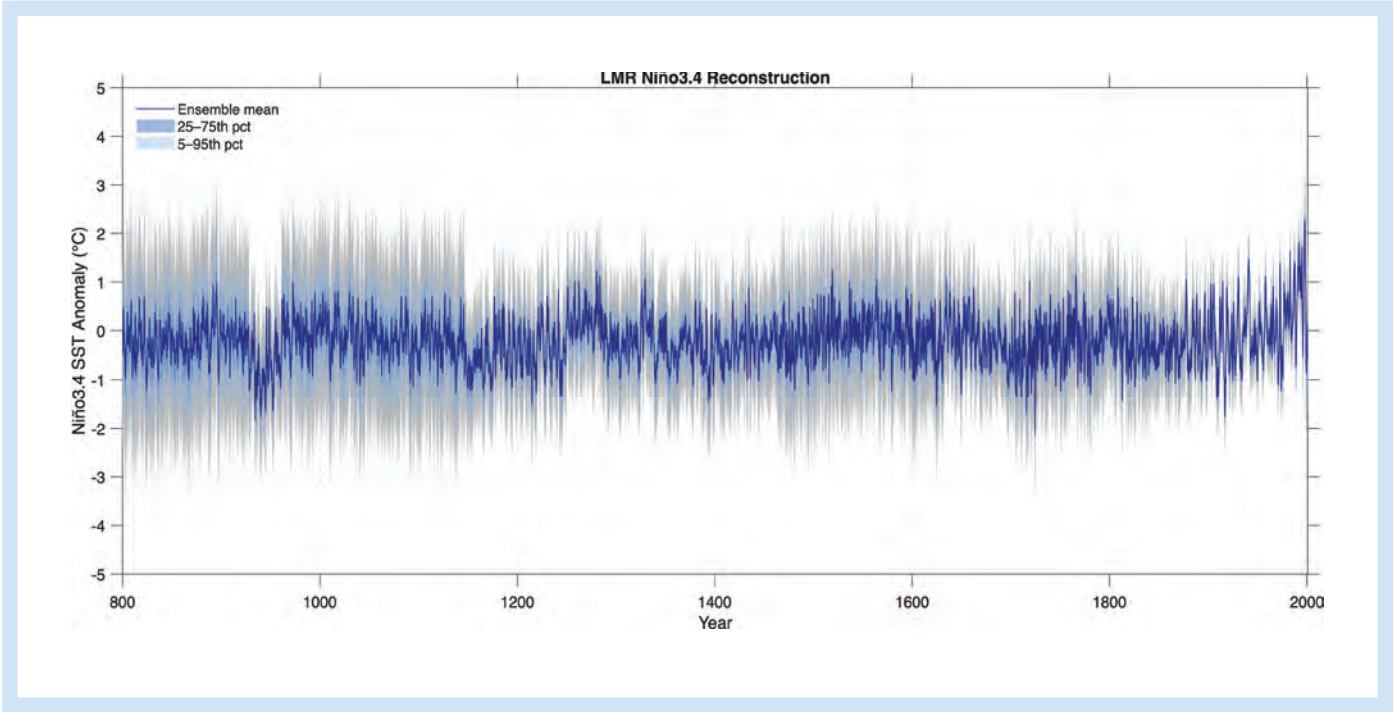

Figure 1. Reconstruction of sea-surface temperature anomalies in the Niño 3.4 region from 800 to 2000 CE, a commonly used measure of El Niño–Southern Oscillation variability. The dark blue line shows the mean of the reconstruction ensemble, while the shaded bands indicate the 25th–75th and 5th–95th percentile ranges, visualizing the uncertainty inherent in estimates of past climate conditions.

or destroyed. AI-Fusion Analysis of Infrastructure Adaptation in Ancient Mesopotamia approached the same problem through texts, by transforming the Chicago Assyrian Dictionary into structured, machine-readable data from which references to drought, flood, famine, agricultural stress, rivers, canals, and human responses to environmental pressure could be extracted, mapped, and eventually compared with paleoclimate evidence. Multi-Millennia Climate Reanalysis through Chinese Historical Records explored East Asian textual traditions, building an agentic AI platform to bring over two millennia of historical sources into systematic comparison with quantitative climate reconstructions. Global Seascapes and Coastal Entanglements Modeling (Mediterranean Journeys) joined climate science and critical geography to investigate changing coastlines, maritime connectivity, and the long-term relationship between environmental conditions and human movement. Supporting these research projects, RCC began developing shared geospatial infrastructure through which AI Pillar researchers could deploy models, analyze data, and visualize results.

The award began with a project-wide kickoff on November 12, 2025, followed by pilot "deep-dive" workshops in November and December, a climate-modeling strategy meeting in January, a workshop devoted to Chinese historical records led by the Forum for Digital Culture and ARTFL, and an "AI Deep Dive" training series that introduced participating researchers to machine-learning fundamentals, deep learning, and model evaluation, taught by Greg Shakhnarovich of the Toyota Technical Institute at Chicago. On May 28, 2026, the teams reconvened for a full-day conference hosted by RCC, at which the initial research projects presented their progress, confronted common methodological problems, and began constructing shared roadmaps for subsequent work (fig. 2).

The AI Pillar's initial research projects had begun as parallel investigations united principally by themes of climate, infrastructure, and resilience. Increasingly, however, they revealed a common methodological problem: How can fragmentary and qualitatively different forms of historical evidence be compared responsibly with one another and with quantitative, physically based models of past environments? The emerging answer places AI not in the role of an autonomous interpreter but as an instrument for structuring evidence, identifying patterns, generating hypotheses, and making comparisons at scales that would otherwise be impossible. Disciplinary expertise remains essential at every stage to determine whether those patterns constitute meaningful historical evidence. In this sense, the scholarly community created by the ISAC-led AI Pillar is as important as any individual algorithm. Its aim is to build a research framework in which archaeologists, historians, philologists, climate scientists, and computational researchers can ask questions together that none of those disciplines could adequately address alone.



Figure 2. Alexander Arroyo presents during the ISAC AI Pillar workshop hosted by the RCC in the Kathleen A. Zar Room on May 28, 2026. Photo by Mehrnoush Soroush.

The Grand Challenges: Why Now?

If the questions posed by archaeology's "grand challenges" are not new, why might they be more manageable now than a decade ago? The answer lies partly in the extraordinary development of AI, but not in any single recent innovation. Modern AI is the product of more than eighty years of experimenting with how information can be represented, how machines can learn patterns from examples, and how increasingly large collections of data can be analyzed computationally.

The history of these developments has a particularly interesting Chicago connection. In 1943, neurophysiologist Warren McCulloch and Walter Pitts, a largely self-taught logician who had attended classes at the University of Chicago as an unregistered student, published "A Logical Calculus of the Ideas Immanent in Nervous Activity." Together, they demonstrated mathematically how networks of simplified, artificial "neu-

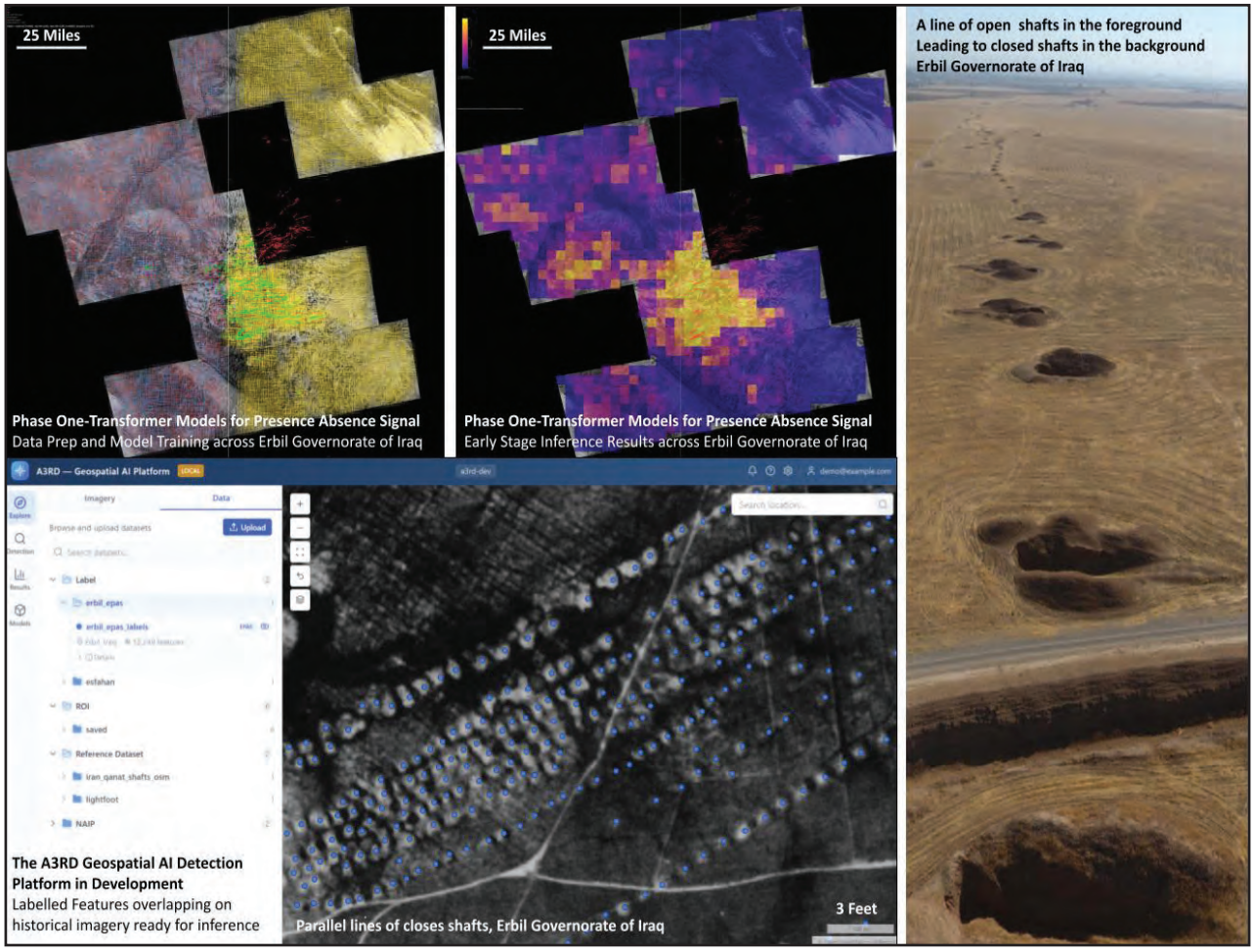

Figure 3. Examples of the imagery and archaeological features used by CAMEL and A3RD to develop automated detection of qanats. Declassified satellite imagery preserves traces of parallel shaft lines across landscapes that have subsequently been altered, while identified examples provide training and validation data for computer-vision models.

rons" could perform logical operations (McCulloch and Pitts 1943). Their model was highly abstract, but it established the foundational idea behind later neural networks that complex behavior might emerge from interconnected computational units rather than from a sequence of rules explicitly programmed by a human.

Although the popularity of AI applications has exploded in the past ten years, other underlying principles can be traced back to the development of information theory in 1948 by Claude Shannon—yes, that Claude. According to company lore at Anthropic, its AI assistant was named partly in his honor (Lewis-Kraus 2026). Shannon's seminal paper for Bell Labs, "A Mathematical Theory of Communication," formalized the bit as a unit of information and provided mathematical foundations for modern digital communication, thereby establishing information theory as a field of study (Shannon 1948). Two years later, Alan Turing published "Computing Machinery and Intelligence," replacing the difficult philosophical question "Can machines think?" with his famous "imitation game," later known as the Turing test (Turing 1950): Could a human interrogator reliably distinguish a machine from a human through their responses?

With Shannon's bits and Turing's artificial intelligence, the groundwork was laid for the information revolution of the late twentieth century. Frank Rosenblatt's 1958 "perceptron" demonstrated that an artificial neural network could adjust the strengths, or "weights," of its connections in response to examples (Rosenblatt 1958). In 1986, David Rumelhart, Geoffrey Hinton, and Ronald Williams showed how backpropagation could train more complex networks by repeatedly adjusting those weights according to the errors the system made (Rumelhart, Hinton, and Williams 1986).

These methods became especially powerful for images, a field now known as computer vision.

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By the 1990s, Yann LeCun and his collaborators had demonstrated the effectiveness of convolutional neural networks for visual recognition (LeCun et al. 1998). In 2012, Alex Krizhevsky, Ilya Sutskever, and Geoffrey Hinton combined deep networks, large training datasets, and graphics-processing units to achieve a dramatic improvement in the ImageNet image-recognition competition, helping inaugurate the current era of "deep learning" (Krizhevsky, Sutskever, and Hinton 2012). For our purposes, the significance is immediate: Similar families of computer-vision methods can be trained to recognize not cats or automobiles but the traces of canals, qanats, roads, settlements, and other infrastructure preserved in aerial and satellite imagery. A collection such as CAMEL's vast archive of historical imagery can consequently be examined at a geographic scale impossible through manual inspection alone (fig. 3).

Language underwent a comparable transformation. In 2017, Google researchers published a new stepping-stone in AI development in the now-famous paper "Attention Is All You Need," where they introduced the transformer architecture underlying many of today's AI systems (Vaswani et al. 2017). Rather than processing every word merely as the next item in a sequence, the transformer's "attention" mechanism allows a model to calculate relationships among different parts of an input and determine which ones are most relevant to one another (through vector embedding, where words are converted to numbers representing their interrelationships). Just as importantly, transformers are highly amenable to parallel computation and therefore to training on enormous corpora.

Subsequent systems, such as BERT (2018) and GPT-3 (2020) demonstrated how transformer models could be pretrained on enormous bodies of language and then adapted to an increasingly wide range of specialized and general linguistic tasks (Devlin et al. 2019; Brown et al. 2020). These developments are especially consequential for research on the ancient world. Rather than simply searching digitized texts for predetermined words, language models can assist in recognizing damaged or unusual text, extracting entities and concepts, classifying passages, relating expressions that are semantically similar but lexically different, and converting enormous bodies of scholarship into structured evidence. For the AI Pillar, such methods offer ways of interrogating the Chicago Assyrian Dictionary, Chinese historical records, and multilingual historical archives for evidence of drought, flooding, agricultural stress, changing waterways, infrastructure, human movement, and societal responses to environmental change. For the Pillar, this methodology makes it possible to compare patterns extracted from texts, archaeological landscapes, and other historical evidence with independently reconstructed environmental conditions.

Readers may be surprised to learn that ISAC actually has a long history of engaging with similar cutting-edge technology, from James Henry Breasted's use of photography in the late nineteenth century to Janet Johnson's adoption of scanners in the second half of the twentieth century. Faculty members such as Gene Gragg and Miguel Civil were likewise early adopters of computational methods. Among Civil's collection of pamphlets was a final administrative report for the "Project for Machine Translation and General



Figure 4. Pamphlet from the files of Miguel Civil containing an administrative report for the Project for Machine Translation.

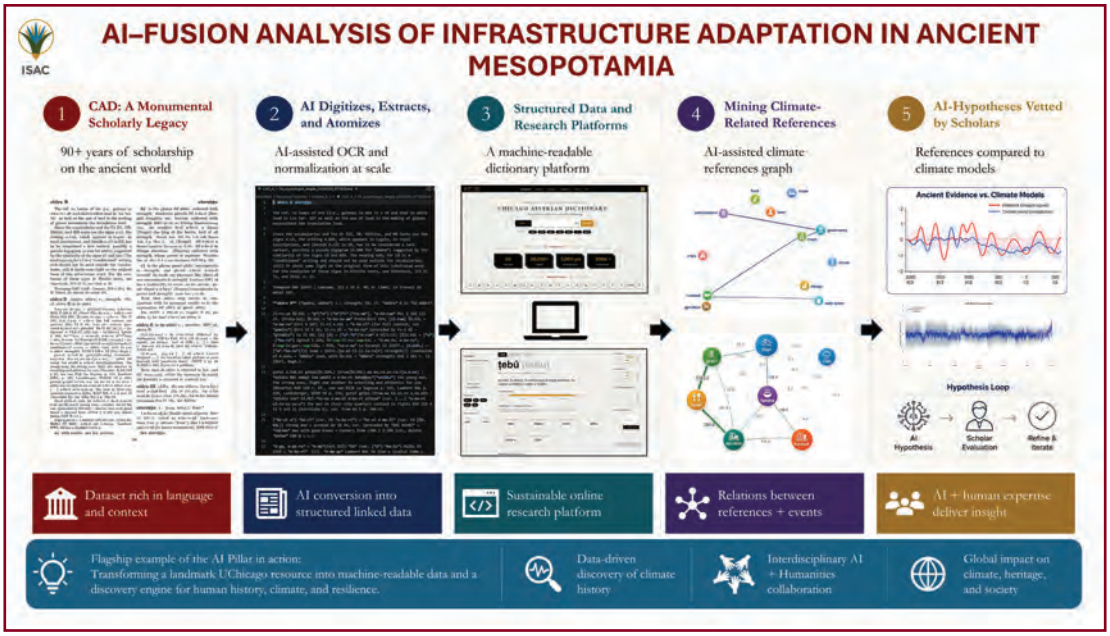

Figure 5. The AI-Fusion Analysis of Infrastructure Adaptation in Ancient Mesopotamia workflow uses AI-assisted optical character recognition, extraction, and classification to transform the Chicago Assyrian Dictionary into structured and machine-readable evidence, relate environmental and infrastructural references to climate data, and return resulting hypotheses to scholars for evaluation.

Automated Linguistic Systems," written by William S.-Y. Yang for the National Science Foundation in 1967 (fig. 4). This project for machine learning had been underway since 1958! These beginnings provided the foundation for ISAC's computational landscape today, from David and Sandy Schloen's work with the Online Cultural and Historical Research Environment (Schloen and Prosser 2023) to the AI Pillar.

What has changed, therefore, is not simply that computers have become "smarter." Digitized archaeological archives, historical corpora, satellite imagery, climate reconstructions, vastly increased computational power, and new methods for extracting patterns from text and images have matured simultaneously. The opportunity before us is to bring these very different forms of evidence into structured, auditable comparison while retaining expert judgment about what they mean. That convergence makes it possible to return to archaeology's grand challenges with tools their authors could only partly have anticipated. The AI Pillar's first year provided an opportunity to test what this convergence could mean in practice.

Addressing the Grand Challenges in 2026 and Beyond

The work of the Pillar during its first year has reinforced a distinction that is fundamental to the study of human–environment interaction: Historical evidence tells us how people experienced, described, and responded to environmental conditions; climate reconstruction attempts to establish what the physical system itself was doing; and landscape analysis serves as a contextual layer bridging historical change and its archaeological remains. One cannot simply stand in for the other. A reference to famine in ancient texts is not a thermometer, just as a reconstructed decline in precipitation does not tell us how a particular community understood or responded to drought. The larger goal is therefore to compare these different forms of evidence systematically while preserving the uncertainties, biases, and limitations particular to each of them. By the end of the first year, this problem became the methodological center of the AI Pillar.

Two ISAC projects illustrate how this approach can transform familiar scholarly resources. The first begins with one of the Institute's most important achievements: the Chicago Assyrian Dictionary (CAD), a twenty-one-volume lexicon produced over some ninety years and containing approximately 28,000 Akkadian lemmas (headwords) drawn from tens of thousands of cuneiform texts spanning nearly three millennia (Reculeau 2026). Traditionally, investigating a question such as how ancient Mesopotamians responded to drought, flooding, or the failure of irrigation infrastructure would require specialists to identify and assemble relevant passages individually from this immense scholarly corpus. Under the

AI Pillar, the CAD, led by Assyriologist Hervé Reculeau, has instead become the foundation for an experimental research environment in which AI-assisted optical character recognition, normalization, natural-language processing, and human review convert the printed dictionary into structured, machine-readable evidence (fig. 5).

An initial experiment concentrated on just three CAD volumes—A/1, A/2, and P—but nevertheless identified 1,467 references assigned to eight environmental and infrastructural categories, including storms, floods, drought, famine, agricultural stress, pestilence, changes to rivers and canals, and infrastructure adaptation (fig. 6). Of these, 219 could be geolocated by linking the extracted data with external cuneiform resources such as the Cuneiform Digital Library Initiative, while 272 could be assigned to one of twelve historical periods. Instead of remaining isolated quotations on dictionary pages, these references can now be explored through maps, chronological visualizations, and networks linking words, places, periods, and environmental phenomena. The purpose is not to ask an AI system to decide whether climate caused a historical event; it is to expose patterns at a scale that allows scholars to formulate better questions—for example, whether references to particular forms of water management cluster in specific periods or regions, or whether changes in the vocabulary of agricultural stress correspond in meaningful ways with independently reconstructed environmental conditions.

A complementary approach is being developed through A3RD, directed by Mehrnoush Soroush and CAMEL. Here, the evidence is not textual but archaeological. CAMEL's collections of declassified Cold War–era satellite imagery preserve visual evidence of the archaeological material of Middle Eastern landscapes before many of them were transformed by urbanization, mechanized agriculture, dam construction, and other modern development. Deep-learning methods can examine this imagery for traces of ancient infrastructure—particularly canals, qanats, settlements, agricultural systems, and transportation networks—across areas far larger than an archaeologist could survey manually. During the first year, the A3RD team and RCC constructed a working pipeline that takes imagery from ingestion through machine-learning inference to interactive mapping, expanded the datasets used to train the system, and systematically tested where the models succeeded and failed. That evaluation led the team to shift its computer-vision approach from semantic-segmentation methods toward object detection, which has appeared more promising in scaling efficiency and detection accuracy.

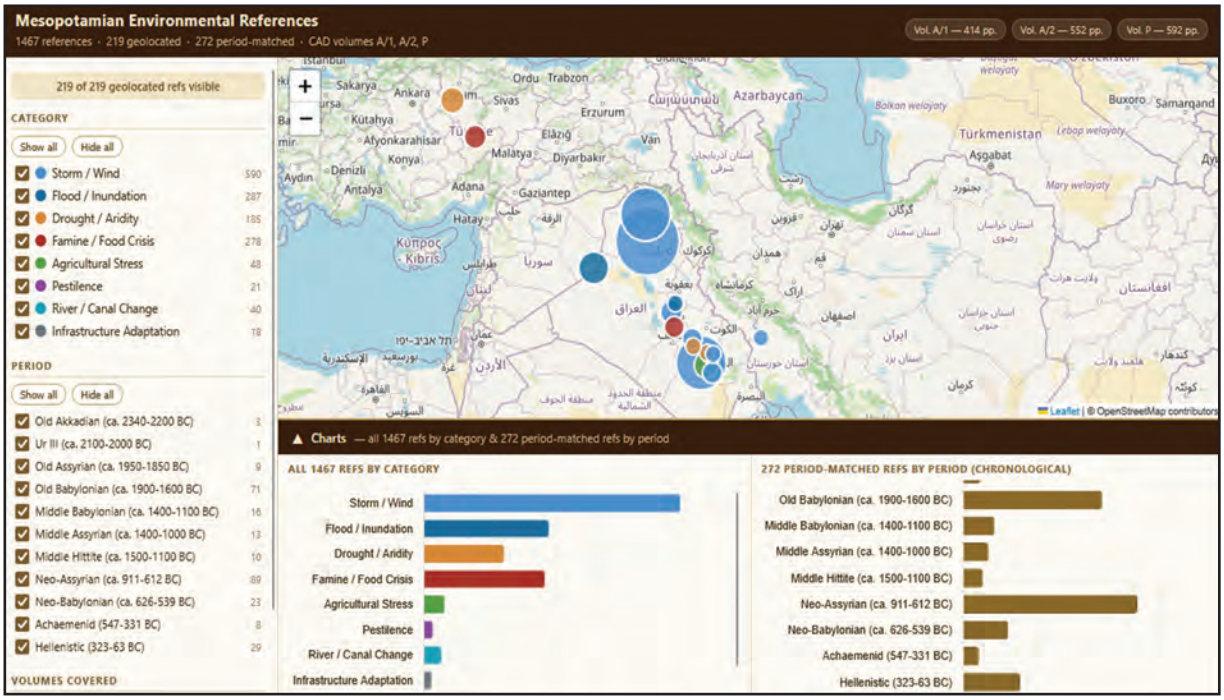

Figure 6. Prototype visualization of environmental and infrastructural references extracted from the Chicago Assyrian Dictionary, using volumes A/1, A/2, and P.

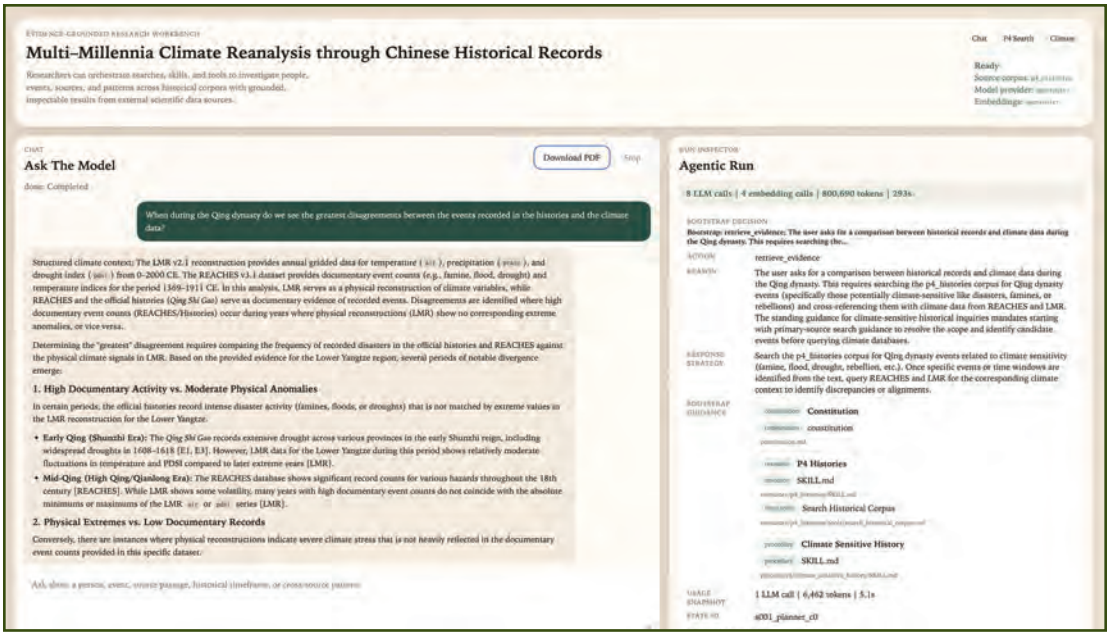

Figure 7. Prototype research workbench for the Multi-Millennia Climate Reanalysis through Chinese Historical Records project. The interface allows researchers to pose questions across historical corpora and compare the resulting evidence with independent climate reconstructions. In this example, the system investigates periods of disagreement between Qing-dynasty documentary records and reconstructed climate conditions, highlighting both convergences and discrepancies between historical testimony and physical climate data.

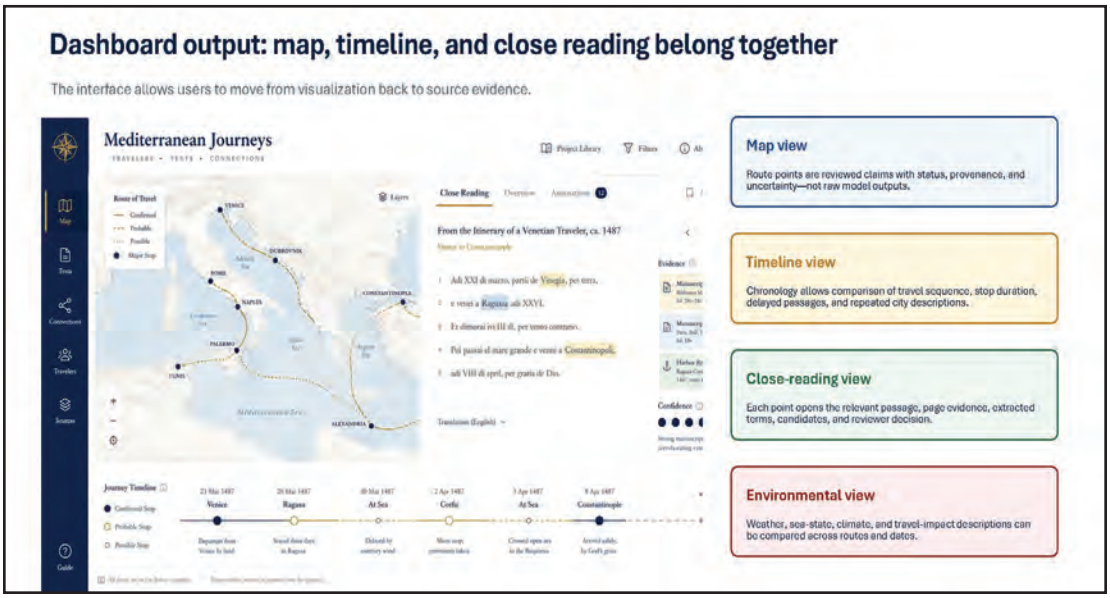

Figure 8. The Mediterranean Journeys pilot reconstructs the movements recorded in early-modern travel narratives by combining AI-assisted text processing with historical place identification and geospatial mapping. The project's interactive dashboard links reconstructed routes and locations back to the passages, dates, and source evidence supporting each identification, allowing scholars to review and validate the results rather than treating machine-generated locations as definitive.

Together, the CAD and A3RD begin to address the same historical problem from opposite directions. The CAD can reveal what ancient sources say about rivers, canals, agricultural stress, and human responses to environmental disruption; A3RD can recover physical traces of the infrastructures through which communities managed those landscapes. Climate reconstruction supplies a third, independent line of evidence. The AI Pillar's climate teams have generated model-based reconstructions of temperature, sea surface conditions, sea ice, and large-scale climate variability, while the Multi-Millennia Climate Reanalysis project has created a prototype environment linking two millennia of Chinese historical testimony with scientific climate

datasets (fig. 7). The system retrieves dated historical passages alongside climate-model output and highlights places where the two bodies of evidence appear to converge—or diverge—for scholarly evaluation. Related work through the Mediterranean Journeys pilot tested whether similar methods could operate across different languages, periods, and genres. During the first year, the project processed twenty-two early-modern travel narratives and developed a multilingual workflow for identifying historical places, reconstructing journeys, and linking mapped locations back to the passages and dates on which those identifications depend (fig. 8).

This last point is critical. Ancient and historical archives are profoundly uneven. The number of references to drought in a corpus may reflect what happened in the past, but it may equally reflect what scribes chose to record, what documents happened to survive, where archaeologists excavated, and what modern scholars subsequently published and indexed. Scaling an analysis with AI can magnify those biases just as efficiently as it can reveal genuine patterns. For that reason, the Pillar has adopted an explicitly expert-in-the-loop approach, in which disciplinary specialists review and validate computationally identified patterns before they are treated as historical evidence. Assyriologists, archaeologists, historians, geographers, climate scientists, and computer scientists remain responsible for deciding whether those patterns constitute meaningful evidence.

The next phase will test whether these methods can move from a promising research portfolio to a reusable research framework. The CAD will expand beyond the printed volumes and connect textual references with additional archaeological and cuneiform resources; A3RD will apply its revised detection models across larger survey regions; building on the geospatial infrastructure developed with A3RD (fig. 9), RCC will move the AI Pillar's shared interactive platform toward broader use across projects; and the historical-climate framework will be tested against additional ancient, medieval, and early modern corpora. Together, these efforts will test whether the methods developed during the Pillar's first year can scale from individual experiments into a durable framework for research on human–environment interaction.

The Future of Computation in Ancient World Studies

The breakthrough is not that a machine can simply know the facts about the past. The real breakthrough is that we can now bring kinds and quantities of evidence together that no individual scholar could previously examine at once. Using computational tools does not automate historical interpretation; it changes the scale and range of

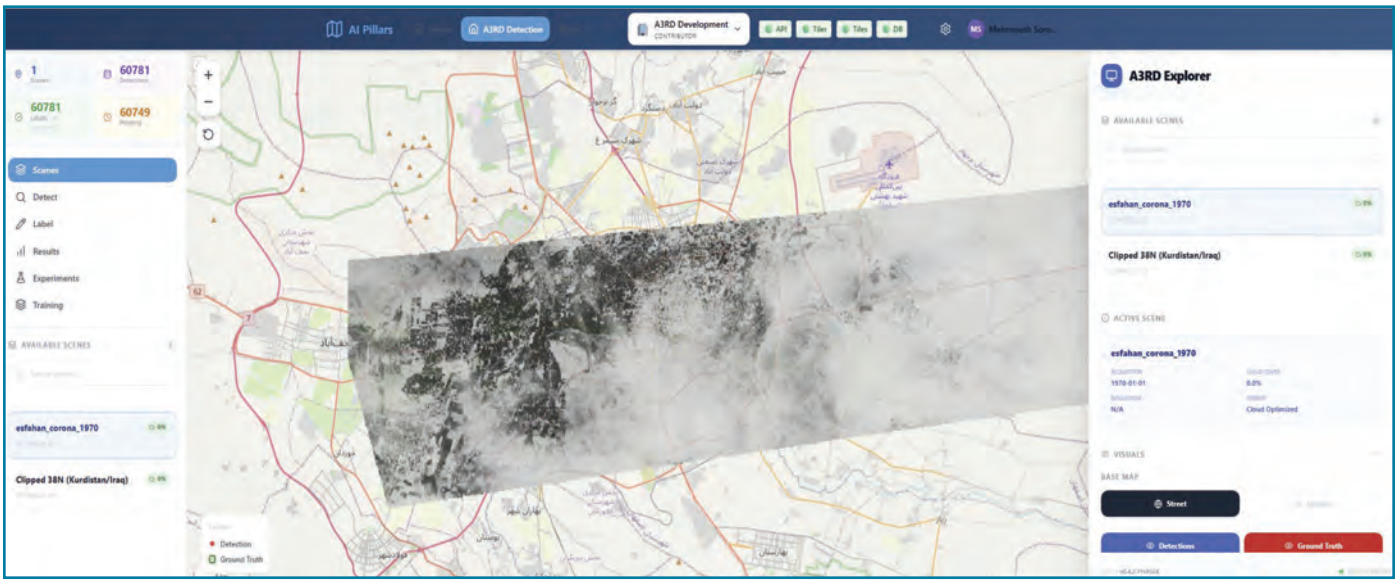

Figure 9. The CAMEL–A3RD–RCC geospatial AI platform developed to support AI-assisted detection of archaeological features in historical satellite imagery. The interface brings together source imagery, mapped ground-truth data, model detections, training workflows, and experiment results in a shared research environment, allowing archaeologists and computational researchers to evaluate and refine automated feature identification across large landscapes.

evidence through which interpretation can proceed. Archaeological landscapes, cuneiform texts, historical narratives, satellite imagery, material culture, and climate reconstructions can increasingly be structured, searched, mapped, and compared across scales extending from individual objects and passages to regions and millennia. That ability alone has the potential to transform research on the ancient world.

Yet, scale is only a small part of the overall potential. The more consequential achievement of the AI Pillar will be the creation of new research domains at the intersections of disciplines that have traditionally operated largely apart from one another. Questions about human responses to drought, changing waterways, agricultural stress, migration, or the construction and abandonment of infrastructure cannot be answered adequately by archaeology, philology, climate science, geography, or computer science in isolation. They require methods for moving between physical environments and human testimony, between models and historical particulars, and between patterns detected computationally and evidence evaluated by specialists. From its inception, the Pillar was therefore conceived not simply as a collection of AI projects but as an effort to create new trajectories of knowledge through sustained interdisciplinary collaboration.

This approach shifts our conceptualization of the role of computation itself. AI should not become a separate technical layer applied after scholars have formulated their questions. Nor should archaeologists and historians simply provide datasets for computer scientists. The most productive work occurs when the research questions, datasets, computational methods, and standards of evidence are developed together. Global Seascapes and Coastal Entanglements Modeling offers one example of this approach, bringing climate scientists and critical geographers together to develop a shared analysis of changing coastlines and oceanic connectivity rather than simply passing data or results from one discipline to another. The project connects environmental and geospatial change with the ways maritime space is described across historical narratives, languages, and periods, while preserving the uncertainty inherent in identifying historical places. An archaeologist's understanding of landscapes can reshape a computer-vision model; a philologist's assessment of ambiguity can change how textual evidence is classified; and a climate scientist's treatment of uncertainty can determine whether an apparent historical correlation is meaningful at all.

The first year of the AI Pillar has begun to build precisely this kind of scholarly community. Its future lies in extending that model by developing reusable tools and shared research infrastructure, training students to work across disciplinary boundaries, opening new datasets and methods to scholars elsewhere, and forging collaborations capable of asking questions that no existing field is equipped to pursue alone. If successful, the lasting contribution of the Pillar will therefore not be any single algorithm or platform. It will be a new way of studying the human past—one in which computation helps create not only new answers but also new questions, new collaborations, and ultimately new fields of inquiry.

Acknowledgments

A project with the scale and interdisciplinary breadth of the ISAC AI Pillar depends on the contributions of a wide range of faculty, staff, students, interns, and other collaborators. We are grateful to all who have contributed to its first year. The appendix identifies the leadership teams of the Pillar's principal components, although no such list can fully capture the extent of the collaboration across projects, departments, and disciplines.

Appendix: ISAC AI Pillar Leadership and Project Teams

AI Pillar Leadership

Principal investigator: Tim Harrison
Coprincipal investigators: Mehrnoush Soroush, Birali Runesha, Foy Scalf, Neil Brenner

Cross-Cutting Research and Technical Collaborators: *These teams provide research computing, data science, and AI expertise across multiple Pillar projects.*

Research Computing Center
Birali Runesha, Parmanand Sinha, Mohsen Zand, Himanshi Yadav, Ross Hyman

Toyota Technological Institute at Chicago
Greg Shakhnarovich, Xiaodan Du

Pilot Project Leads and Core Teams: *These teams lead the Pillar's individual research projects*

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and coordinate their scholarly and technical development.

AI-Driven Integration of Archaeological, Archival, and Climate Proxy Data into Climate Models
Alexander Arroyo, Sol Kim, Grga Bašić, and Brian Wilson

AI-Assisted Archaeological Remains Detection (A3RD)
Mehrnoush Soroush, Dominik Lukas, Yuwei Zhou, Jiayue Wang, Nuttita Pophet, Rémi Cresson, Bijan Rouhani

Multi-Millennia Climate Reanalysis through Chinese Historical Records
Jeff Tharsen, Clovis Gladstone

AI-Fusion Analysis of Infrastructure Adaptation in Ancient Mesopotamia
Hervé Reculeau, Foy Scalf, Christian Borgen

Global Seascapes and Coastal Entanglements Modeling (Mediterranean Journeys)
Niall Atkinson, Brooke Luetgert

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Exhibiting Hartapu

Putting Iron Age Kingship on Display

BY JAMES OSBORNE

Readers who have been following ISAC's research in Anatolia are, by now, familiar with a discovery made in 2019 that has excited Iron Age specialists ever since: That summer, archaeologists from ISAC and a team led by Michele Rüzgar Massa from Bilkent University in Ankara, Türkiye, discovered a stone stela with a Hieroglyphic Luwian inscription composed by "Great King Hartapu," in which he claims to have defeated the great Iron Age kingdom of Phrygia as well as thirteen local rulers (fig. 1). Since 2019, Anatolian scholarship has been consumed by the many questions the inscription raises: What was the name of Hartapu's kingdom, and why does it not appear in contemporary texts? How could a kingdom allegedly powerful enough to defeat Phrygia escape our attention all these years? When, exactly, did Hartapu reign? Why does the inscription use two different modes of writing—hieroglyphs both incised and in relief—and even spell the ruler's name two different ways? Should Hartapu and his kingdom be understood as the cultural descendants of the Late Bronze Age Hittite Empire, or do they belong to a new cultural formation?



Figure 1. The inscription now referred to as TÜRKMEN-KARAHÖYÜK 1, authored by "Great King Hartapu." Photograph by Jennifer Jackson.

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Figure 2. Türkmen-Karahöyük from the west. Photograph by Michele Rüzgar Massa.

These questions, and many others, led Dr. Massa and me to launch the Türkmen-Karahöyük Archaeological Project (TKAP), a large-scale excavation at the site where the inscription was found (fig. 2). But it also made me want to tell Hartapu's story to a wider audience, especially to non-Anatolian specialists who might otherwise never hear of him or the place in which he lived. The special exhibition currently on display at the ISAC Museum—*Hartapu: The Forgotten King of Anatolia* (September 17, 2026–March 14, 2027; isac.uchicago.edu/kinghartapu)—seeks to accomplish this goal of sharing Hartapu and the remarkable site of Türkmen-Karahöyük with the public.

As soon as the decision was made to organize an exhibition on Hartapu and the nature of Iron Age Anatolian kingship more broadly, several significant challenges became apparent. The most immediately impactful one is the fact that cultural-heritage preservation laws in Türkiye prevent the export of artifacts to other countries, including the United States: There would therefore be no new finds on display in the exhibition, including, of course, the Hartapu inscription itself. One might try to get around this obstacle by exhibiting artifacts from Iron Age Anatolian royal culture already in North America, but investigating that possibility brought us rapidly to a second challenge: Iron Age Anatolia has historically been neglected by Near Eastern archaeology generally, with very few relevant collections in non-Turkish museums. The Anatolian collections stewarded by the ISAC Museum, for example, focus heavily on the Syro-Turkish border region in southeastern Türkiye, close to, but culturally not quite the same thing as, the Anatolian plateau. Even the collections of the Penn Museum—an institution famous for its longstanding excavations at Gordion, the capital of Phrygia—does not include objects that would make for a fitting loan; the most spectacular finds from Gordion reside permanently in Ankara's Museum of Anatolian Civilizations.

Showing visitors anything about Hartapu or the site of Türkmen-Karahöyük was going to need some creative approaches. We experimented with several new technologies and modes of explanation to communicate the excitement of the discovery and the wonder of Türkmen-Karahöyük. Instead of the actual object, the centerpiece of the exhibition is a 3D-printed replica of the Hartapu inscription; instead of wall text being the only way to learn about the object, Massa and I give an on-site interview on video so that viewers can see the exact location where the inscription was found; and instead of royal finds from the plateau, we exhibit royal culture from southeastern Türkiye by way of contrast with the lesser-known central Anatolia. Through such communication strategies, *Hartapu: The Forgotten King of Anatolia* expresses multiple themes about Iron Age Anatolia to the audience.

Monumental Claims: The Hartapu Inscription

Hartapu's inscription, which scholars refer to as TÜRKMEN-KARAHÖYÜK 1, was found only in 2019 but made an immediate impact on the world of Anatolian scholarship. Perhaps most exciting was its mention of Hartapu's conquest of Mushka, the ancient Near Eastern term for the kingdom known as Phrygia in later Greek sources. Hartapu's previously unknown kingdom must have been mighty indeed—more powerful



Figure 3. 3D-printed replica of the Hartapu inscription on display in the special exhibition.

than Phrygia itself, if Hartapu is to be believed. Whether or not that was actually the case, it cannot have been too wildly exaggerated for Hartapu to be able to make the claim with a straight face. As soon as it was translated by ISAC Hittitologists Petra Goedegebuure and Theo van den Hout, Hartapu's inscription made a deep impact on Anatolian scholarship.

Of course, the original stone remains in Türkiye, where it rests in the storerooms of the Konya Archaeological Museum, not currently visible even in its home country. We solved the problem of accessibility in a few ways. First, photographer Jennifer Jackson conducted reflectance transformation imaging on the inscription, a photographic technology that allows the inscription to be viewed under every angle of the light source. A video demonstrating the technique is included in the exhibition. Second, we partnered with the University of Chicago's Materials Research Science and Engineering Center and Stratasys to create a 3D-printed replica of the inscription, working from hundreds of photographs taken from every possible angle (fig. 3). Although the 3D-printed version on display does not capture the shallowly incised hieroglyphs in full detail, it does a remarkable job of giving the viewer an accurate sense of its physical and material properties. Finally, a video of Massa and me describing our excitement the day we found the inscription—shot on the spot where it was actually found—and the subsequent excavation project the discovery inspired helps highlight the human side of scientific discovery.

Hidden in Plain Sight: The Türkmen-Karahöyük Archaeological Project

The site of Türkmen-Karahöyük, where Hartapu's inscription was found, went almost completely unnoticed by scholars until it was identified by the Konya Regional Archaeological Survey Project in 2017. This ignorance is remarkable because Türkmen-Karahöyük is gigantic. The mound itself is 30 hectares in area and looms a full 35 meters over the surrounding plain, a height that accumulated over 3,000 years of continuous occupation from the start of the Early Bronze Age until the end of the Hellenistic period. When off-mound cemeteries and outer settlements from various periods are added, the site's total size reaches at least 150 hectares.

Scholarship has not been wholly unaware of Türkmen-Karahöyük's existence, however. In fact, a pioneering Hittitologist named Emil Forrer visited the Konya Plain in 1926 and sketched the mounds he encountered in his travel diary, along with brief descriptions. Forrer never published his discoveries, however, so his account of his visit to Türkmen-Karahöyük, which he referred to as "the colossal Kara-Hüyük," was never shown to others. Forrer's diary is in the possession of the German Oriental Society, which unfortunately declined our request to display Forrer's sketch of the site, a scholar's first attempt to grapple with Türkmen-Karahöyük exactly 100 years ago. But the sketch is remarkably accurate and surprisingly close to TKAP's own plan of the mound made with sophisticated digital technologies. (Interestingly, two years later Forrer was hired by ISAC, then known as the Oriental Institute, to launch new research initiatives in Anatolia. But he was released from his contract in 1931 when those initiatives never materialized.)

Although Türkmen-Karahöyük was not widely known before the discovery of Hartapu's inscription, Hartapu himself had been identified as an Anatolian ruler by the famous explorer and archaeologist Gertrude Bell in the early twentieth century. Bell and her traveling partner, Sir William Ramsay, were shown several inscriptions authored by Hartapu in the vicinity of Binbirkilesi (Turkish for "The Thousand and One Churches"), a district with several dozen Byzantine churches scattered on the slopes of Karadağ, an extinct volcano about 25 kilometers south of Türkmen-Karahöyük. At the very summit of Karadağ, tucked inside a Byzantine church that today is itself located within a mod-

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Figure 4. View to the north over the crater of Karadağ; to the right is the peak, with the modern military installation (the location of Hartapu's dedication) clearly visible. Photograph by Michele Rüzgar Massa. *Inset:* Hartapu inscription known as KARADAĞ 1. Photograph by Volker Höhfeld, courtesy of Wikimedia Commons.



Figure 5. KIZILDAĞ 1, with Hartapu seated on a throne. Photograph courtesy of the Konya Regional Archaeological Survey Project.

ern military compound (and thus inaccessible to the public), Great King Hartapu dedicates the mountain to the Celestial Storm-god in a brief inscription (fig. 4). Halfway between Karadağ and Türkmen-Karahöyük, Hartapu placed additional inscriptions on the much smaller mountain of Kızıldağ, including a picture of himself seated on a throne (fig. 5). Less than 100 meters away from that depiction is the inscription known as KIZILDAĞ 4, a longer text in which Hartapu claims to have defeated none other than the Mushka—the very same boast made in the inscription from Türkmen-Karahöyük. It is now apparent that Hartapu converted this portion of the Konya Plain into an integrated politico-religious landscape. Very likely, he imitated his predecessors of the Late Bronze Age Hittite Empire a few centuries prior and conducted ritual processions from Türkmen-Karahöyhük to Kızıldağ and Karadağ, performing rituals along the way.

Although TKAP's excavations at Türkmen-Karahöyük may have been inspired in large part by the discovery of Hartapu's inscription, our ambitions extend well beyond the Iron Age. TKAP aims to construct a millennia-long portrait of human–environment interaction in southern Anatolia; to trace the trajectory of social and political complexity in the Konya Plain; and to understand the plain's role in the circulation of raw materials, commodities, and technologies across the region.

Displaying Power: Kingship in Iron Age Anatolia

One aspect of Iron Age Anatolia that the inscription immediately brings to mind is the nature of royal authority. How was kingship practiced? Was it full of pomp and circumstance, as we imagine the royal families of Europe, or something altogether different? These questions are extremely difficult to answer in our current state of knowl-



Figure 6. Column base from porticoed entrance to the Iron Age palace at Tell Tayinat, ancient Kunulua.



Figure 7. Alişar IV ware krater with stag silhouettes.



Figure 8. Iron Age pit with stag antler and painted wine krater. Photograph by Nathan Lovejoy.

edge about Iron Age society in Anatolia. We simply have not conducted sufficient archaeological field research to make informed statements about how Hartapu and contemporaries communicated their authority.

However, there do seem to be preliminary indications of noticeable differences between royalty as expressed in the Anatolian plateau, including the region of Hartapu's kingdom, versus in the Syro-Anatolian region along the Turkish-Syrian border, where decades of exploration of contemporary city-states have furnished tremendous amounts of information. At Tell Tayinat, for example—the Neo-Hittite city of Kullanua, capital of the kingdom of Patina—ISAC archaeologists have unearthed imposing palaces (including elaborately carved column bases from porticoed entryways), monumental statuary, and royal inscriptions in publicly prominent venues in the urban fabric (fig. 6). Fragments from a monumental, inscribed throne statue are on display in the exhibition (ISACM A27861A–B), as is a cast of a royal statue fragment (ISACM C5676) found near Zincirli, the site of another ISAC excavation. In this Iron Age society, in other words, kingship appears to have been effected in ways that seem fundamentally familiar to us: via monumental arts and bombast.

On the Anatolian plateau, however, kingship appears slightly different. After several decades of excavating at Gordion, the capital of Phrygia (i.e., Mushka), for example, archaeologists have yet to unearth anything resembling a palace, despite finding large buildings everywhere they dig. As archaeologists have come to realize for Hittite royalty during the preceding Late Bronze Age, it seems that Anatolian kingship was emphasized as much by performance as by monumentality. We know that kings in the southeast used performance too, but on the plateau it appears to have been the very essence of what made a good king, and what made his rule appear legitimate. Successful stag hunts, for example, were a common part of Hittite royal discourse in texts and in visual culture, and in the Iron Age it is probably not coincidental that we see stags painted in silhouette on elite ceramic wine-preparation vessels, known to scholars as Alişar IV ware (fig. 7). At Türkmen-Karahöyük, an Iron Age pit produced an antler from a ten-point stag next to a similarly painted vessel, presumably deposited there following the celebration of a hunt (fig. 8). We do not know whether that celebration was associated with royal or, more likely, elite individuals, but it is evocative of the kinds of things one needed to do to legitimize one's authority in Iron Age Anatolia.

Between Two Empires: Türkmen-Karahöyük's Relations with Phrygia and the Neo-Assyrian Empire

The Konya Plain, where Türkmen-Karahöyük is situated and where Hartapu's kingdom was located, is squarely between the kingdom of Phrygia to the north and west and the heartland of the Neo-Assyrian Empire to the south and east. We know from Assyrian textual records that Assyria

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and Phrygia were in regular contact. It is thus mysterious that Hartapu, unlike other local rulers in south-central Anatolia, never features in Assyrian records. Perhaps the cuneiform tablets that mention him still lie buried, awaiting discovery by archaeologists.

Certainly, Hartapu would have been all too aware of these geopolitical heavyweights, especially since both of them very likely traveled across the Konya Plain in their engagements and conflicts with each other. The so-called Sargon Cylinder—excavated by ISAC archaeologists at Dur-Sharrukin (modern-day Khorsabad) and on display in the exhibition (ISACM A17587)—records the famous Assyrian ruler Sargon II's campaigns into Anatolia to fight against Phrygia; it even names Phrygia's ruler, Mita, whom we know as Midas, he of the famously golden touch. Sargon would go on to die in battle somewhere in Anatolia, probably not far from Türkmen-Karahöyük.

But such political conflicts brought with them the opportunity for cultural exchange. Hartapu and everyone living in his kingdom would inevitably have been exposed to Phrygian and Assyrian visual culture, for example, and learned to use and even make pottery in foreign styles, to give just two examples of cultural influence visible to archaeologists.

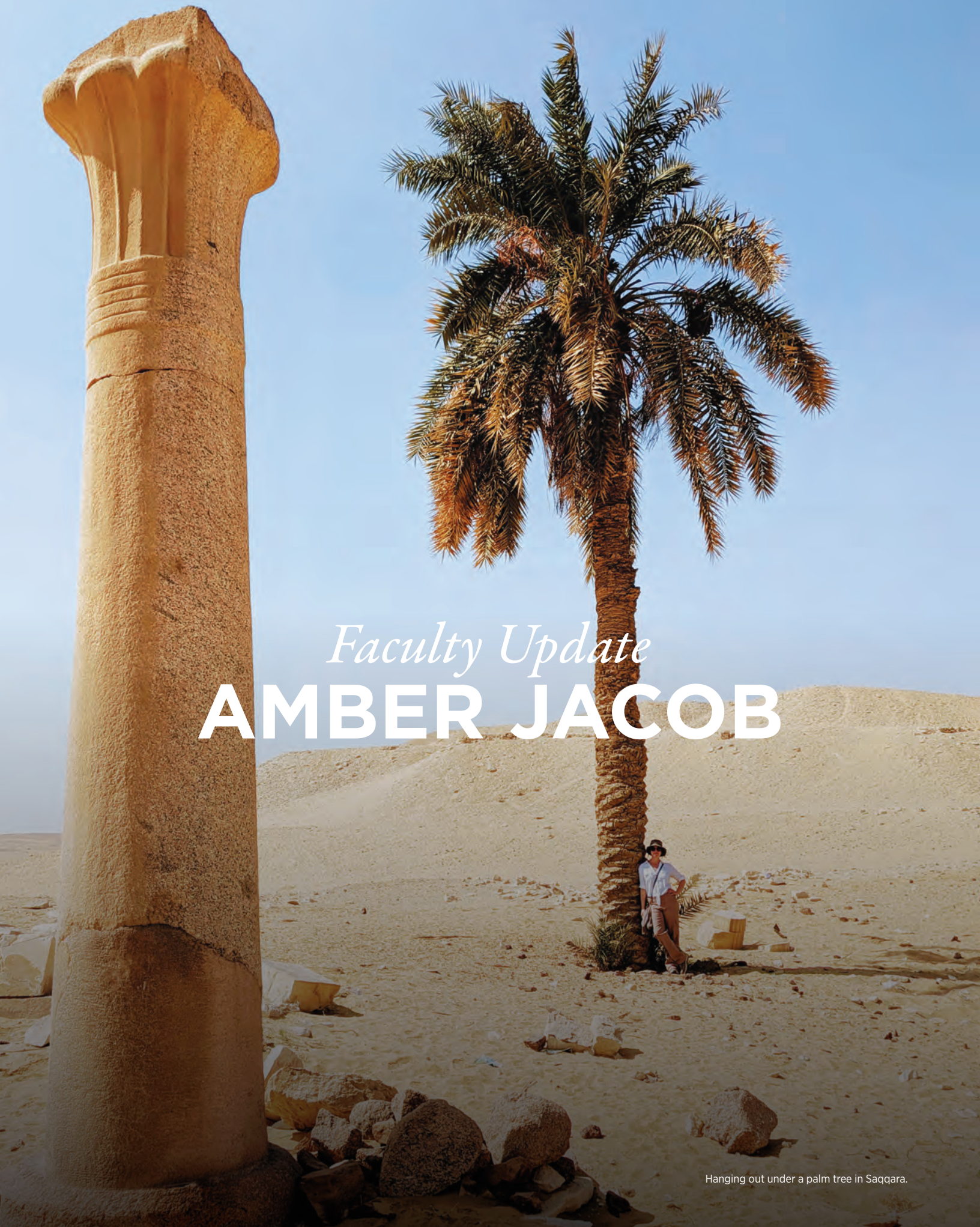
TKAP has just begun its work, and it will take many seasons of excavation before such relationships can be elucidated systematically. Already, however, some important indicators are apparent. The relief of KIZILDAĞ 1, discussed earlier, is one such example (see fig. 5). Anyone who has visited ISAC's Mesopotamian gallery will be forgiven for thinking that this portrayal of Hartapu comes from Assyria, for he is represented using iconography that is highly Assyrian in style. Clearly, Hartapu's artisans were strongly influenced by the art they were seeing in their interactions with Assyria. At the same time, TKAP has excavated Iron Age ceramics that are strongly Phrygian in nature, especially the Brown-on-Buff ware that characterizes elite contexts in Gordion, such as the site's many tumuli. Several pieces of this ceramic tradition have already been excavated in Iron Age contexts at Türkmen-Karahöyük, and one very large piece, nearly identical to examples from Gordion, was found on the surface (fig. 9). A working hypothesis of TKAP is that Türkmen-Karahöyük, and the Konya Plain generally, was a meeting ground for Assyrian and Phrygian cultural traditions and that it was heavily affected by both polities as it thread the needle between them.

Hartapu: The Forgotten King of Anatolia

The special exhibition *Hartapu: The Forgotten King of Anatolia* currently on display at the ISAC Museum attempts to represent all these themes raised by the Hartapu inscription—and all without the original inscription itself! Thanks to technological innovations, we are now able to study and display this artifact nearly as well in Chicago as we can in Türkiye. And we can gain a deeper appreciation of the many paths it leads to, whether Iron Age kingship or cross-cultural interaction. Perhaps most conspicuously, the Hartapu inscription led to the creation of the Türkmen-Karahöyük Archaeological Project, a major ISAC-Bilkent research initiative that will supply Anatolian scholars with material for years to come.



Figure 9. Brown-on-Buff ware sherd from Türkmen-Karahöyük. Drawing and photograph courtesy of the Konya Regional Archaeological Survey Project.



Faculty Update

AMBER JACOB

Hanging out under a palm tree in Saqqara.

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When I was an undergraduate at the University of British Columbia, I read Robert Ritner's *The Mechanics of Ancient Egyptian Magical Practice* with rapt attention. One of the most compelling agendas of the book was its challenging of the idea of a strict division of knowledge—often espoused in modern scholarship—into medicine, magic, and religion. I knew then that this was the kind of work I wanted to do: work that challenged outdated hypotheses about the nature and practice of the ancient "sciences" and illuminated the kinds of biased perspectives that might be uncritically projected onto our understanding of the past. In particular, I was keen to explore the question of how ancient Greek learning may have been influenced by Egyptian medical knowledge, pushing back against colonial narratives of the imperial triumph of Greek "rational" medicine over a superstitiously "irrational" and declining Egyptian system. Although my intervening education and research have nuanced my approach to this question (I have abandoned the question of *influence* and now explore the evidence for the intercultural *exchange* of medical knowledge), the initial passion that drove me down this avenue of study has remained strong and still informs my research today. It is a particular pleasure, then, to find myself now among Ritner's colleagues at ISAC, where his influence on the field of Egyptian magic and medicine remains very much alive—his *Mechanics* remains an ISAC bestseller even now in its fourth printing. I recently joined ISAC and the University of Chicago's Department of Middle Eastern Studies as an assistant professor of Egyptology, working on ancient Egyptian medicine, magic, and mummification, and I hope in some small way to carry forward the legacy of scholarship in these areas for which ISAC is rightly celebrated.

After completing my bachelor's degree, I moved to Denmark to undertake a master's at the University of Copenhagen with the aim of achieving competency in Demotic, a later script and phase of the Egyptian language used from about the mid-seventh century BCE to the mid-fifth century CE. I knew Demotic would be indispensable to my project, being the standard script for scientific literature in the Greco-Roman period, when intercultural contact between Greeks and Egyptians peaked. I was not aware, at the time I arrived in Copenhagen, that the famed Papyrus Carlsberg Collection, housed at the University of Copenhagen, contained the largest extant collection of Demotic medical papyri worldwide—and it was completely unpublished! In fact, this material, which dates to the first and second centuries CE, more than doubles the total amount of Egyptian medical texts from the Greco-Roman period to have come down to us, making it indispensable for any inquiry into the question of medical knowledge exchange between the Greeks and Egyptians. This stroke of good luck was incredible! Prior to this point in my educational trajectory, I never dreamed that I would be among the select few who would get to read such an important trove of otherwise inaccessible ancient texts, let alone that I would get to be the one to publish them (fig. 1).



Figure 1. The author working on the Demotic medical papyri in the Papyrus Carlsberg Collection, University of Copenhagen.

Naturally, as a relative newbie to Demotic studies at the time, I first had to prove myself competent to the task. I was permitted to undertake an informal text edition of a small selection of fragments for my master's thesis. Though I chose my first fragment from among the roughly 200 in the Papyrus Carlsberg Collection simply on the basis of its having a relatively coherent chunk of text preserved with minimal damage to the ink and its being written in a clear and tidy hand, the fragment ended up being truly remarkable in its contents. It turned out to contain the first medical treatise ever discovered from ancient Egypt on the treatment of the kidneys—a discovery that

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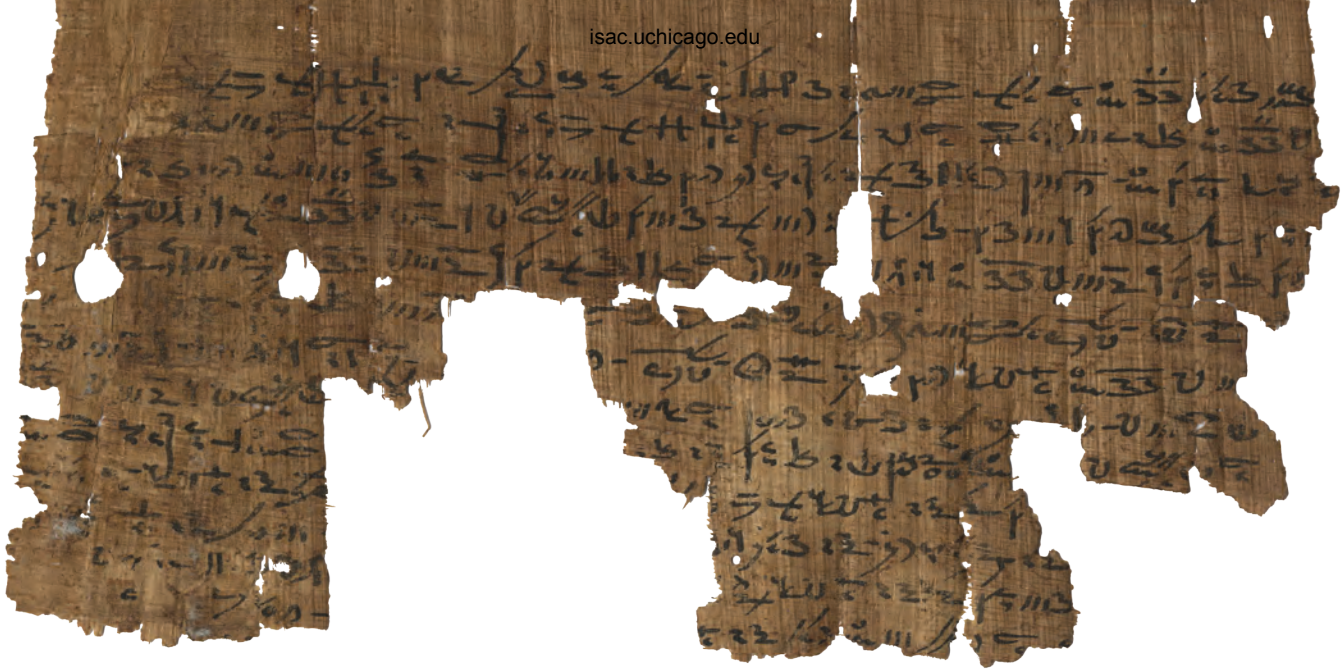

Figure 2. Detail of a fragment of the first-discovered medical treatise on the kidneys from ancient Egypt, in Demotic and dating to the first or second century CE. Source: Papyrus Carlsberg Collection, University of Copenhagen.

promptly ended a long-running debate about whether the Egyptians had any medical (or even anatomical) knowledge of the kidneys (fig. 2). My good fortune continued to grow! From there, I was able to identify three further fragments from the same kidney treatise, which I edited and analyzed for my master's thesis. The result was that I walked away from Copenhagen with a publication contract for the full corpus of these incredible texts.

From there, I undertook a dissertation project on the broader corpus of texts during the course of my doctoral degree at the Institute for the Study of the Ancient World (ISAW) at New York University (NYU)—an institute that prioritizes interdisciplinary approaches to the ancient world. Armed already with training in Egyptian philology and papyrology, I used this time to gain a strong secondary skill set in Greek medical traditions and interdisciplinary methodologies. Toward the end of this degree, I also started turning my research toward mummification, having been invited to copublish a cache of inscribed embalming vessels together with my longtime Danish colleagues, Kim Ryholt and Sofie Schiødt, through the University of Tübingen's Saqqara Saite Tombs Project (Susanne Beck, director). With almost 150 inscribed vessels in hieratic and Demotic, it is the largest assemblage of such vessels discovered to date. This project has provided an excellent way to broaden my knowledge of ancient Egyptian pharmacology beyond the scope of medical texts.

Early in my ISAW degree, I also became an inaugural member, and later codirector, of an international research collaboration titled Scientific Papyri from Ancient Egypt in Cross-Cultural Perspective (SciPap), which brings together leading experts in the broader scope of ancient Egyptian "science"—including medicine, the so-called "exact sciences," and practices of magic and divination. Although the latter are commonly relegated today to the field of pseudoscience, they were taken extremely seriously by the ancients. The principal aim of SciPap is to publish the wealth of ancient Egyptian scientific papyri in the Papyrus Carlsberg Collection in Copenhagen, including nearly 100 scientific texts. The unpublished status of key texts has been the single greatest impediment to research on the development of ancient Egyptian scientific knowledge systems and their transmission intra- and interculturally. To what extent did the cultures of the ancient Mediterranean and Near Eastern world borrow, adapt, and develop the scientific knowledge of their neighbors? And in which directions did this knowledge flow? How have implicit biases in theory affected our interpretations of knowledge exchange in antiquity? SciPap brings together scholars in Egyptology, classics, ancient Near Eastern studies, and the history of science and medicine to address such questions in an interdisciplinary setting and has, to date, hosted five international conferences and seven text-reading workshops, producing a volume of conference proceedings (*Scientific Traditions in the Ancient Mediterranean and Near East*, NYU Press, 2023), with two further volumes forthcoming.

Upon graduating, I was fortunate enough to make the dream jump: from ISAW to ISAC! After years of admiring the Institute from afar, I was

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offered a tenure-track professorship at ISAC, which I happily accepted, albeit with a one-year deferral to take up a postdoctoral position at the University of Michigan's Society of Fellows. This fellowship year was invaluable in that it helped me prepare to make the transition from graduate student to faculty member, and the Society of Fellows offered a vibrant, interdisciplinary scholarly community to hone some of my approaches to my own work. In addition to branching further into mummification (including a research trip to Saqqara to work on the embalming-vessel inscriptions; fig. 3), I also began to turn my attention further toward magic. I see medicine, magic, and mummification as overlapping domains of knowledge in ancient Egyptian thought, and through my fellowship year I was able to develop an undergraduate-level course that teases out these interconnections and challenges outdated narratives about "rational" versus "irrational" approaches to science in the ancient world. This fall (2026), I am pleased to bring this course to the UChicago Core (Medicine, Magic, and Mummification in Ancient Egypt: Science, Culture, and Society I—Ancient Science) to share my passion for ancient science with the broader University of Chicago community and, I hope, inspire an interest in these topics (and Egyptology more broadly) among undergraduates.

Looking ahead, my next step will be to expand my research in two directions. First, I will undertake a study of the full corpus of Greek medical papyri from Egypt to continue to seek evidence of medical knowledge exchange between the Greeks and the Egyptians. My preliminary research in this direction has already yielded some fruitful discoveries. For example, I have identified one of the first certain direct transmissions of a medical text to cross the linguistic border between Egyptian and Greek—a recipe featuring the use of cress, mustard, and arugula for the treatment of a skin disease. So far, I have found four variants of the recipe: one in Demotic, two in Greek, and a later version in Coptic. In fact, the Demotic version can be shown to have been adapted from an earlier Aramaic source, with origins in the Persian and perhaps originally Mesopotamian worlds. Thus, the Greek versions may very well have been translated from Egyptian originals, challenging the narrative of a unidirectional flow of knowledge from Greece to Egypt. The mobility of textual medical traditions suggested by this one recipe points to the complex, dynamic world of information exchange that I argue characterized Egypt and the Mediterranean world in this period.

Second, I will undertake the first synthetic study to encompass the full range of Egyptian pharmacological knowledge, covering medical, magical, and embalming practices. Although I am certainly not the first to acknowledge conceptual and practical overlap among these three domains of knowledge, no study has yet approached their shared *materia medica* as a single system of knowledge. I hypothesize that the pharmacopoeia of magic has direct repercussions for how the efficacy of various botanical, animal, and mineral products were understood medicinally. For example, certain substances common in all eras of Egyptian medical practice, such as the well-attested *ished*-plant, play an important role in various religious and mythological scenes or are associated directly with one or another deity. Thus, their inclusion in a recipe may be motivated by a broader spectrum of reasoning than simply that of medical efficacy as it is understood in the framework of modern medicine. I intend to leverage the joint study of the pharmacopoeia of medical, magical, and embalming treatises to provide greater insights into the underlying perceived mechanisms of drug action, whether applied to therapeutic or other concerns.



Figure 3. Working on embalming-vessel inscriptions in the storage magazine at Saqqara, as part of the ongoing excavation of the University of Tübingen's Saqqara Saite Tombs Project.



Restoration of the Gate of Taharqa at Medinet Habu

BY J. BRETT McCLAIN

The Epigraphic Survey stonemasonry team placing a lintel stone atop the restored gate of Taharqa. Photo by Frank Helmholz.

The Egyptian temple of Amun *Djeser-set*, the primordial demiurge in the cosmogony of ancient Thebes, is the oldest monument in the sacred precinct of Medinet Habu on the west bank of the Nile at Luxor. Its earliest foundations were laid at the beginning of the Middle Kingdom, and the core of the present temple was constructed during the reigns of Hatshepsut and Thutmose III in the Eighteenth Dynasty. Incorporated by Ramesses III into his great mortuary complex more than two centuries later, this smaller monument, because of the significance it held in the local cultic topography, continued in use long after the end of the New Kingdom and was continually repaired, refurbished, and expanded over many centuries until the late Roman era. Among the most significant of these modifications, undertaken during the Twenty-Fifth Dynasty, were the construction of a small pylon in front of the Thutmosid temple and the restoration of Hatshepsut's original mudbrick enclosure wall, which had by that time fallen into ruin. On the north side of the rebuilt wall, the masons added a sandstone gate (fig. 1), allowing lateral access to the expanded *Djeser-set* enclosure (fig. 2). Although the king's cartouches on its doorjambs were erased by later rulers (fig. 3), the gate may be dated to the reign of Taharqa, last king but one of the Twenty-Fifth Dynasty, based on textual evidence from a commemorative stela discovered nearby.

Taharqa's enclosure wall was rebuilt once again in the Ptolemaic period, but over the following centuries the mudbrick rampart slowly deteriorated; the stone gate was left standing on its own, lacking the former support of the brickwork, when ISAC (then known as the Oriental Institute) commenced excavations at Medinet

Habu in 1927 (fig. 4). Careful archaeological investigation by Professor Uvo Hölscher of the Institute's Architectural Survey established the gate's chronological relationship to the underlying archaeological strata, but further decay and shifting of the foundations, coupled with the effects of groundwater infiltration and salt-induced deterioration of the stone during subsequent decades, affected the stability of the freestanding structure. By the late 2010s, the gate of Taharqa was at serious risk of collapse (fig. 5).

In 2019, with the support of a grant from the US Agency for International Development, the Epigraphic Survey initiated a restoration project for the Taharqa gate, as part of our larger program for the conservation, stabilization, and restoration of at-risk monuments within the Medinet Habu precinct. Implementation of the project was delayed by the COVID-19 crisis in 2020–21, but the work began in earnest in autumn 2021. Over the course of five field seasons, the Chicago House stonemasonry team overseen by master mason Frank Helmholz, working in cooperation with our restoration team led by head conservator Mohamed Abo el-Makarem, completely dismantled, consolidated, cleaned, and reconstructed the gate's decorated sandstone jambs, lintels, and preserved roof blocks. Prior to the start of the project, to document the monument's preintervention state and to serve as the basis for condition assessment, photographer Yarko Kobylecky recorded the decorated surfaces of the gate in large-format negatives, photogrammetry specialist



Figure 1. View of the gate of Taharqa and the temple of Amun *Djeser-set* from the northeast, with preliminary documentation in progress. Photo by Ariel Singer.

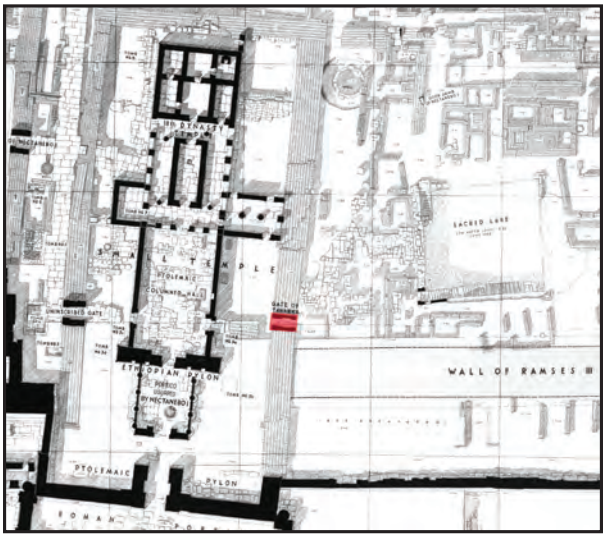

Figure 2. Plan of the temple of Amun *Djeser-set* showing the location of the gate of Taharqa (in red). After Hölscher 1934, pl. 5.



Figure 3. North jamb of the gate of Taharqa showing an erased royal cartouche. Photo by Frank Helmholz.



Figure 4. South face of the gate of Taharqa in the late 1920s. After Hölscher 1939, pl. 28B.



Figure 5. The gate of Taharqa in 2019, prior to intervention. Photo by Frank Helmholz.



Figure 6. Orthomosaic elevation of the north face of the gate prior to dismantling, with blocks individually numbered. Illustration by Owen Murray and Frank Helmholz.

Owen Murray generated 3D models and orthophotographic images of the in situ structure, and artist Dominique Navarro made preliminary facsimile drawings of the well-preserved reliefs on the gate's north and south faces. To ensure that the original architecture was precisely recorded, the gate was also surveyed and each block was measured and numbered to facilitate tracking throughout the process (fig. 6).

On January 20, 2022, the first stone was removed from the gate's north lintel (fig. 7). The dismantling process then moved forward, with the structure enclosed in steel scaffolding and the heaviest lintel and roof blocks carefully removed with the aid of a forklift (fig. 8). By April 2022, the lower courses were reached (fig. 9), and in December of that year the restoration team reached and extracted the badly deteriorated foundation stones (fig. 10). As each block was removed, it was carefully stored in a nearby temporary blockyard. There, individual condition assessments were made by the conservation team, followed by cleaning, treatment, and consolidation where required (fig. 11). In some instances, broken stones had to be fitted together and strengthened by inserting stainless-steel rods; in the most serious cases, where an entire stone was so damaged by moisture and salt that it could not be salvaged, the decorated surface was carefully removed and grafted onto a replacement sandstone block, painstakingly carved by our



Figure 7. Frank Helmholz and Mahmoud Abd el-Haris removing the first block from the north lintel of the gate. Photo by Mohamed Abo el-Makarem.



Figure 8. The stonemasonry team removing the lower north lintel block with a forklift. Photo by Mohamed Abo el-Makarem.

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Figure 9. The lowest decorated courses of the Taharqa gate during dismantling. Photo by Frank Helmholz.



Figure 10. The severely deteriorated foundation courses before removal. Photo by Frank Helmholz.



Figure 11. Conservators Neama Ahmed and Doaa Abd el-Aty treating dismantled blocks of the Taharqa gate. Photo by Mohamed Abo el-Makarem.

skilled stonemasons to match the original dimensions (fig. 12). Later in the 2022–23 field season, the last foundation blocks were removed, and our masons laid a reinforced concrete support slab below the foundation level (fig. 13), covered with a moisture-proof outer layer, to provide stability to the rebuilt gate and protect its foundations from any further infiltration of salt-laden groundwater from below.

During the 2023–24 season, the stonemasonry team began the reconstruction of the gate (fig. 14). As each block was put back in place, its position was carefully verified using the pre-intervention 3D model and survey data, adjusting the orientation where necessary to correct the disjointed relationship into which many of the deteriorated stone courses had shifted over the centuries. The goal was to make sure that the gate's decorated blocks would be restored to their original relative positions, with the reliefs and architectural features properly realigned with millimeter accuracy. To achieve such precision, it was necessary for the stonemasonry team to "dry-set" several courses, remeasure their positions, dismantle them, make the necessary corrections to each level, and then reset the blocks course by course (fig. 15). Once the final positions were verified, the stones of each side of the gate were fixed in place using liquid lime mortar, one layer at a time (fig. 16). By the end of the season in April 2024, the main lintel blocks on the north and south sides were successfully placed atop the jambs (fig. 17).

During the 2024–25 season, the stonemasons finished setting the remaining roof slabs and the upper stones of each lintel and mortared them into place, as well as sculpting the finished surface onto the new replacement sandstone blocks, thereby completing the structural work on the gate (fig. 18). In the meantime, the conservation team undertook further cleaning and consolidation of the restored stones (fig. 19) and applied the final layer of restoration mortar between the gaps of the masonry. This painstaking last stage of the restoration process extended into the 2025–26 season, but by April 2026, the project of dismantling, rebuilding, consolidating, and conserving the Taharqa gate was complete (fig. 20). When the Epigraphic Survey returns to Luxor for our 2026–27 campaign, we will work on the site management of features surrounding the restored gate, including the vestiges of the adjoining mudbrick walls, to prepare the area to be reopened for visitors.



Figure 12. A severely deteriorated first-course block with hieroglyphic decoration (left); the decorated portion removed and grafted onto a new sandstone block (right). Photos by Frank Helmholz.

The Epigraphic Survey's restoration of the gate of Taharqa illustrates many of the problems typically encountered when working to preserve ancient stone monuments in Egypt, including the destructive effects of groundwater infiltration and salt-induced decay, the structural weakening of components of the monuments over time that can lead to the risk of collapse, and the deterioration and loss of both decorated and undecorated surfaces. A conscientious, anastylotic approach is required to address these issues effectively. By combining the skills of our documentation, stonemasonry, and conservation teams, by adhering to internationally recognized best practices, and above all by taking the time to plan and implement the intervention carefully and adapt our methodology to the issues that arise in the course of the work, the Epigraphic Survey's specialists have successfully carried out a full restoration of this at-risk monument, erected 2,700 years ago, which will allow it to remain standing intact in its original location for centuries to come.

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Figure 13. The stonemasonry team pouring the reinforced concrete foundation. Photo by Frank Helmholz.



Figure 14. Reconstruction of the lower courses of the gate in progress, showing replacement sandstone blocks for the foundation and lower courses. Photo by Frank Helmholz.



Figure 15. The stonemasonry team dry-setting the upper courses and checking the position and alignment of each block. Photo by Frank Helmholz.



Figure 16. The stonemasonry team fixing blocks in place with liquid lime mortar. Photo by Frank Helmholz.



Figure 17. The lower north lintel block in its restored position. Photo by Frank Helmholz.



Figure 18. The stonemasonry team lowering the final roof slab into position. Photo by Frank Helmholz.



Figure 19. The conservation team cleaning and applying final mortar to the reconstructed gate. Photo by Yarko Kobylecky.



Figure 20. The restoration of the gate of Taharqa completed. Photo by Frank Helmholz.


Photo by Saule Tuganbaeva.

In Conversation With...

To coincide with the sixtieth anniversary of ISAC's volunteer program, assistant director of programs and education Kate Ayres reached out to our longest-serving volunteer, Terry Friedman, and our most recent one, Tim OBrien. Their conversation, shared here, offers engaging insights into how ISAC has changed over the decades and yet, in many ways, has also stayed the same.

Kate: Terry, as the longest-serving volunteer, and Tim, as our most recent docent recruit, thank you both for agreeing to answer my questions. Terry, if I can begin with you—when did you start volunteering at ISAC?

Terry: It was in 1974 when, as a young, recently married woman, I began my volunteer work for the Oriental Institute (as ISAC was then known). For the next nineteen years, I would serve as both a Museum docent and the captain of the Tuesday afternoon team.

Tim: I only entered the docent training program in February 2026!

Terry: Fifty-two years goes by in the blink of an eye. It seems like only yesterday that I first walked into Breasted Hall, met volunteer program chair Carlotta Maher, and sat down to hear the first lecture of my docent training, on the history of Mesopotamia. McGuire Gibson was the guest speaker for this impressive first session.

Tim: My docent training began with four winter days in ISAC's LaSalle Bank Room.

Kate: Yes, sorry about that—it is rather cold in the basement! Sadly, we can no longer hold the training in Breasted Hall because of the number of University of Chicago admissions sessions that take place there now. The training has changed somewhat over the years, but I hope we have retained the academic rigor.

Tim: There *was* a lot of information packed into these four days. What I remember most is that each trainee was assigned several artifacts, which we needed to present to the group. One of my artifacts was a Nubian hairpin. Given that I am severely follically challenged, I still wonder whether this was a coincidence or an example of ISAC leadership's humor.

Kate: Ha! I'd like to say we were deliberately being funny, but I promise it was a complete coinci-

dence. Yes, we decided to remove the written-essay part of the training, since being a docent is ultimately about performance: how you can captivate your audience and convey potentially complex information in a succinct and entertaining way. The twelve objects were used as an exercise in one's ability to retain and deliver essential information within a limited amount of time, particularly since school groups notoriously turn up late and their one-hour tours need to be drastically condensed. We wanted to make the training fun as well as challenging.

Tim: And it was. I became a certified docent in June and regularly help as an Ask Me guide in the galleries.

Kate: Terry, you've not always been a volunteer here, have you?

Terry: No—in 1993, I assumed the role of volunteer coordinator as a job-share with Cathy Dueñas. Our co-stewardship of the program would last more than twenty years. After Cathy retired in February 2013, I continued solo in my new role as volunteer manager. Since my retirement in October 2014, I have remained involved, volunteering in various capacities throughout the Institute. I am currently working "behind the scenes" with Helen McDonald in Registration, helping register sherds from Mesopotamian sites. I am also serving on the sixtieth anniversary committee, helping plan the special celebration on October 4. It has been an interesting transition from docent to staff member and then back to volunteer.

Kate: What made you want to volunteer here?

Terry: My educational background had centered on modern languages and education. The Institute gave me the opportunity to expand my horizons and to study the ancient Near East.

Tim: I worked for my employer for thirty-five years, primarily as an executive, and retired in July 2026. Our business was the manufacturing of industrial food-processing machinery. As I was approaching retirement, I knew I wanted to volunteer somewhere that would also provide some mental stimulation and social interaction. Museums were my targeted venue. I had visited ISAC a couple of times over the years. I have a strong interest in history and have been to several of the areas ISAC specializes in, such as Egypt, Anatolia, and the Levant. I am very comfortable interacting with people and giving tours, as I frequently did for my employer. All these things combined made ISAC a seemingly perfect fit for me.

Kate: What would you say has been the most rewarding aspect of volunteering at ISAC?

Terry: I am always impressed by its commitment to research, as well as the depth of knowledge that has built this world-renowned institution. The faculty and staff here are receptive and eager to share their wealth of knowledge with the volunteers.

Tim: I agree. Most rewarding is the interaction with museum visitors and with other ISAC docents and staff. My veteran docent colleagues and ISAC's staff are extremely knowledgeable and helpful. As an Ask Me guide, I am frequently amazed at what I can learn from interacting with our visitors. For example, I met one gentleman who did his master's degree thesis on the Rosetta Stone. He was quite knowledgeable about the decree itself, in addition to the three scripts.

Kate: Terry, how have you seen ISAC change over the years?

Terry: Over the course of five decades, I have seen ISAC change and evolve to meet the opportunities and challenges of an unpredictable world. Despite its name change in April 2023, it has remained true to its core mission: to advance the knowledge of the ancient Near East through research, education, and public outreach. The volunteer program has built an amazing legacy for over sixty years through its continuity of leadership, unity of purpose, and the forging of lasting friendships.

Kate: Friendship is a very important pillar at ISAC. There is such a lovely feeling of camaraderie among the volunteers. The people who choose to devote their time to ISAC really love being here, and that enthusiasm comes across to the visitors. Do you think volunteering here has given you a different perspective on life and history?

Tim: Yes. I think West Asia and North Africa are underappreciated parts of world history. It is where humans started living in cities, writing was invented, and several complex empires were formed. These ancient people were intelligent, worried about such things as finances and their children, and tried to understand and explain the

world as best they could. In many ways, they were much like we are today.

Terry: I am surprised by how much I have personally evolved and matured intellectually over these past fifty-two years, through my involvement at ISAC. Volunteering has opened many opportunities to develop new skills while studying the history and cultural landscape of the ancient Near East.

Kate: What would you consider to be your greatest success here?

Terry: One of the greatest successes of the volunteer program happened in 1995. When it was announced that the Institute was to close its galleries to install climate control and build an addition, a shock wave went through the docent community. We were forced to pivot and develop a new format to reach our audiences. Outreach was the battle cry, and we took the show on the road. Its creation and implementation kept the volunteer program and museum alive and vibrant during a multiyear renovation project.

Kate: What a triumph! I think the legacy of that success is still felt today in the way we run our education program. The education department continues to offer off-site and even virtual fieldtrips to schools that can't make it here in person—from Des Plaines to Lima, Peru!

Tim: It's too soon for me to say, but it's quite an achievement that I'm able to travel from Palatine to Hyde Park using Metra and the University of Chicago bus system in less than two hours!

Kate: That's quite a feat indeed! So many of our volunteers come from far away. That's what makes it even more special that so many of you continue to regularly devote your time to us. What would you say has been your most memorable moment?

Terry: I have had many memorable encounters and experiences over the past fifty-two years. One that was quite unexpected happened when I was a young, Tuesday afternoon docent. I had just started a tour with a group of students, and I was standing next to the predynastic burial in the Egyptian gallery, when I happened to look up and saw Katherine Hepburn stop for a moment to listen to my tour. I was stunned but managed to keep my composure, as well as keep the



students engaged in our discussion.

Kate: What a wonderful moment! Can you top that, Tim?

Tim: Well, a severe storm necessitated that everybody in the museum shelter in the basement. . . .

Kate: That was rather dramatic. Luckily it happened during the summer, and there weren't too many people in the building—can you imagine if a large school group had been visiting? This is a bit of a cliché, but I have to ask: What is your favorite object, and why?

Terry: The museum is a treasure trove of significant artifacts. However, one of my favorite objects in the museum has always been the beveled-rim bowl in the Mesopotamian gallery. For me, it humanizes the ancient world in giving a unique perspective into not only Mesopotamian life but also life throughout the ancient Near East. These bowls were mass-produced with the use of a mold and have been found at numerous sites. This simple yet functional ceramic artifact transcends time. Visitors might overlook this everyday object, yet its presence represents the beginning of the organization of complex society. The bowls' purpose, although debated, seems to be based on



ISAC docents celebrating the sixtieth anniversary of the volunteer program. Photo by Saule Tuganbaeva.

the finds from the fourth-millennium site of Uruk in ancient Iraq. These small, undecorated bowls were probably used as a standard measure for grain rations, as payment for work in the corvee labor system.

Tim: While I do like the *lamassu* and the King Tut statue because of their enormity and memorableness, I'm going to say my favorite object is the Gilgamesh display. Gilgamesh is the oldest-known surviving poem in world literature, and it offers lessons on the value of friendship, humility, and legacy that still hold true today. The epic's tablets being found written in cuneiform in Ashurbanipal's Nineveh library, and Ashurpanipal being the grandson and great-grandson of Sennacherib and Sargon II, respectively, also tie into many of the museum's other artifacts and themes.

Kate: Finally, what do you do when you're not volunteering at ISAC?

Terry: When I am not volunteering at ISAC, I continue to take online classes both at ISAC and, most recently, at the Newberry Library. I have recently joined the Monday Class at the Fortnightly Club, where I enjoy hearing lectures on a wide range of current events presented by experts in their fields. I am a board member of PFLAG Metro Chicago and attend its monthly support meetings. I have continued to serve in a long-standing tradition as a science-fair judge and award presenter at Lane Tech College Prep high school.

Tim: I like to exercise, especially riding my bike. I enjoy taking weeklong bike rides a couple of times per year. Three of my four children and five of my six grandchildren live in the Chicago area, so my wife and I are fortunate to be able to see them regularly.

Kate: It seems like the old adage is true: You're busier when you're retired! Thank you both for your time. Do you have any final words?

Tim: Well, ISAC has a nice offering of videos on YouTube, and I would like to see the content continue to grow. I thoroughly enjoy the Volunteer Day meetings and the book club, as they both offer opportunities to learn and socialize with others at ISAC.

Terry: I am proud to be able to contribute my time and talents to help further ISAC's mission and goals, and I cherish the many friends I have made along the way. It has been an opportunity of a lifetime.

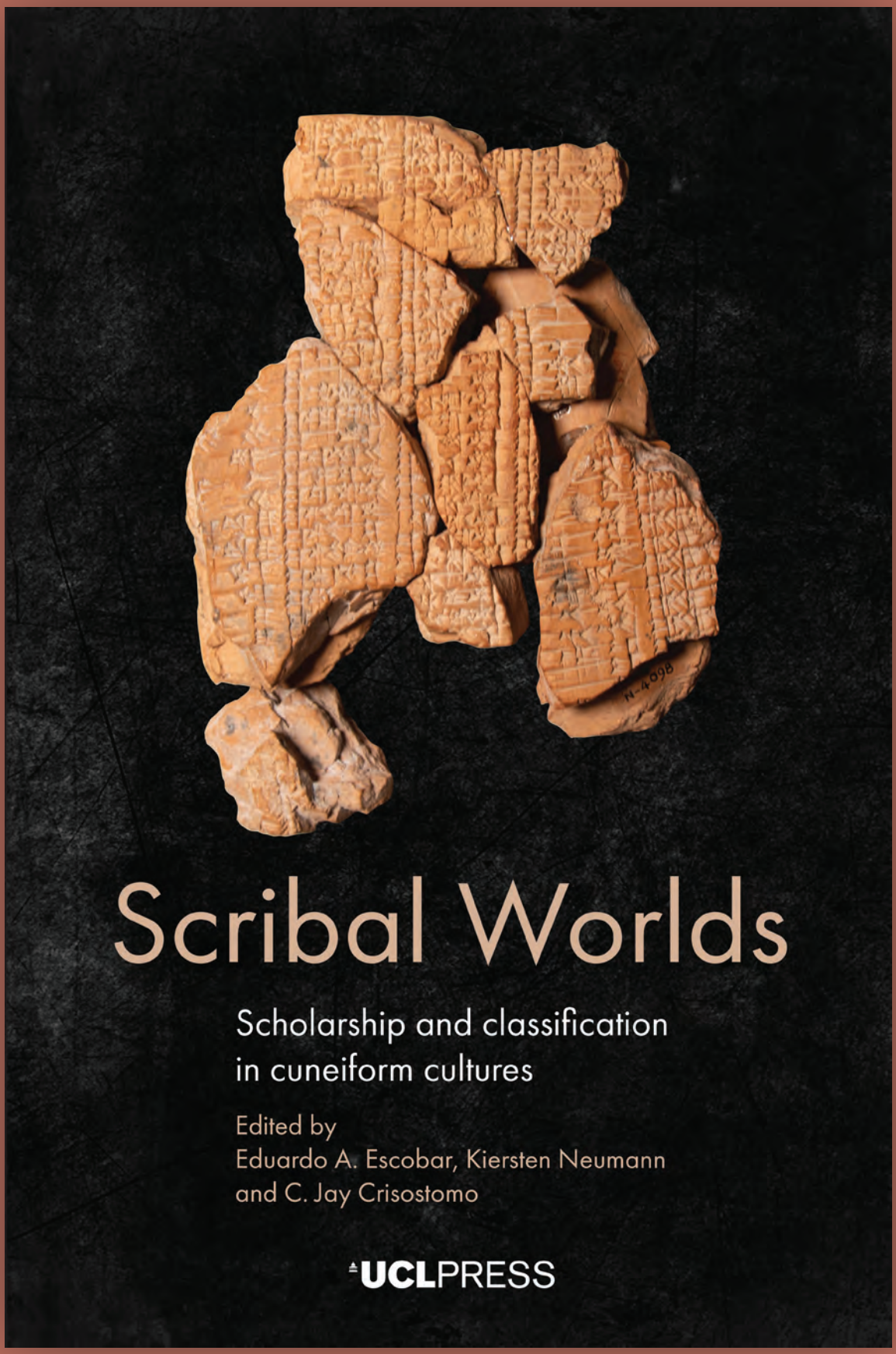

Figure 1. *Scribal Worlds: Scholarship and Classification in Cuneiform Cultures*, published open-access by UCL Press in June 2026.

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Guardians of Scribal Traditions

BY KIERSTEN NEUMANN, EDUARDO A. ESCOBAR, AND C. JAY CRISOSTOMO

Published open access by UCL Press in June 2026, *Scribal Worlds: Scholarship and Classification in Cuneiform Cultures*, edited by Eduardo A. Escobar, Kiersten Neumann, and C. Jay Crisostomo, brings fresh color to an already kaleidoscopic field (https://uclpress.co.uk/book/scribal-worlds/) (fig. 1). That field spans the micro level—the subtlest practices in cuneiform traditions—and the meta level—the intellectual frameworks of the world's earliest writing cultures and the processes through which knowledge was created, transmitted, and understood. Inspired by and in appreciation of the work of Niek Veldhuis, professor emeritus of Assyriology at the University of California, Berkeley, the book departs from the traditional Festschrift format: Personal tributes open the volume, and its chapters draw on both texts and material culture to tease out how language, ontology, classification, and scribal learning were interwoven in the cuneiform cultures of the ancient Middle East.

At the heart of this inquiry is one of the most fundamental forms of knowledge-making: the list. Here, Veldhuis followed in the footsteps of ISAC's Miguel Civil, for decades the leading authority on Mesopotamian lexical lists. As Veldhuis observed in his *History of the Cuneiform Lexical Tradition* (Ugarit-Verlag, 2014), "Mesopotamian lexical texts did not deal with anything that we would recognise as a discipline in a modern school or university and thus they problematise our very conception of what knowledge is." Readers of *Scribal Worlds* witness a range of ontological and methodological frameworks for engaging and thinking with such exceptional datasets from the ancient world: Although the material traces are largely fragmentary, they reveal intellectual worlds that were dynamic and multivalent. The exploration of such worlds is no stranger to ISAC, where some of those very material traces, and the minds that illuminated them, have moved through its halls for over a century. The following highlights a few of the threads that tie the volume to ISAC.

An inscribed stone vessel (ISACM A7462) displayed in the ISAC Museum's Edgar and Deborah Jannotta Mesopotamian Gallery inspired Neumann's chapter, "What's in a Name? Material Self-Referentiality, Aesthetic Values and Stone Classification" (fig. 2). Purchased in 1931 from New York–based antiquities dealer Elias Solomon David, this Old Babylonian bowl bears a ten-line Sumerian text recording its dedication to the goddess Inana of Zabala by Šallurum, son of Lu-Assaluhi, for the life of Rim-Sin I, followed by a reference to the material of which it was crafted: "a bowl of pirig-gùn stone" (D. Frayne, *Old Babylonian Period (2003–1595 BC)* [University of Toronto Press, 1990]: Rīm-Sîn I E4.2.14.2002). Neumann pairs this case study with three other objects whose inscriptions cite the material they are made of—a phenomenon she terms "material self-referentiality": an Old Akkadian cylinder seal dedicated by Beli-pala, a bead of the Assyrian king Sennacherib, and an axe-head dedicated by a eunuch of the Assyrian king Sargon II, the texts inscribed on their surfaces identifying them as pirig-gùn, *papparmīnu*, and *uqnû* stone, respectively. Each label evoked distinct aesthetic properties: black-and-white speckling (Piotr Steinkeller translates pirig-gùn as "speckled lion-stone"); black-and-white banding, as described by the text *Abnu šikinšu* and commonly associated with agate; and dark, radiant blue, traditionally asso-

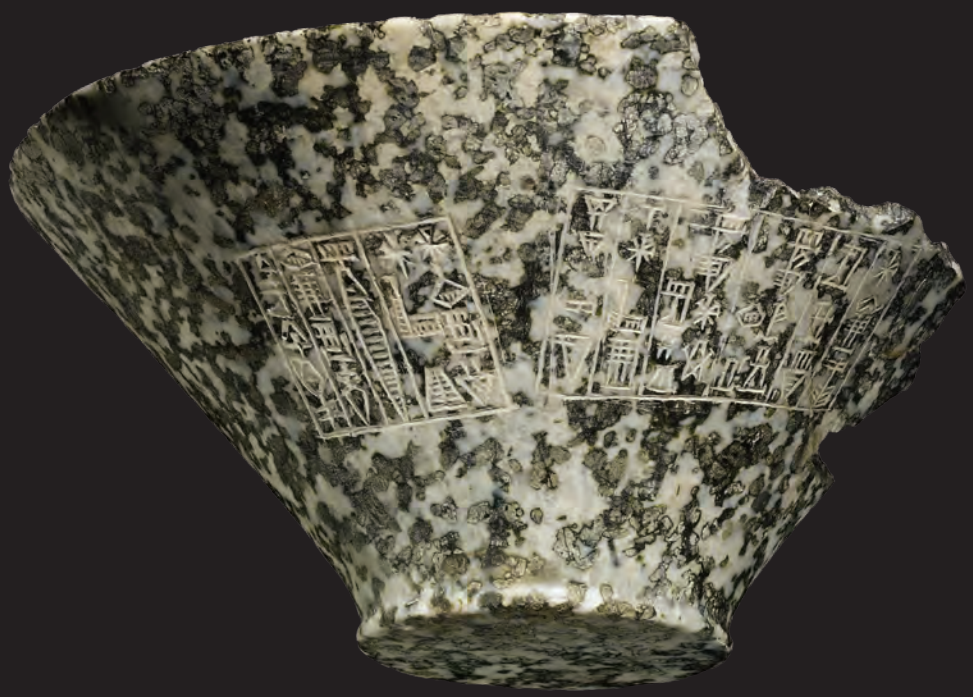

Figure 2. Stone bowl dedicated by Šallurum to King Rim-Sin I (reigned 1822–1763 BCE). ISACM A7462.

ciated with lapis lazuli. Yet the stones themselves tell a different story. The bowl, identified as diorite by University of Chicago geologists in 1971, and the seal, of diorite or gabbro, do not necessarily share a mineral makeup. The bead's banding was produced artificially through dyeing and heating, and the axe-head has been published as being made of bluish marble rather than lapis. These material–text pairings led Neumann to argue that classification privileged aesthetic and affective properties over mineralogical composition, highlighting how ancient systems of knowledge diverged from modern taxonomies.

Eleanor Robson's chapter, "Back to House F," similarly begins at the ISAC Museum. House F, a small home in eighteenth-century BCE Nippur (modern-day Nuffar) that has yielded an unparalleled find of nearly 1,400 clay tablets and fragments from scribal schooling, has long been instrumental in reconstructing scribal education. As Robson writes, the house came back into her life through ISAC's 2023–24 special exhibition *Back to School in Babylonia*, curated by Susanne Paulus, ISAC associate professor of Assyriology and Tablet Collection curator. ISAC and the University of Pennsylvania Museum excavated the house through their Joint Expedition to Nippur (1948–52). After the 1951–52 season, the tablets were divided among the Iraq Museum in Baghdad, the Penn Museum, and ISAC before many fragments could be cleaned and joined. ISAC's plaster casts of the entire assemblage, along with field registers and catalogs in Chicago and Philadelphia, underpinned the database Robson built in the 1990s, which has continued to inform her more recent archaeological work. From that starting point, her chapter asks questions that the exhibition brought back into view: Who actually wrote these exercises? How regularly were lessons held? What did scribal training look like as a living household practice? And is "school" even the right word for such a setting? She concludes that scribal education was sporadic, taking place around other work and in homes rather than formal institutions, yet she preserves "school" as a useful shorthand.

Eduardo A. Escobar and C. Jay Crisostomo take up one of the more curious bodies of writing from ancient Iraq: the Assyrian "Group Vocabularies." These Sumerian–Akkadian word lists, most of them from the royal collections at the Assyrian capital of Nineveh (modern-day Mosul), rarely offer simple translations. In one passage—which reads like an alchemical allegory—the Sumerian verb "to know" is matched with the Akkadian terms for "wisdom," "silver," and "gold." Their chapter builds on a project with deep Chicago roots: The standard editions

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of such lists, the series *Materials for the Sumerian Lexicon* (MSL), began as foundational work for the Chicago Assyrian Dictionary. In the preface to the first MSL volume, signed in Ankara in 1936, Benno Landsberger thanked the late Edward Chiera for entrusting him with the task "for the dictionary being prepared in Chicago." Escobar and Crisostomo read the Group Vocabularies against two related lists—Erimhuš and Antagal—which Landsberger reconstructed for the dictionary's files after joining ISAC. Landsberger's preliminary edition was finished by 1950, then revised and published in 1985 as MSL 17 by editors Antoine Cavigneaux, Hans G. Güterbock, and Martha T. Roth, who prepared the Antagal text edition. That volume looked ahead to a future MSL 18 on the Group Vocabularies. As Escobar and Crisostomo note, that edition has yet to appear, and their chapter offers a close reading of these enigmatic texts, expanding on Veldhuis's *History of the Cuneiform Lexical Tradition*. Here, Escobar and Crisostomo argue that the lists were the work of Assyrian court scholars demonstrating their virtuosity during a period of imperial decline.

The material traces stewarded by ISAC support yet another contribution: "Between Conservatism and Creativity: The Old Babylonian Transmission of the Early Dynastic Proverb Collection 1," by Jana Matuszak, ISAC associate professor of Sumerology. The collection EDPC 1 is first attested on mid-third-millennium tablets from Fara and Abu Salabikh, the latter published by ISAC professor emeritus Robert Biggs (*Inscriptions from Tell Abu Salabikh*, Oriental Institute of the University of Chicago, 1974), and resurfaces some 800 years later, including in two Old Babylonian copies from Nippur, one of them first edited by Civil and Biggs in *Review d'Assyriologie et d'Archéologie Orientale* 60 (1966). These later copies add pronunciation glosses and Akkadian translations that consistently favor feminine forms and pejorative meanings, recasting gender-neutral sayings as insults against women. A mock hymn, *The Evil Mouth*, took the reinterpretation further, adapting the proverbs to insult the goddess Inana herself. For Matuszak, such interventions show Old Babylonian scribes as both preservers and creative interpreters of the Sumerian legacy, working with the same principles that later cuneiform scholarship would build on. A Babylonian tablet currently at ISAC features in the chapter as the only known copy of *Sumerian Proverb Collection* 22 (B. Alster, *Proverbs of Ancient Sumer* [CDL Press, 1997], 261–69, 445–48, pls. 89–93) (fig. 3). Of unknown provenience, it is unusual among proverb tablets: Its sayings run on without dividing lines, are often truncated, and borrow from well-known collections and literary texts without following their order. Matuszak shows how modern expectations of a "misogynistic tradition" have shaped translations of the tablet, with one line reading "s/he always changed the eyes" being rendered "she has really shifty eyes" despite the fact that nothing in the text refers to women.

Veldhuis once described the Old Babylonian scribes who copied lists as "guardians of tradition." The chapters gathered in *Scribal Worlds* suggest that the phrase fits their modern readers, too—and at ISAC, the guardianship of these material traces, and the work of reading them anew, continues.



Figure 3. Cuneiform tablet with the Old Babylonia *Sumerian Proverb Collection* 22.

MEMBER HIGHLIGHT

A Unique Collection of Historic Stereographs of Ancient Egypt, Chicago, and Sites around the World

BY ALLIE SCHOLTEN AND FOY SCALF

ISAC is pleased to announce the donation of more than 900 stereographs to its institutional Archives. The collection was acquired and meticulously curated by Mr. Lee Lane of Chicago, who generously donated the collection to ISAC in 2026. This remarkable collection includes stereoscopic photographs, glass-plate stereoviews, and hand-colored photographic cards from around the world, with a particularly comprehensive subset depicting ancient Egyptian monuments, historic cities, and cultural landscapes (fig. 1).



Figure 1. Box of glass-plate stereoviews from the Lee Lane Collection. Photo by Allie Scholten.

Dating primarily to the nineteenth and early twentieth centuries, the views depict landscapes and monuments as they appeared to travelers and photographers more than a century ago. Prominent Egyptian sites such as Medinet Habu, Luxor, and Karnak are represented (fig. 2), along with the work of well-known photographers and publishers such as Francis Frith and Underwood & Underwood.

Beyond Egypt, the collection encompasses sites across many continents, including views of Chicago after the Great Fire in 1871, historic streets in Rome, and scenes of Tokyo and Yokohama before the turn of the twentieth century. Collectively, these materials preserve a visual record of the world at a time of extraordinary cultural, technological, and physical transformation.

The Lee Lane collection builds on ISAC's extensive holdings of historic photography and stereographs, such as those found in James Henry Breasted's *Egypt through the Stereoscope* (doi.org/10.83354/wpbr-0b35), while expanding the geographical scope of its photographic documentation to sites across the globe.

Many of the monuments and landscapes depicted in these photographs have undergone extensive physical change since the images were taken, whether through excavation, restoration, urban development, environmental processes, or destruction. By documenting sites and their surroundings at particular moments in time, the stereographs preserve valuable visual evidence of earlier conditions that may no longer be visible today. They offer researchers opportunities to investigate the changing appearance of landscapes while preserving documentation of cultural heritage. Furthermore, these views provide insight into emerging forms of photographic technology and the ways photographs were carefully crafted for public consumption—an affordable means to "travel" without leaving one's home.

These invaluable resources will support teaching and research across a wide range of disciplines at the University of Chicago and beyond. Students and schol-

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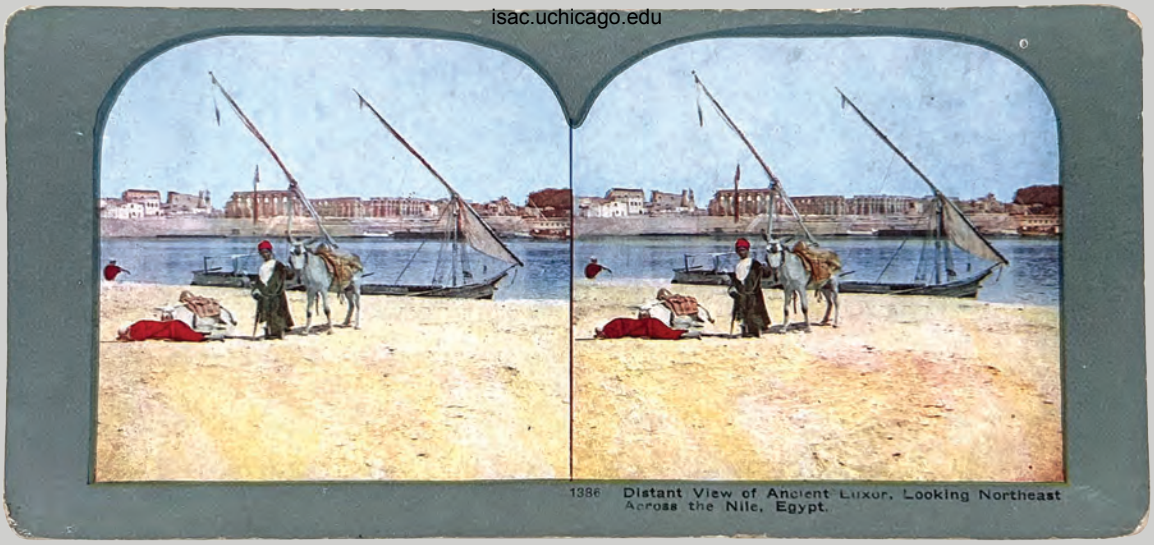


Figure 2. Sterograph from the Lee Lane Collection: "No. 1386. Distant View of Ancient Luxor. Looking Northeast Across the Nile, Egypt." Photo by Allie Scholten.

ars will be able to explore subjects ranging from American history and the representation of cultures in West Asia, Africa, and South America to the history of photography, visual culture, and technological innovation.

ISAC is extremely grateful to Mr. Lane for his generous donation. The collection will be preserved in the ISAC Archives, with future digitization and access supported by the ISAC Data Research Center. Together, these efforts will ensure that the photographs and historical information they preserve continue to inform new generations of students, researchers, and visitors.

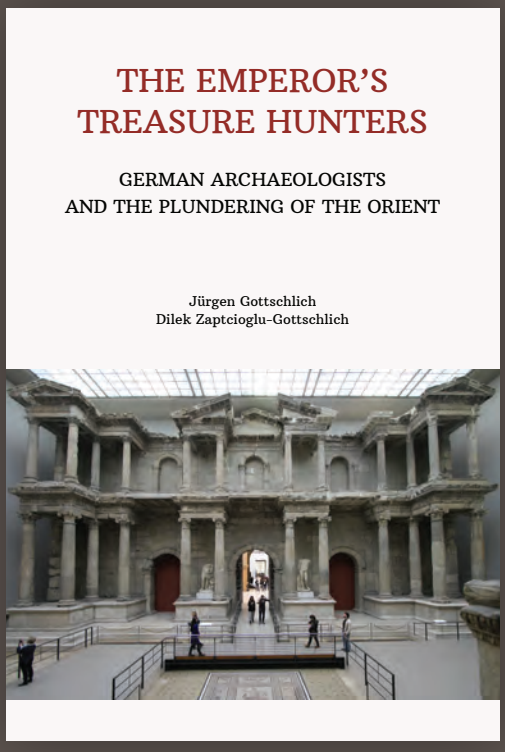
Stay tuned for future stories exploring the work of ISAC Archives staff to catalog and preserve the collection, the development of ethical and accessible approaches to its online presentation, and opportunities to incorporate these materials into future exhibitions at ISAC.

NEW BOOK

ISAC is delighted to announce the English publication of *The Emperor's Treasure Hunters*, translated from the German original by longtime ISAC Advisory Council member and volunteer Barbara Schubeler Jillson

The Pergamon Altar, the Market Gate of Miletus, the Lions of Babylon, the bust of Nefertiti—these are all treasures that we admire in German museums today. Where do these works come from? When and under what circumstances did they come to Germany? Are we actually the rightful owners of these world-famous cultural assets? Jürgen Gottschlich and Dilek Zaptcioglu-Gottschlich take an in-depth look at the history of archaeological excavations and their transportation to the German Empire. The focus is on the expeditions of famous excavators such as Carl Humann, Theodor Wiegand, and Robert Koldewey on the one hand and the predominantly nationalistic motives of their forays in the service of the Emperor on the other. While the debate on looted art has so far tended to focus on works of art from African and Asian colonies, this is the first book on archaeological finds in the former Ottoman Empire. Just as important as the demand for restitution is the question, How do we make this world cultural heritage accessible to as many people as possible?

Published by Lockwood Press, the book is available for purchase in the ISAC Museum Shop or via the Lockwood website.



Upcoming ISAC Adult Education Classes

See all classes at bit.ly/ISACEvents



James Parker (after John Flaxman), *Ulysses at the Table of Circe (The Odyssey of Homer)*. Metropolitan Museum of Art 1977.595.53(16). Gift of Harvey Smith, 1977.

Short Class: Imagining and Reimagining Homer

Instructor: Tasha Vorderstrasse, PhD | manager of ISAC's continuing education program
4 weeks
Prerecorded half-hour classes drop Sundays at 10:00 a.m. Central, November 29–December 20

Join us for this short class on the interpretations and reinterpretations of Homer's *Iliad* and *Odyssey*. Each installment will examine a particular artwork and place it within its historical context to see what it tells us about the interpretations and reinterpretations of Homer. The class will include a discussion of a statue of Penelope that ISAC found at Persepolis in the 1930s, as well as Robert Duncanson's painting *Land of the Lotus Eaters.*



Jar from Tell Tayinat. ISACM A27725.

Phoenician Schemes: History of the Ancient Phoenicians

Instructor: Samantha Suppes, PhD
6 weeks
Wednesdays, December 2–16 and January 6–20, 5:00 p.m.–7:00 p.m. Central
(class does not meet on December 23 or 30)

In this class, learn the history of a people who left a lasting impact on the world still felt today through wine, writing, and Wes Anderson. We will trace Phoenicia's roots in the Bronze Age; follow the rise of its early city-states and expansion into the western Mediterranean; and then examine the attacks by the Assyrian and Babylonian empires, the rise of Carthage, and the Punic Wars.



Merowe Reservoir on the Nile River. Source: NASA, Wikimedia Commons.

Life along the Ever-Changing Nile: Reconstructing the Environment of Ancient Nubia and Egypt

Instructor: Katherine Rose, PhD | ISAC Center for Ancient Middle Eastern Landscapes research fellow and director of programs for the Institute for Field Research
4 weeks
Tuesdays, January 19–February 9, 5:00–7:00 p.m. Central

This course will explore the environment of ancient North Africa and its relationship to the cultures of modern-day Sudan and Egypt. We will learn how the Nile (the enduring lifeblood of civilizations in the region) and its associated landscapes have evolved and changed over time as a result of broad climate patterns and human occupation. We will discuss how ancient peoples engaged with their surroundings and what practices and technologies they used to harness the Nile for economic, social, religious, and political purposes. We will also learn about the methodologies and tools archaeologists use to reconstruct and study past environments, such as geoarchaeology, hydrology, and remote sensing. Students will receive foundational training in GIS and analysis of cutting-edge datasets such as LiDAR, thermal imagery, and satellite imagery of ancient cities along the Nile. Lastly, this course will explore the impact of recent changes to the Nile, such as the building of the Aswan and Meroe dams, on environments and archaeological sites.



Famine Stela on Sehel Island, Aswan, Egypt. Source: Morburre, Wikimedia Commons.

Short Class: Inventing History through Inscriptions

Instructor: Tasha Vorderstrasse, PhD | manager of ISAC's continuing education program
4 weeks
Prerecorded half-hour classes drop Sundays at 10:00 a.m. Central, January 17–February 7

In the Iron Age inscription of King Hartapu, a replica of which is on display in the ISAC Museum's current special exhibition, *Hartapu: The Forgotten King of Anatolia*, Hartapu declares that he conquered kings and fortresses and defeated the land of Mushka. But is this claim really true? In this short class, we will consider several other inscriptions: the Shabaqo Stone of the Kushite Twenty-Fifth Dynasty pharaoh Shabaqo, the Neo-Babylonian Nabonidus Cylinder from Sippar, the Ptolemaic-era Famine Stela, and forged medieval French Carolingian documents on Merovingian papyri. In the light of these inscriptions, the class will investigate how, throughout time, people have looked to the past to justify their actions in the present.



Stela fragment from Jisr el Hadid. ISACM A23427.

Introduction to Hieroglyphic Luwian

Instructor: Emily Smith | PhD candidate, Department of Middle Eastern Studies and Department of Linguistics, University of Chicago
8 weeks
Wednesdays, February 24–April 14, 6:00–8:00 p.m. Central
(class does not meet on March 17)

This class is an introduction to the Hieroglyphic Luwian language and writing system. Closely related to Hittite, Hieroglyphic Luwian was written in an indigenous Anatolian script that combines logographic and phonetic signs. The Hieroglyphic Luwian corpus consists primarily of monumental inscriptions but also includes royal seals, lead strips, and occasionally pottery. As we survey this corpus over the course of eight weeks, students will learn to recognize common Hieroglyphic Luwian signs, become familiar with the basic grammar of the Luwian language, practice reading and translating a variety of Bronze Age and Iron Age Hieroglyphic Luwian texts, and gain an understanding of the social and political context of the Luwian language.

THE UNIVERSITY OF CHICAGO
INSTITUTE FOR THE STUDY OF ANCIENT CULTURES
West Asia & North Africa

1155 East 58th Street
Chicago, Illinois 60637
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