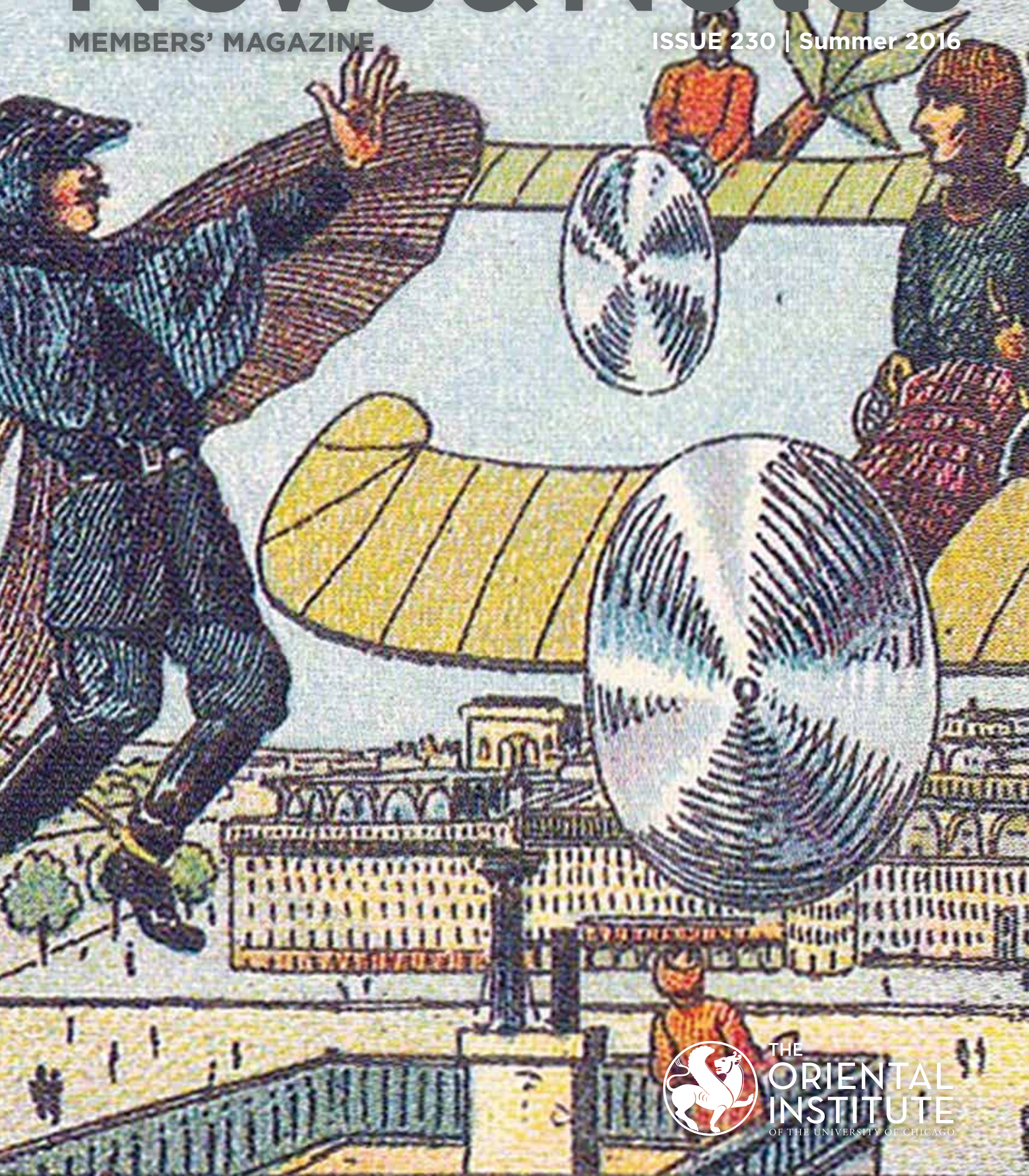


News & Notes

MEMBERS' MAGAZINE

ISSUE 230 | Summer 2016



THE
ORIENTAL
INSTITUTE
OF THE UNIVERSITY OF CHICAGO

FROM THE DIRECTOR'S STUDY

Exploration of the ancient civilizations of the Near East lies at the intersection between the humanities and social sciences, on the one hand, and the physical, biological, and exact sciences (e.g., mathematics), on the other. The question of what constitutes “science” and when it arose in human history is both a fascinating and hotly debated topic among scholars from a broad range of fields, from historians to philosophers, classicists, and Assyriologists. We are essentially asking not only “what” ancient people knew about the world around them, but also “how” they organized that knowledge and grounded it within their broader cultural system.

As definitions of science have changed with developments in theories of historiography and culture, evidence for science in the ancient Near East has played only a small role in these inquiries, mainly owing to the anonymous nature of ancient Near Eastern texts. In this issue, John Wee, Assistant Professor of Assyriology at the Oriental Institute, provides an overview of the history of thought on this topic from the mid-nineteenth century to the present, and offers a new way of thinking about how to interpret scientific ideas and practices through history, which places these developments within their socio-cultural as well as geographical and historical contexts. In this way, he demonstrates how certain systematic disciplines in antiquity, such as the study of physiognomy in Mesopotamia, may, indeed, qualify as “science.”

This issue also features a summary of the Postdoctoral Symposium, “Irrigation in Early States: New Directions,” organized by Postdoctoral Fellow (2015–17) Stephanie Rost, which took place on March 3–4, 2016. The symposium brought together an international panel of scholars with expertise in widely disparate time periods and geographical areas — from the Americas to the Near East, India, China, and Southeast Asia — to address the multifaceted topic of the relationship between irrigation and the socio-political and economic organization of early state societies. Conference participants offered descriptions of diverse irrigation systems, presented overviews of the methodology used to study ancient irrigation systems, analyzed the economic and socio-political functions of these systems within their various contexts, and explored the cosmological and cognitive aspects of irrigation

as demonstrated by ritual and as embedded in the formation of language itself. Postdoctoral Fellows like Stephanie contribute to the Institute’s vibrant community of scholars by bringing new topics and questions to bear on the studies of the ancient Near East.



A handwritten signature in black ink, reading "Gil J. Stein".

Gil J. Stein, Director

In This Issue

- | | |
|--------------------------------|-------------------------------|
| 3 Artifact Highlight | 23 Volunteer Spotlight |
| 4 Ancient Science | 24 From the Field |
| 16 Postdoctoral Seminar | 25 Programs & Events |
| 20 Multisensory Tour | 31 Travel Program |

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Designer: Rebecca Cain

News & Notes is a quarterly publication of the Oriental Institute, printed exclusively as one of the privileges of membership.



On the Cover

Personalized ways of flight by the Year 2000. French postcard from the series *En l'an 2000* (1899–1910), by Jean-Marc Côté, Villemard, and others.

ARTIFACT HIGHLIGHT

Pearly White and Precious: A Duck-Shaped Vessel from Megiddo

By Kiersten Neumann

The ancient city of Megiddo in northern Israel overlooked one of the principal trade routes connecting Egypt and the Middle East. For this reason, object groups recovered from its many layers of occupation — the site having been inhabited from prehistoric times to the Persian period — demonstrate an impressive range of cultural influences and ideas. The rich collection of 382 carved ivories uncovered during the Oriental Institute excavations of the 1930s are exceptional for their variety of subjects and stylistic diversity (Gordon Loud, *Megiddo Ivories*, OIP 52, 1939).

This carved piece is somewhat unique among the Megiddo ivory corpus. Rather than elephant tusk, which was also used during the Late Bronze Age, it was carved from the lower canine of a hippopotamus, a raw material that offered particular benefits. Here, the craftsman was able to take advantage of the curved triangular contour of the complete canine for the finished product. In contrast, a number of other pieces were carved from a single tusk, and their finished shapes do not clearly resemble the original raw material — for example, circular containers (pyxides), figurines, and rectilinear plaques that were used as inlays for furniture. Enhancing the canine's appeal is its natural sheen and pearly white color; unlike other ivory types, hippo ivory does not turn yellow with age. In addition to its visual appeal, this natural glossiness also gave it a smooth and pleasing touch.

Adding to this ivory's prestige was its original use. This piece has many features in common with Egyptian-style duck-shaped ivory cosmetic vessels that were produced as part of a local Levantine tradition (Cemal Pulak, "Duck-Shaped Vessels," in *Beyond Babylon*, Metropolitan Museum of Art, 2008, pp. 330–33). Known examples of this type help us to reimagine this object in its entirety. Covering the shallow receptacle would have been a pair of wing-shaped lids that pivoted back and forth, secured by pins inserted into the two holes in the narrower end of the ivory. The incised design at the opposite end of the receptacle represents the duck's tail feathers. The larger hole at the narrow tip would have been used to anchor the duck's neck, its head and beak either forward facing or twisted backward over the wings. The holes at the centers of the incised rosettes likely held inlays of precious materials, such as glass, stone, or gold. Detached duck heads and wings were also found at Megiddo — perhaps among this group are the ones that were once attached to this piece. While all of the Levantine duck vessels seem to have been carved exclusively from hippo canine, its natural shape being perfectly suited to the container's design, what makes this example unique is the curved rather than straight rectangular shape of the body of the vessel, the craftsman preserving the original extent and contour of the medium.

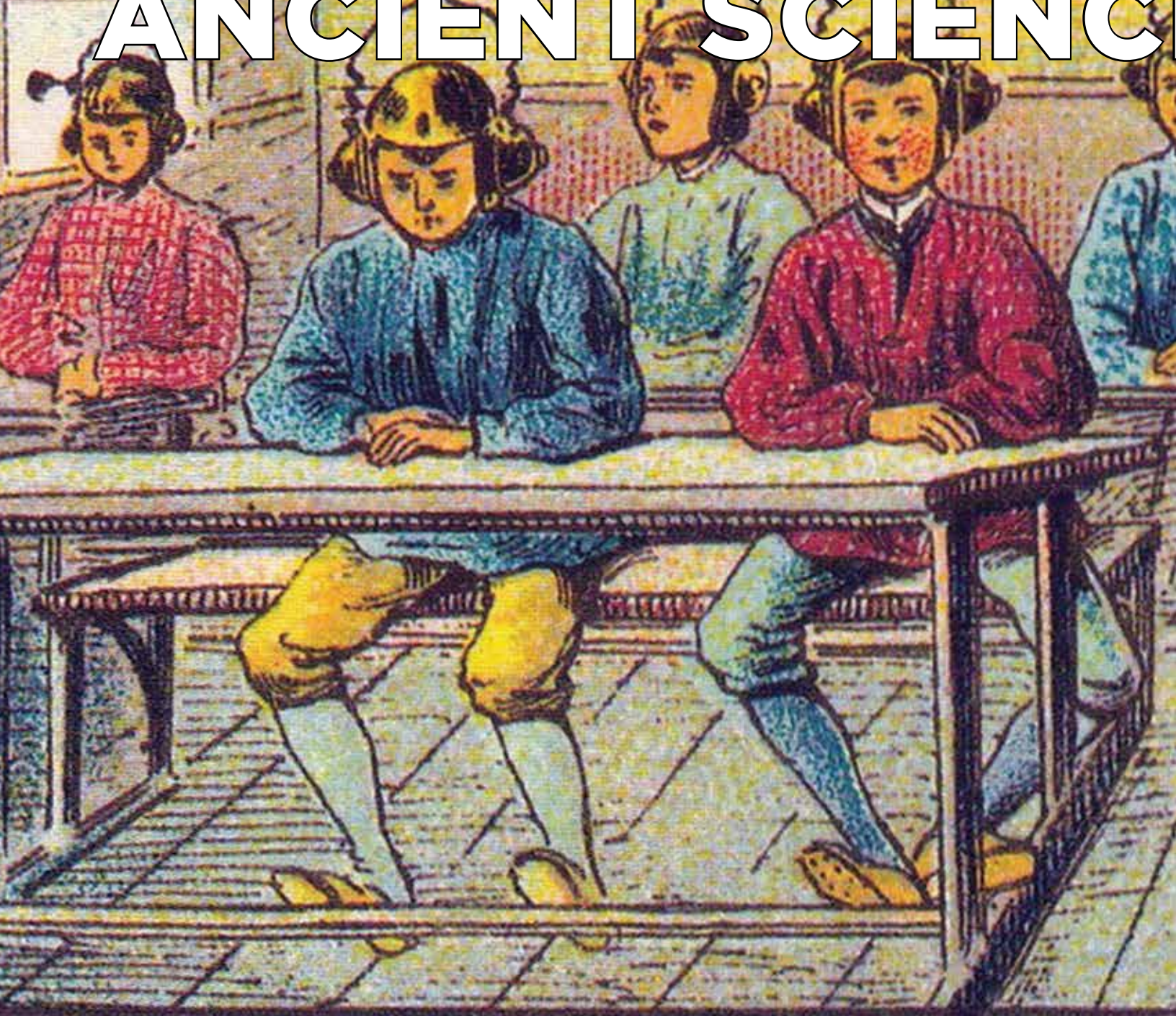
Thinking about this carved ivory in these different spheres of practice — its manufacture by a craftsman and its use by elite consumers — gives us a sense of the visual and tactile qualities of ivory, and hippo canine in particular, that were valued by the international Late Bronze Age communities of the Mediterranean and Near East.



Material: Ivory (hippopotamus canine)
Origin: Megiddo, Stratum VIIA
Date: Late Bronze IIB, 1300–1200 BC
Dimensions: Thickness of receptacle wall, 0.3 cm
OIM A2221 (D. 5476)

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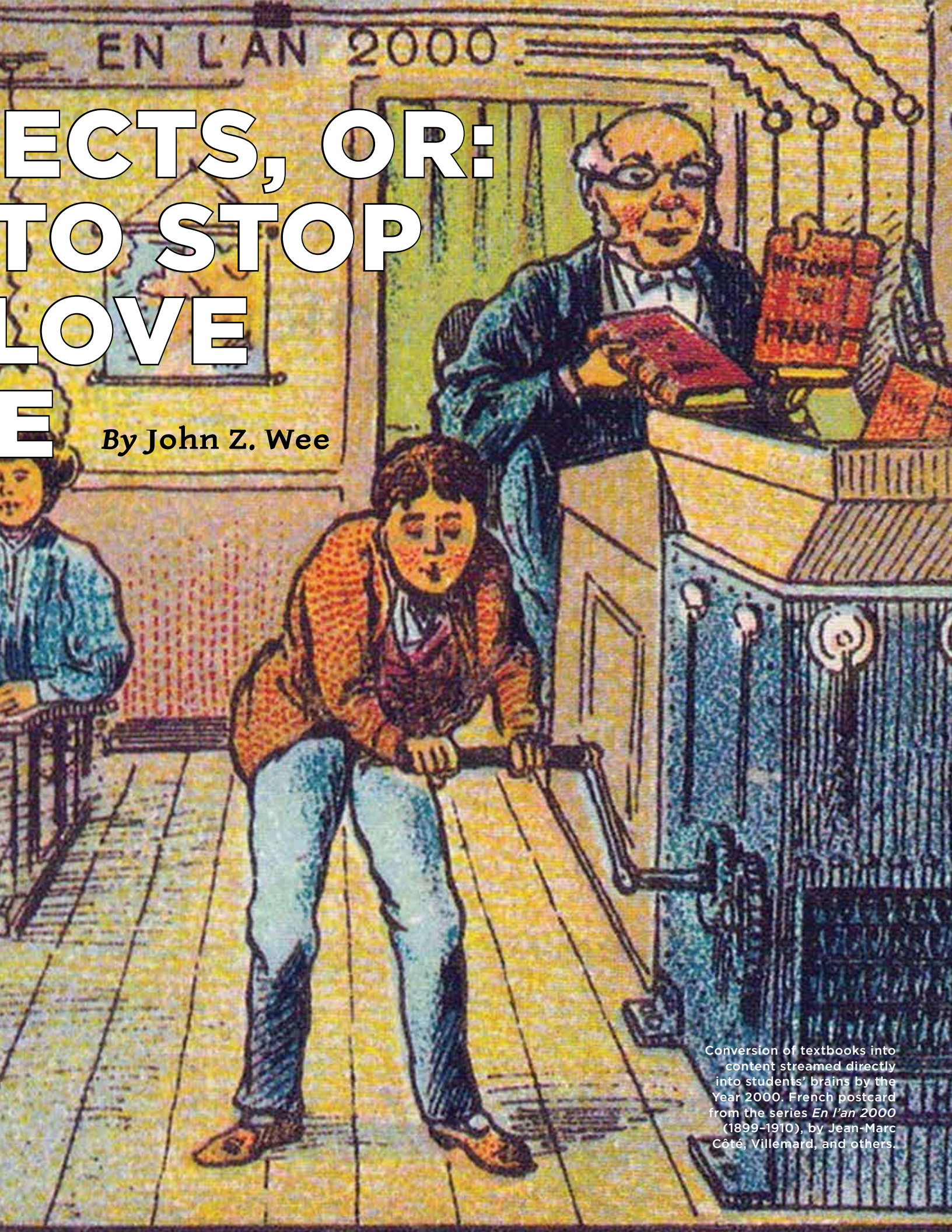
**WRETCHED SUBJECT
HOW I LEARNED
WORRYING AND
ANCIENT SCIENCE**



EN L'AN 2000.

ECTS, OR: TO STOP LOVE E

By John Z. Wee



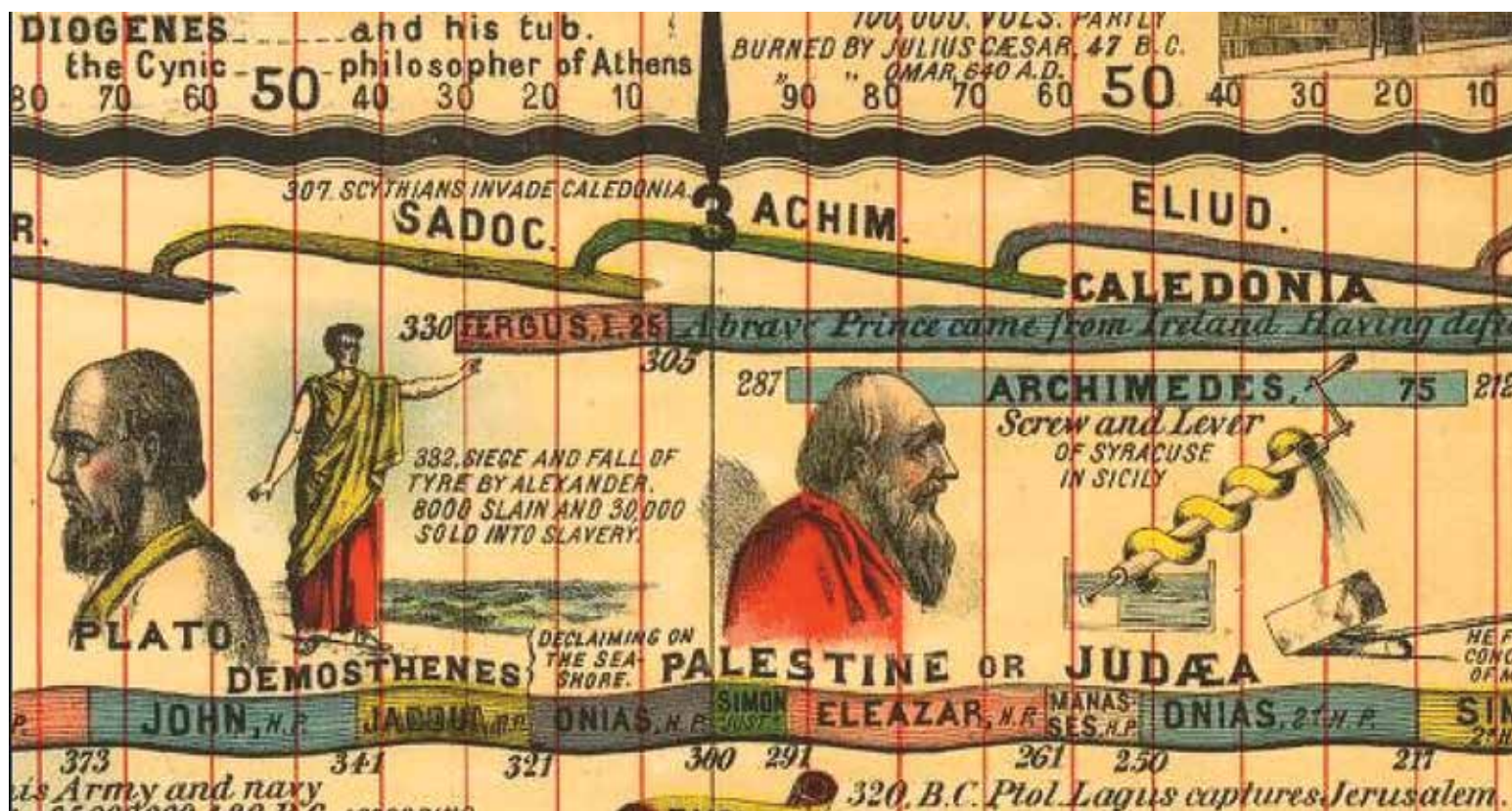
Conversion of textbooks into
content streamed directly
into students' brains by the
Year 2000. French postcard
from the series *En l'an 2000*
(1899-1910), by Jean-Marc
Côté, Villemard, and others.

“**T**he Study of Wretched Subjects” emblazoned the top of a one-page essay otherwise tucked quietly within the 1951 issue of the history of science journal *Isis* (vol. 42, no. 2). Its author was the great scholar of ancient astronomy, Otto Neugebauer. Its title referred to what the journal’s editor George Sarton had described in an earlier issue as “a wretched collection of omens, debased astrology and miscellaneous nonsense ultimately derived from Arabic, Greek, Persian and of all the superstitious flotsam of the Near East.” By urging upon historians of science as their obligation “the recovery and study of the texts as they are, regardless of our own tastes and prejudices,” Neugebauer played to the very values extolled in the young discipline. After all, Sarton (1931, p. 116) had imagined that the virtue of scientific disinterestedness would unite the sciences and the humanities in a New Humanism, and that science itself would supply not merely subject matter for history writing, but also its attitude and method of evaluating historical and cultural facts in unbiased ways.

In the nineteenth century, seminal works like Auguste Comte’s *Cours de philosophie positive* (1830–1842) and William Whewell’s *History of the Inductive Sciences* (1837), among others, looked back at how different branches of scientific knowledge had developed in the preceding centuries, while affirming an essential unity of the sciences that was rooted in shared ways

of reasoning and analogous methodologies. This acknowledgment of basic continuities heralded the coming historiography with its sweeping narratives of science and mathematics that brought together, in a single story, extensive (though mostly Western) geographies and millennia of human thought. Historical surveys by Rouse Ball (*A Short Account of the History of Mathematics*, 1888), Archibald Geikie (*The Founders of Geology*, 1897), William C. Dampier (*A History of Science, and Its Relations with Philosophy and Religion*, 1929), William Wightman (*The Growth of Scientific Ideas*, 1951), and Rupert and Marie Hall (*A Brief History of Science*, 1964), to name but a few authors, took up the red thread of scientific innovation in classical Greek antiquity and followed its meanderings through the Middle Ages, the Renaissance, and the Enlightenment, before ending up in the present. Magisterial titles such as John Dreyer’s *History of Planetary Systems from Thales to Kepler* (1905), Pierre Duhem’s *Le système du monde, histoire des doctrines cosmologiques de Platon à Copernic* (1913–1959), and Thomas Hall’s *Studies in the History of General Physiology, 600 BC–1900 AD* (1969) situated modern achievement within the panorama of historical development.

The notion of progress in these stories gained impetus from popular theories of social evolutionism in the nineteenth century, even though these were rapidly being challenged by anthropologists and sociologists from the beginning of the twentieth century. As Regius Professor John Bury (1920, p.



Landmarks in a universal history of science, including Archimedes’ screw, Erathosthenes’ calculation of the earth’s circumference, and Scipio Nasica’s water clock. Sebastian C. Adams, *Adam’s Synchronological Chart* (1881), 7. David Rumsey Historical Map Collection.

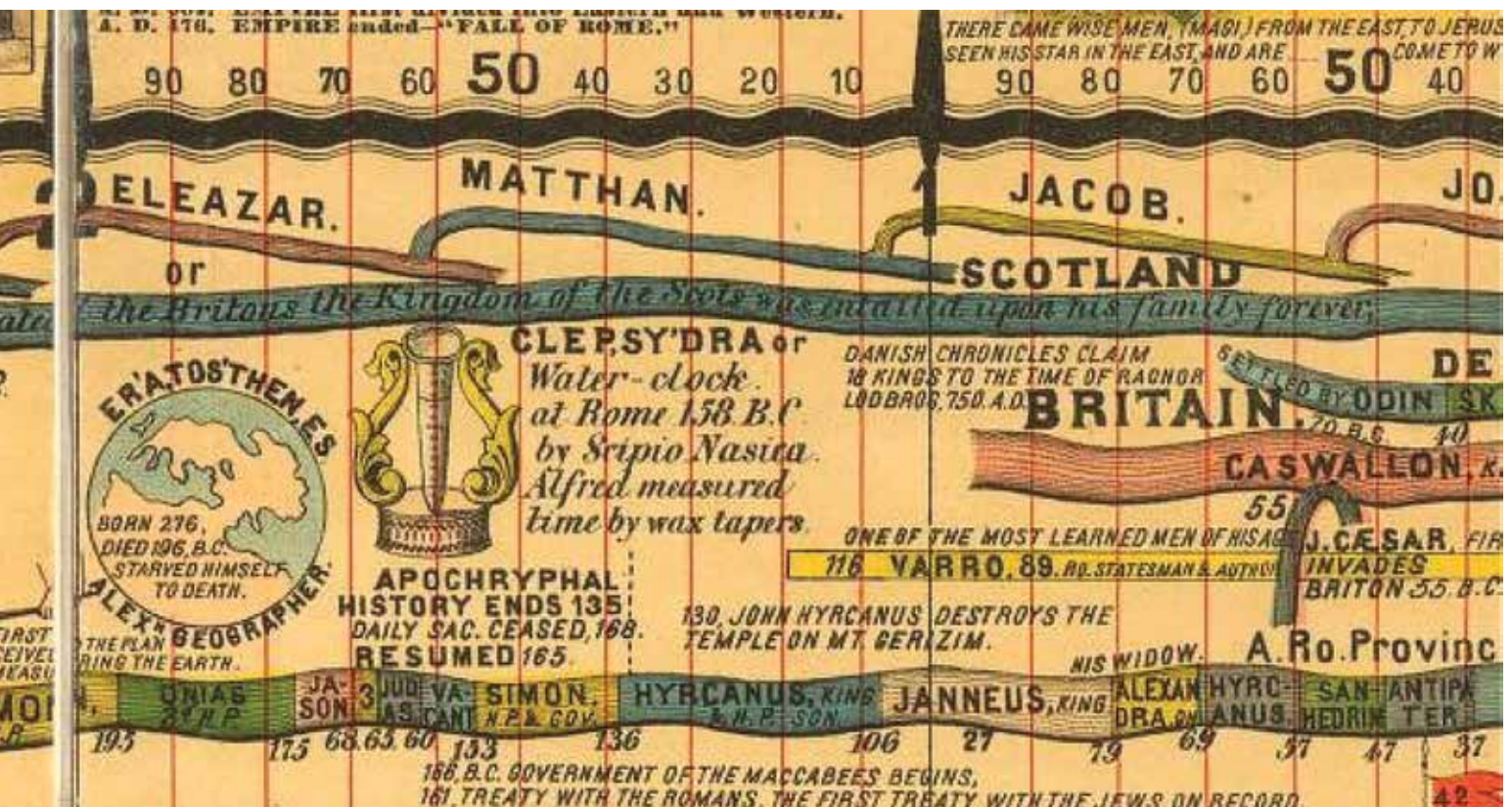
104) quaintly put it, citing the French author Fontenelle, “we are under an obligation to the ancients for having exhausted almost all the false theories that could be formed.” Given that the good professor of classics was of such an opinion, it comes as little surprise that scientists of the time, often with little more than a general classical education, should have considered themselves expert enough to adjudge scientific and medical texts from ancient Greece and Rome. After all, since scientific progress was thought to be linear and unidirectional, what prerequisite other than a mastery of modern science was necessary for the understanding of its ancient primordial form? Because scientific language and concepts were viewed as universal, it was assumed that ancient science could be comprehended with minimal cultural interpretation.

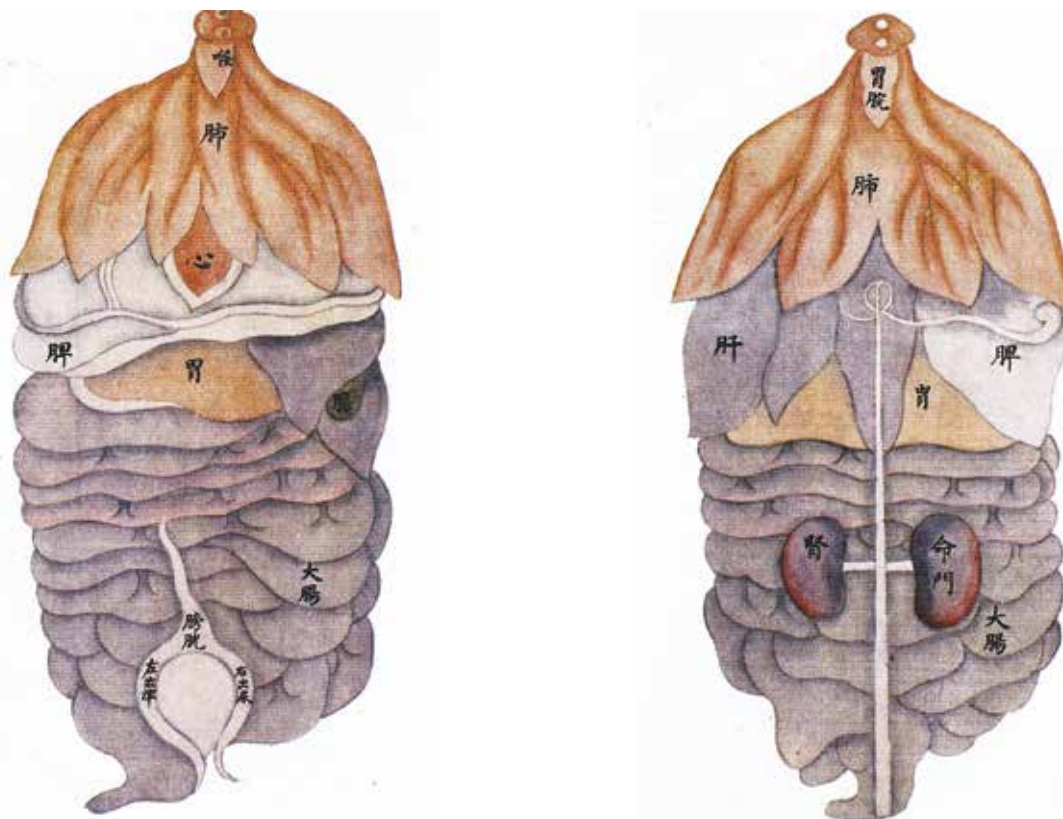
Compared to the Greek and Latin classics, the fields of ancient Near Eastern and Egyptological studies were still very much in their infancy, and perhaps the scarcity of modern translations contributed to the diminished roles of these great cultures in the narratives. It remains questionable, however, whether our knowledge today of subjects like Babylonian astronomy or Egyptian medicine could have been articulated independently enough at the time from the subsuming storyline of Western progress. The multi-volume opus *Science and Civilization in China* (1954–ongoing), by Joseph Needham and his

Cambridge team, for example, stood as an important counterpoint to their contemporaries. Yet, as one critic pointed out,

in the late fifties and early sixties [historians of Western science] continued to insist that science was exclusively Western: in response to studies of the sciences of other civilizations (and Needham’s in particular), the criteria defining *science* changed; however, the defining boundaries of science as exclusively Western did not Western science was no longer defined solely in stark opposition to Oriental intuition. In its place, *Western science* was defined by an incongruous amalgam of “essential elements” culled from the tradition claimed for the West, including noncontradiction, empirical testing, Euclid, and logic. (Hart 1999)

Indeed, from the middle of the twentieth century, with the looming Cold War and its demand for ideological self-fashioning, Greek antiquity seemed to offer the West a heritage of both politics and scientific prowess. The two were married in the belief that “the very heart of political democracy is adjudication of social differences by discussion and exchange of views, [and that] this method provides a rough approximation to the method of effecting change by means of experimental inquiry and test: the scientific method” (Dewey 1944, p. 188). Others observed how “the development of a certain openness and dialectical acuteness in parts of Greek philosophy and science ... reflect the very considerable experience that many





Anatomical drawing of front (left) and back (right) views of the human viscera, from the *Renti jingmai tu*, produced in China during the Kangxi period (1662–1722). Wellcome Library, London.

Greek citizens acquired in the evaluation of evidence and arguments in the contexts of politics and the law” (Lloyd 1989, pp. 78–79), or the existence of “a crucial link between the existence of certain forms of democracy and the development of argumentation skills that led to the hypothetico-deductive method” (Russo 2004, p. 172).

David Pingree (1992, p. 555), the prominent historian of mathematics, offered an especially trenchant critique on this “Hellenophilia” that produced four misconceptions:

The first of these is that the Greeks invented science; the second is that they discovered a way to truth, the scientific method, that we are now successfully following; the third is that the only real sciences are those that began in Greece; and the fourth ... is that the true definition of science is just that which scientists happen to be doing now, following a method or methods adumbrated by the Greeks, but never fully understood or utilized by them.

Even the founder of the Oriental Institute, James Henry Breasted (1930, pp. 15–18), was not exempt from such influences in his day, as is evident from his description of the ancient authors of the Edwin Smith Papyrus as “the earliest natural scientists of whom we know anything, who, confronting a world of objective phenomena, made and organized their observations and based inductive conclusions upon bodies of observed fact,” but who nonetheless failed to attain “the complete dissociation of medicine from magic and religion

[that] was the achievement of the Greeks.” This is not to say that classicists were content with the elevation of their discipline on the basis of modern Western priorities, which inadvertently had its share of troubling loopholes. The renowned scholar of Greek philosophy and medicine Ludwig Edelstein (1952, p. 576) protested that subjects like “astrology, the theory of humors, [and] Plato’s mathematical scale of music are not ‘intrusions’ in ancient science,” just because they do not conform to the modern scientific canon. Astrology, far from being an embarrassment of Greek science, was said to have constituted a universal natural law that was comparable in scope to and replaceable only by Newton’s law of gravitation (Thorndike 1955).

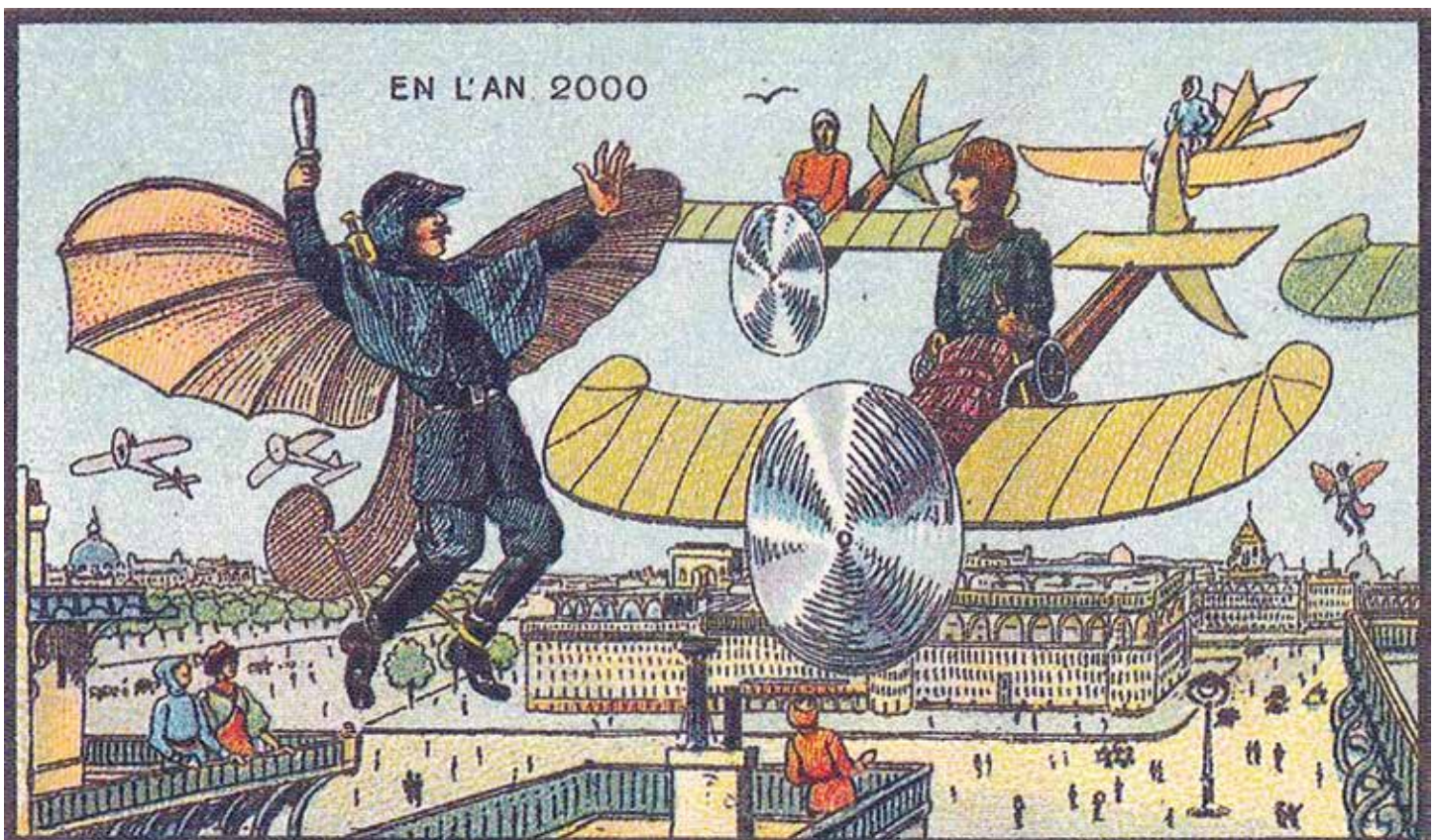
Meanwhile, in the 1940s, the philosopher Alexandre Koyré had begun to formulate the view of a seventeenth-century “Scientific Revolution” centered upon the pivotal figures of Galileo Galilei and Isaac Newton, whose discoveries and theories resulted in major shifts in world perspective. Koyré’s idea found its way into popular imagination, importantly because of its adoption by the Cambridge professor Herbert Butterfield. Several did question the accuracy of the label, since significant breakthroughs in human thought could be identified already at various occasions in the Middle Ages and the Renaissance. Others, on the other hand, argued for the postponement of the “Scientific Revolution” until the eighteenth century, where it would belong together with contemporary upheavals in

the French Revolution, the Industrial Revolution in Britain, and the post-Kantian Intellectual Revolution in the German states (Cunningham and Williams 1993, p. 425). A common theme that emerged, regardless of when one dates the event, had been anticipated in Butterfield's anti-social-evolutionist polemic against *The Whig Interpretation of History* (1931). This curious expression derived its name from the liberal, pro-parliamentary "Whig" party in Britain, and depicted the progression of history as an optimistic march toward ever increasing freedoms, knowledge, and scientific advancement. To engage in Whig historiography was to allow present perspectives and motivations to distort one's understanding of the past. The notion of discontinuity implicit in the idea of "Revolution" seemed just the right remedy for Whig history.

As such definitions of the Self (present) versus the Other (past) came into sharper focus, scientific modernity with its emphasis on unmediated experience and reason readily found its antipole in textual traditions that scripturalized the wisdom of past authorities. Historians now hesitated to designate the latter as "science" or even the Latin *scientia*, often relegating to it instead the nondescript label "natural philosophy." In his book transparently titled *Medicine before Science* (2003), for example, Roger French described how university-trained doctors, who had been certified by academic curricula rooted in Aristotelian and Galenic ideas, adopted new clinical and

experimental procedures in an effort to remain relevant in the eighteenth-century Enlightenment. The stereotyping of past practice as a kind of "idolatry of books" (Edelstein 1952, p. 577) was unfortunate for the study of ancient cultures that yield manuscripts on scientific, medical, and mathematical topics, but that frequently do not preserve enough information on how such manuscripts were used in antiquity. For the historian to assume that descriptions in ancient texts meticulously depict how the ancients thought and behaved (in the absence of contrary evidence) was to run the risk of portraying them as slavish adherents to the written word. For the historian to imagine how the pragmatics of real-life scenarios might have led to deviations from the text was to venture into the realm of speculation.

Another development that indirectly contributed to a sense of discontinuity with the past was the growing disenchantment with positivism at the beginning of the twentieth century. According to positivist thinking, the only legitimate knowledge claims were those verifiable by sensory experience through disinterested methods of reasoning. In Comte's *Cours de philosophie positive* (mentioned above), positivist interpretations of natural phenomena represented a shared characteristic among the sciences, whether in the past or present. The esteemed philosopher Karl Popper, however, argued that such knowledge claims could never be exhaustively



Personalized ways of flight by the Year 2000. French postcard from the series *En l'an 2000* (1899-1910) by Jean-Marc Côté, Villemard, and others.



Sections of the human head, with a network of crisscrossing lines on the forehead between the eyes representing the *rete mirabile*. Johannes Dryander, *Anatomiae* (1537), fol. 28r. Wellcome Library, London.

proven true, and that a better criterion for legitimacy was the possibility that a claim could be proven false. Another attack on the tenets of positivism came by way of questioning the very idea of sensory perception, which had been assumed as unproblematic. In his very readable book *Patterns of Discovery* (1958), Norwood Hanson used optical illusions to illustrate how a viewer could be predisposed to interpret an ambiguous shape or figure in certain ways, in response to the scenery in the figure's background. Observations are "theory-laden," in that they are molded by prior knowledge of the thing observed and shaped by conventions of language use. Seeing is a cognitive activity, which relies on presuppositions of what the world is like and what the object viewed is likely to be in the context of such a world.

A good illustration would be the case of the *rete mirabile*, a network of blood vessels that the ancient anatomist Herophilus supposedly observed beneath the human brain. Biologists today reject it as a feature of human anatomy, leading to suspicions that Herophilus had in fact observed the *rete mirabile* in artiodactyls such as oxen, pigs, sheep, and goats, and

misassigned it to humans. Others have noticed that even his description of the so-called torcular Herophili, the confluence of several major sinuses in the human skull, seems to bear closer resemblance to its counterpart in the ox (Woollam 1958, p. 5). Instead of regarding cases like these as sloppy errors, however, an alternative explanation would involve different presuppositions on the part of Herophilus and later dissectionists, about the extent to which anatomical structures are analogous across different animal species. Interestingly, the sixteenth-century surgeon Realdus Columbus, who repeatedly claimed to "[privilege] observation and sense-experience over reason," continued to assert that the *rete mirabile* existed in humans. In a fascinating exhibit of the dynamics at play between ancient authority and personal sensory experience, which historians tend to underestimate as mere "idolatry of books," the famed Italian surgeon Berengario da Carpi transferred "the functions that Galen gave to the *rete mirabile* to the small arteries of the brain substance," acknowledging that the ancient Roman physician had indeed conducted anatomical studies, even if he had expressed his findings in ways that did not always conform to medical conventions in the Renaissance (Cunningham 1997, pp. 77, 155).

The work of Hanson and others highlighted the importance of culture, society, and language in the articulation of theories, which in turn shaped observation and the interpretation of sensory experience. Without theory, any sequence of facts, which might otherwise be recognized as cause and effect, could simply be dismissed as mere coincidence. Scientists worked "retroductively" from theories, discerning the facts of their world through the framework of conventional language, and identifying causes and effects by means of theory-laden observations. Just as Butterfield rejected the anachronistic imposition of the present on the past in Whig history, cases like the *rete mirabile* suggest we cannot always take for granted that the ancients shared our own experiences and definitions of objects, concepts, and events in the world. In some ways, Hanson's ideas echoed older developments in linguistics and cognitive science, as expressed, for example, in Edward Sapir's (1929, p. 209) claim that "the worlds in which different societies live are distinct worlds, not merely the same world with different labels attached." Benjamin Lee Whorf (1956, p. 214) hinted at the possibility of dialogue, even between users of disparate language systems: "all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar, or can in some way be calibrated." Today, the Sapir-Whorf Hypothesis stands at one end of the spectrum of views on the ability of language to determine mentality and behavior.

Many of these arguments would have sounded familiar to readers of Thomas Kuhn's book *The Structure of Scientific Revolutions* (1962), which has been acclaimed as one of the most influential works of the twentieth century, and one of the most cited academic publications of all time. The history of scientific development, according to Kuhn, consists of rel-

atively long and stable periods of “normal science,” separated by briefer episodes of “scientific revolutions.” Normal science is characterized by universal consensus on a paradigm, and scientists work retroductively to demonstrate the validity of the accepted paradigm or to extend its applications. When experiments fail to replicate the paradigm, there is a strong impulse to ascribe failure to the scientist’s incompetence or his instrument’s inaccuracy, rather than to any fault of the system itself. During scientific revolution, however, there is a shift in paradigms resulting in changes in the meanings of key terms and concepts, so that adherents to different paradigms may experience difficulty communicating with each other. For example, whereas “motion” in Newtonian mechanics is confined to changes in spatial location, “motion” in Aristotle’s system included also other kinds of changes like color, temperature, density, and even psychological states. The incommensurability between Newton’s and Aristotle’s definitions of so basic a concept underlies our modern puzzlement over the fact that, for Aristotle (*Physics* 8.10.267a1), the magnetizing quality of a lodestone could serve as the model for how the First Mover imparts to the cosmos the ability to effect all sorts of changes.

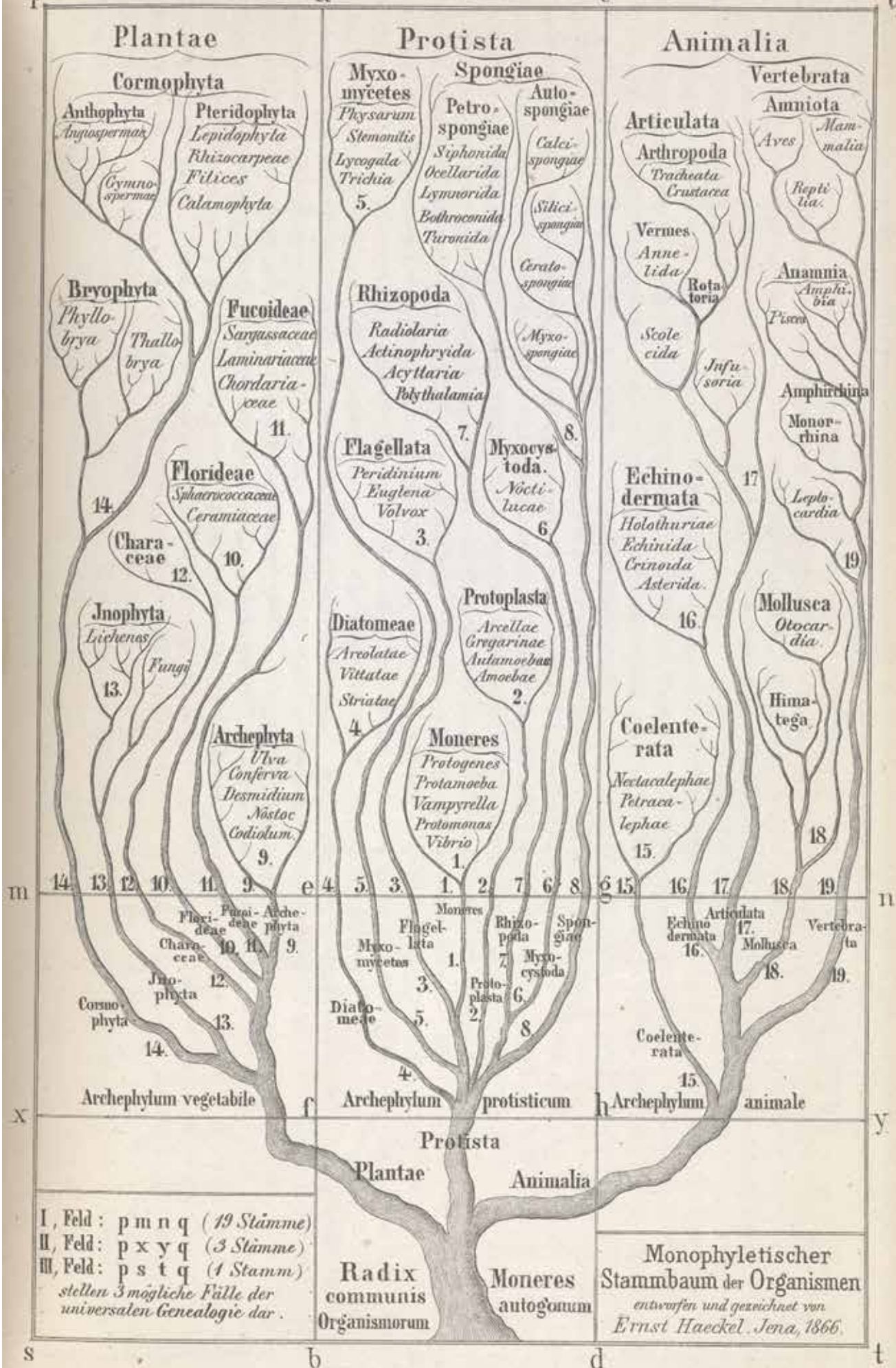
Kuhn’s huge influence should not be understood as the absence of criticism, but in terms of the degree and fervor to which critics and Kuhn himself became engaged and changed by discussions, such as over how revolutions would have arisen given scientists’ commitment to normal science, whether so-called paradigm shifts were as dramatic as imagined, and whether the problem of incommensurability for scientists belonging to separate paradigms really existed or was as insurmountable as suggested, among other questions. In the later part of the twentieth century and up to the present day, this emphasis on social, cultural, and professional conditions under which scientific ideas gained currency invigorated scholarly research in what came to be known as the sociology of scientific knowledge, as well as broader agendas in science (and technology) studies. It is beyond the scope of this essay to explore individually the number of prominent theorists during this period and the often-nuanced distinctions that separate one program from another. For our purposes, it is instructive to consider instead why science and medicine in the ancient Near East (and even in classical antiquity) make few appearances in such studies.

In essence, the acknowledgment of a vital sociological component in history of science narratives tended to focus on the formation of consensus, which is achieved not by a detached process of reasoning, but by converging socio-cultural influences. This very notion of consensus is notoriously elusive in the an-

cient sources. Our identifications of intellectual giants that dominated their field — such as Theophrastus in botany, Euclid in geometry, and Ptolemy in astronomy — may be as much a statement on our modern access to these authors’ works or their testimonials, which to an extent reflects the skewing interests of early Islamic and medieval European cultures that preserved versions of the manuscripts. Citations of predecessors or contemporaries in treatises can be deceptive. Theophrastus’ description of Plato’s views on the senses, for example, do not bear up to scrutiny when we compare them with Plato’s own account (Long 1996, pp. 345–62). The false ascriptions to famous authors in Greek and Roman pseudepigraphy, as well as anonymous authorships of texts from the ancient Near East, purported that their contents were aligned with the views of recognized authorities or with traditions that could be taken



Frontispiece of *Physica Subterranea* (1669), by the alchemist Johann Becher, who, together with Georg Stahl, developed a theory on the role of the element *phlogiston* in combustion. Illustrating the subjectivity in identifying a “paradigm,” Thomas Kuhn thought Lavoisier’s refutation of the *phlogiston* theory represented the shift from one paradigm to another, whereas the sheer diversity in forms of *phlogistic* chemistry led others to define it as “pre-paradigmatic.”



for granted, even though there is no real guarantee that was the case. Terse observation statements on phenomena frequently occupy the bulk of Near Eastern compositions on science and medicine, with little to tell us how their individual facts were connected into theories. Where interpretations are explicitly expressed in ancient commentaries or scholia on these texts, commentators may be sometimes suspected of deviating from original authorial intent, behaving instead as authors in their own right by introducing new meanings. The relationship between ancient science and ancient culture or society is, therefore, often imaginable only in broad strokes. While so-called archival study on the distribution of textual sources and genres in localized archaeological sites remains a laudable goal, broad consensus for ways of doing science do not always leave a clear “paper trail” of contiguous regions that yield the same type of scientific text.

Where does this leave us? The present generation of scholars in ancient Near Eastern and classical antiquity, who typically have cut their teeth on the philological study of texts in the original languages, are unlikely to find appeal in the sweeping histories of the late nineteenth and early twentieth centuries, which frequently came at the price of accuracy in detail. Indeed, as our understanding of these ancient cultures becomes increasingly more complex and nuanced, and as we appreciate the necessity of examining the whole of society and culture instead of isolated scientific practices, the old mammoth projects with narratives spanning millennia become less and less plausible. Furthermore, regardless of the weight one accords to a single “Scientific Revolution” or to multiple revolutions in history, it appears that modern concerns for certain phenomena, definitions of concepts, standards of proof and argument, and the nature of evidence can be markedly different from those held by the ancients. Theory-laden and retroductive qualities of sensory perception caution us not to assume that experiences of our own world are always normative for observers in the past. If not careful, such crucial discontinuities can be obscured by Whig historiography, which bestows value on only those ideas (disembodied from their original cultural contexts) that form tributaries in the stream of modern Western thought.

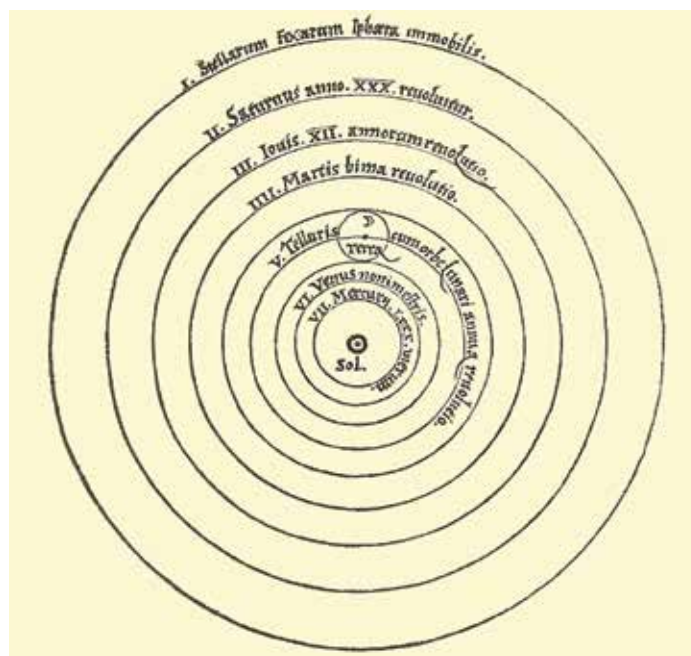
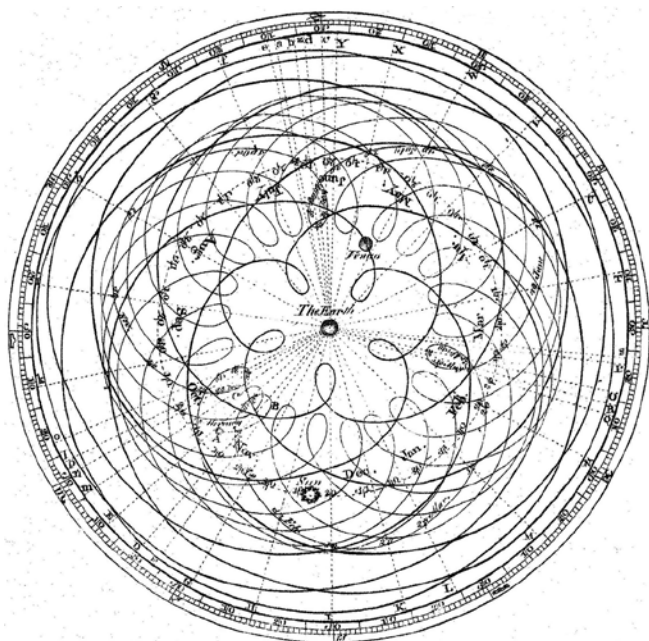
Harvard professor Steven Shapin (1996, p. 7) noted that “historians of science have now grown used to condemning ‘present-oriented’ history, rightly saying that it often distorts our understanding of what the past was like in its own terms,” but wondered if there were admissible ways of integrating both past and present in the same narrative: “To do this would be an expression of just the same sort of legitimate historical

interest displayed by Darwinian evolutionists telling stories about those branches of the tree of life that led to human beings — without assuming in any way that such stories are adequate accounts of what life was like hundreds of thousands of years ago.” The metaphor of an evolutionary tree, which includes both continuities and discontinuities, is an intriguing one. Just as *Homo sapiens sapiens* shares genealogy with earlier ancestors who would not be identified as human in the modern sense, perhaps then we can trace a lineage from modern ideas and practices of science to precursors in the past that would not qualify as “science.” Unless the notion of lineage is to be interpreted very elastically, however, such a solution would still likely exclude many well-defined, systematic disciplines in antiquity like the study of physiognomy in Mesopotamia, the Hippocratic theory of humors, and perhaps also classical geocentric models of the universe.

Fortunately, the metaphor points the way to an alternative model: instead of seeing present and past linked together by an evolutionary tree, we might do better to think in terms of evolutionary strategies, whereby organisms, which may not be directly related to each other, engage in similar problem-solving activities in response to similar environmental conditions. Although the syrphid fly and the scarlet kingsnake belong to totally different phyla (Arthropoda versus Chordata), for example, they display kindred strategies of mimicking more formidable creatures like the honeybee and the coral snake in their respective environments. It is only through a close study of these animals in their local environmental context that their strategies become evident. Parallel to this is the sociological imperative, articulated by Kuhn and others, to elucidate how scientific ideas and practices interact with and develop within the context of society, culture, and the science profession.

Let me conclude by giving one final example: many have noticed how Copernicus’ heliocentric model of the universe in the sixteenth century represented a simplification of the geocentric model by the Roman astronomer Claudius Ptolemy, according to the principle of Occam’s razor not to multiply entities beyond what was necessary. In Ptolemy’s scheme, because a planet appeared to move in eccentric ways around the earth, its motion needed to be represented as a point moving around a small circle (“epicycle”) that was, in turn, moving around a larger circle (“deferent”). By replacing the earth in the center with the sun, Copernicus could, for the most part, represent planetary movements as simple circles around the sun. As a matter of fact, it was likely the same principle (Occam’s razor) that led Ptolemy to adopt the geocentric model in the first place. If the earth were not stationary but moving around the sun, then one would expect to detect parallax in the stars’ positions at different times of the year. Because such parallax was scarcely noticeable given the means available to ancient astronomers, a heliocentric proposal would require the universe to be many more times larger than it was then thought

Opposite: Evolutionary tree including branches leading to *Homo sapiens sapiens* (class Mammalia, no. 19), the syrphid fly (phylum Arthropoda, no. 17), and the scarlet kingsnake (class Reptilia, no. 19). Ernst Haeckel, *Generelle Morphologie der Organismen* (1866), pl. 1. Wellcome Library, London.



Paths of planets in Ptolemy's geocentric model (left) and Copernicus' heliocentric model (right).

to be, so that the stars would be far enough for parallax to be negligible. This concern was expressly voiced by the ancient mathematician Archimedes in the introduction to his treatise *The Sand-Reckoner*. There were indeed additional factors that made the geocentric model preferable in ancient Greek and Roman times, but I wish, in closing, only to draw attention to how similar scientific motivations and considerations led to different conclusions. From the viewpoint of lineage, the geo-

centric model must appear to have been a bad guess or a failed hypothesis. From the perspective of problem-solving strategies, however, both represent reasonable and valid choices in the context of their respective times and societies.

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POSTDOCTORAL SEMINAR

Irrigation in Early States: New Directions

By Stephanie Rost



Watercolor rendering of irrigation along the Euphrates River, by Heidrun Westerboer.

The annual Oriental Institute Postdoctoral Seminar took place on March 3 and 4, 2016, and brought together experts in the field of irrigation studies from a wide regional and temporal scope. The idea of organizing a conference on irrigation management derived from my own research on third-millennium BC watercourse management in southern Iraq. The organization of ancient irrigation has been of considerable interest in the field of archaeology and anthropology because many early civilizations developed in large river valleys, such as in ancient Egypt, China, Mesopotamia, and the Indus valley. Earlier approaches argued that the civilizations that emerged in large river valleys followed a similar trajectory in their evolutionary history owing to their dependency on irrigation. In turn, a considerable interest in the cross-cultural study of what Julian Steward called the irrigation or hydraulic civilizations developed in the 1960s and 1970s. These early comparative works were conducted with the explicit goal of defining cross-cultural regularities in order to explain the mechanism behind the alleged evolutionary trajectory of early civilizations in river valleys, which was thought to be found in the managerial requirements of irrigation agriculture. Many scholars at the time assumed that the organization of irrigation required centralized control that had socio-political as well as economic consequences of such magnitude that they led to the development of social and political complexity and eventually to the formation of the state.

This assumption was based primarily on the scholarly work of Karl Wittfogel, who argued in *Oriental Despotism* (1957) that irrigation conducted on a large scale will inevitably lead to a despotic form of governance. In order to be successful, according to Wittfogel, large-scale irrigation required massive hydraulic devices — not only for irrigation but also for flood control. In turn, the construction and maintenance of these devices required massive amounts of labor that could have only been recruited and organized by a centralized directing authority. Due to the utter dependency on water in an arid or semi-arid environment, controlling access to water allowed for the concentration of power in the hands of a single despotic ruler.

Wittfogel's hydraulic hypothesis has been tested by archaeologists and anthropologists alike, and the conclusion reached, based on the results of later studies, was that centralized control is a choice rather than a necessity. In addition, there has been not only one but several paradigm shifts in archaeology and anthropology away from attempting to define cross-cultural regularities in human behavior and social evolution. With the growing knowledge of ancient civilizations, case study upon case study has shown that social evolution is not linear but has a wide array of trajectories, and that diversity is almost always as common as similarity. In turn, how irrigation was organized could not alone have been the driving force behind the development of social and political complexity. Once the evolutionary perspective was taken out of the inves-

tigation of ancient irrigation, there was space for a renewed investigation of the multiple functions that irrigation might have had in the development and functioning of early states.

The seminar made use of this space in conducting once more a cross-cultural study of ancient irrigation — with a larger quantity of data but, more importantly, with the goal of highlighting the diversity of functions that irrigation had in early states and the variety of conditions under which it developed. The examples presented took us around the globe, from South to North America, to Africa, to West, Central, and Southeast Asia, and they highlighted the diversity of how ancient irrigation was organized in various historical and cultural contexts. The seminar showed that irrigation systems are exceedingly well suited to a cross-cultural comparison — they are systems with both social and physical aspects whose boundaries can be clearly delineated. Both water-control technology and the managerial requirements are well understood, and when compared systematically, similarities and differences do become very apparent. Explanatory models on the difference and similarities between cases have the potential to shed light on many aspects of early states far beyond the organization of irrigation.

One important aspect in the investigation of the role of irrigation in early states is the attributes of the physical system used to irrigate crops. Thus, the seminar's first session showed that irrigation systems are highly diverse and vary depending on their size, the environment in which they occur, the water source they control, the kinds of crops they irrigate, and the duration of their use. Understanding the physical attributes of a system is absolutely essential when analyzing the social structure behind its management. Therefore, the papers presented in this session compared a diverse sample of cases from the highlands of Peru (presented by Maurits Ertsen), to the subtropics of Cambodia and the Yucatan Peninsula in Central America (presented by Vernon Scarborough), to the desert of Lybia (presented by Martin Sterry). The irrigation schemes presented differed greatly from one another inasmuch as the Peruvian system drew water from a river, while in Lybia underground water tunnels ("foggaras") tapped the elevated groundwater table at mountain slopes. Water management for irrigation in the Yucatan Peninsula and the subtropics of Cambodia required the modification of wetlands for agricultural use.

Our knowledge of the physical layout of ancient irrigation systems is — with a few exceptions — limited. The lack of data is partly due to the difficulty of detecting ancient irrigation systems archaeologically as well as defining the duration of their use. This shortcoming is problematic as the size and duration of a system are central to how the functions of irrigation in early states were (and still are) conceptualized. Both determine the labor input and economic output of a system that has profound socio-political ramifications. Thus, it was the goal of Session 2 to provide an overview of the data and

methods used in the “Empirical Investigations of Ancient Irrigation.” Kyle Woodson’s presentation provided a detailed review of the various archaeological methods employed in the investigation of ancient irrigation systems in Gila and the Salt River valley of Arizona dating to the Hohokam period (ca. 450–1450 AD). Stephanie Rost presented results of her analysis of late third-millennium BC cuneiform documents that provide extraordinarily detailed insight into the social organization of irrigation and water management in southern Mesopotamia. Based on several case studies from Mesopotamia, Jason Ur showed how much data can be acquired through the analysis of satellite imagery.

Knowing the physical dimensions of an irrigation system and for which kind of crops it provided water is absolutely essential for investigating the “Economic Function of Irrigation,” which was the focus of the third session. Most scholars would agree that one of the important functions of irrigation was economic in nature, as irrigation played a key role in the intensification of agriculture. However, very little effort has been made to quantify the economic output of irrigation systems to gain a more precise understanding of its economic potential in comparison to other agricultural strategies. Thus, the contribution made by Robert Hunt on the simulation of irrigated maize production in Arizona during the Hohokam period was very valuable — in particular since it was carried out by a Neolithic society that did not develop into a state. This example was contrasted by Hervé Reculeau’s presentation on the economic input and output of palace-organized irrigation during the second-millennium BC in Upper Mesopotamia, modern-day eastern Syria. These two examples provided the opportunity to explore how different modes of organization (centralized versus local control) affected economic output. Emily Hammer posed the question in her presentation whether irrigation might have had a different economic function in the highlands of eastern Turkey, northwestern Iran, and Azerbaijan in the first millennium BC by providing water for the production of fodder rather than crops for human consumption. This is an aspect of irrigation management that has not yet received much attention in the available literature.

In Session 4 the “Socio-Political Function of Irrigation” was explored. First, monumental water-control structures, auspiciously visible in the landscape, can be exploited for political ends. Newly constructed irrigation systems played an important role in the process of settling (and re-settling) people on the landscape. Moreover, colonizing conquered land with loyal subjects solidified the state’s claim of control over its territory. But how these processes were realized remains poorly understood. While coercion is frequently assumed, state investment in irrigation systems as a public good could also have been the means to create economic incentives to entice people to voluntarily join a polity. The papers presented in this session shed light on this process, starting with that by Michael Harrower, who presented an alternative view on the

role of irrigation in the state formation processes in ancient Yemen. Kathleen Morrison discussed how elite consumption of water-loving crops (rice, coconut, cane sugar, and bananas) was the driving force behind large-scale water management in medieval southern India. Juan Carlos Moreno García presented the case of Pharaonic Egypt — an example in which an early state appears to have abstained from taking an active role in irrigation management. He showed how private individuals exploiting various sources of water and land formed an important part of the ancient Egyptian economy.

In the final session, Session 5, the “Cosmological and Cognitive Dimensions of Irrigation” were explored. As has been shown by the very influential work of Steven Lansing, management of irrigation in Bali was highly ritualized — enacting a cosmological belief system of the region while at the same time fostering group cohesion by the regular gathering and commonly enacted rituals among the water users. Zhichun Jing presented the case of ancient China under the Shang dynasty (1200–1046 BC) that controlled water for practical purposes such as irrigation but also for ritual or symbolic purposes. Christopher Woods shed light on a so far completely neglected aspect of the irrigated landscape — river and canal banks functioning as points of reference of speech in the Sumerian language to indicate the location of the speaker and the addressee. Miriam Stark took us to Ankor in Cambodia, showing how hydrologic engineering under the Khmer dynasty (800–1500 AD) was always a blend between practical and cosmological consideration. McGuire Gibson and Carrie Hritz provided a response to a set of five to six papers, highlighting how the papers related to as well as contrasted with one another, and reflected on where we stand in terms of our understanding of irrigation in early states. The seminar concluded with a lively final discussion that evaluated the outcome of our gathering.

This seminar could have not been realized without the generous support of a large number of people. I want to thank first and foremost Arthur and Lee Herbst for their continuous and generous financial support of the annual postdoctoral seminar program. I want to thank Gil Stein, director of the Oriental Institute, for employing me; Chris Woods, associate professor of Sumeriology, for being a true and very supportive mentor; and Mariana Perlinac, for providing continuous support for not only the conference but also getting settled at the Oriental Institute and Hyde Park. I also want to give special thanks to Tom Urban and Leslie Schramer, of the Oriental Institute Publications Office, whose tremendous editorial support and continuous assistance made the organizing process smooth sailing. I wish to thank Brittany Mullins, associate director of development, for ensuring with great care that our culinary needs throughout the conference were met; Kiersten Neumann, museum curator, for giving a great tour through the Oriental Institute Museum galleries; Knut Boehmer, IT support specialist, for excellent technical support; and

Charles Derbigny for logistical support in the running of the seminar. I am also very grateful to Morag Kersel, associate professor of anthropology at DePaul University and research associate at the Oriental Institute; Richard Payne, assistant professor in ancient Near Eastern history; and James Osborn, assistant professor of Anatolian archaeology, for functioning as session chairs. My gratitude also goes to Steve Camp, executive director; D'Ann Condes, financial manager; and Nathaniel Francia for handling the financial ends of this conference.

Many thanks also to two previous Postdoctoral Fellows Ilan Peled and Miriam Müller, to whom I could always turn for advice. I want to also thank my postdoctoral colleague Lynn Welton, who was very generous in helping out and providing her input. Last but not least, I want to thank all the speakers for being such a pleasure to work with and providing truly excellent papers, which made this seminar an engaging and very productive event.



2016 Postdoctoral Seminar participants. Row 1 (bottom of the stairs): Robert C. Hunt, Emily Hammer, Jason A. Ur and Carrie Hritz; Row 2: Morag M. Kersel, Vernon L. Scarborough, Stephanie Rost, Michael Harrower, Maurits Ertsen; Row 3: Zhichun Jing, Miriam Stark; Row 4: Christopher Woods, Kathleen D. Morrison, M. Kyle Woodson, Hervé Reculeau, Martin Sterry; Row 5: McGuire Gibson. Photo by Jeffrey Newman.

NEWS

New Access Program: Multisensory Tour for Blind and Partially Sighted Visitors

By Carol Ng-He

Throughout history, we have lived in a world of sensation. Archaeologists use their senses to try to reconstruct past societies and lives: they use the sound of a piece of pottery as it falls to infer temperature at which the pot was fired; they touch a potsherd to seek out the value of different materials and construction techniques for different purposes; they smell and map the scentscapes of a place to find an explanation for the placement of tanneries, metalworking facilities, and other industrial activities in relation to where town centers were located; and sometimes, like geologists, they even taste rocks to find the presence of particular minerals or substances. Such multisensory inves-

tigation offers a wide range of rich and important data for archaeologists.

A new access program — Multisensory Tour — was created to engage our museum visitors who are blind or have low vision in a unique investigation of the ancient world. Our first Multisensory Tour was held in February in celebration of Low Vision Awareness Month, and it served as a continuum of the twenty-fifth anniversary of the Americans with Disabilities Act (ADA) in 2015.¹ According to the 2010 federal census, approximately 9.5 percent of individuals between ages fifteen and sixty-four and 31.4 percent of those ages sixty-five or older have a visual disability or difficulty seeing.² Studies





Sam Harris (*at right*) leads the group in a walk around the reliefs in the Yelda Khorsabad Court to get a sense of the dimension and grandeur of the space.

show that “higher levels of visual impairment are associated with more depressive symptoms and lower life satisfaction.”³ It is recommended that individuals with visual impairment, especially older adults, can benefit from social integration programs, resources, and perceived support as intervention efforts.

By inviting these visitors to touch, feel, hear, smell, and imagine the stories behind replicas of ancient artifacts, our Multisensory Tour puts those who are blind or have low vision in touch with the ancient world that the replica represents. The tour also connects them with their caregivers, our staff, volunteers, and content specialists, as well as other visitors in the community. It provides a positive social interaction and enriching learning opportunity that will help enhance their quality of life.

In the first Multisensory Tour we drew over twenty participants, including blind and partially sighted visitors and

their sighted companions from the Blind Services Association. The tour featured three objects or stops to give visitors an in-depth exploration of the subject. Starting with an introduction of the founding of the Oriental Institute and its architectural elements in Breasted Hall, the tour moved to the Edgar and Deborah Jannotta Mesopotamian Gallery, guided by Sam Harris, PhD candidate in Mesopotamian archaeology in the Department of Near Eastern Languages and Civilizations at the University of Chicago. Docents Shirlee Hoffman and Luella Adan provided individual attention to visitors as the tour transitioned from case to case, and visitors were encouraged to explore the properties of artifact replicas. The group was introduced to the ways archaeologists use their five senses to study pottery sherds in the field and try to reconstruct the past by using various potsherd samples in our Discovery Cart. The group also learned about the importance of bevel-rimmed bowls as a representation of ceramic production

Left: Visitors on our Multisensory Tours are invited to touch a miniature version of Lamassu to discover the structure and artistic expression of the sculpture.



Visitors explore ancient potsherds in the Discovery Cart.

For more information about accessibility at the Oriental Institute and our upcoming Multisensory Tours, visit oi.uchicago.edu/access, or contact the Public Education and Outreach Department at oi-education@uchicago.edu or 773-702-9507.

and thus the industrial boom in ancient Mesopotamia. Finally, the group stopped at the Yelda Khorsabad Court to learn how archaeologists today are trying to reconstruct not only the architectural layout of the Assyrian royal palaces, but also the dramatic sensory impressions they offered to their visitors.⁴

The launch of the program was wildly successful. Our survey shows that nearly 90 percent of the attendees would recommend it to others and expressed that the unique experience of touching the artifact replicas and having firsthand knowledge about archaeology from a university graduate student were informative and inspiring.

The Oriental Institute is dedicated to free access for all to explore the ancient world. The Multisensory Tour is one of the many steps the Public Education and Outreach Department has taken toward the goal of increasing accessibility. We thank our colleagues from the Chicago Cultural Accessibility Consortium and the Frank Lloyd Wright Trust who shared their insights and helped us achieve our initial goal. This program will continue on a quarterly basis. In addition, the Public Education Department will work with the staff from the Blind Service Association on providing training for our docents on applying visual description techniques in our standard highlight tours, which are offered throughout the year.

NOTES

¹ ADA 25 Chicago. <http://ada25chicago.org/>

² Matthew W. Brault. *Americans with Disabilities: 2010*. Table A-1. Prevalence of Specific Measures of Disability Among Individuals 15 Years and Older: 2010. 2010 Census. <http://www.census.gov/prod/2012pubs/p70-131.pdf>

³ R. L. Brown and A. E. Barrett. "Visual Impairment and Quality of Life Among Older Adults: An Examination of Explanations for the Relationship." (2011). *The Journals of Gerontology*, Series B, Volume 66B, Issue 3 (2010). <https://psychsocgerontology.oxfordjournals.org/content/66B/3/364.full>

⁴ S. Harris. *Archaeology in Five Senses Gallery Tour Script*. Unpublished paper. 2016.

VOLUNTEER SPOTLIGHT

JEAN NYE

By Shirlee Hoffman

Shirlee Hoffman, Oriental Institute volunteer, sits down to interview volunteer Jean Nye.

How did you become interested in volunteering at the OI? How long have you been a volunteer?

I have been interested in the ancient world in a general way all my life. In my career, I went other directions, beginning as an elementary school music teacher, then teaching and supervising special education programs for twenty years. When I was burned out both emotionally and physically, I enrolled at the Lutheran School of Theology at Chicago, where I was commissioned as an associate in ministry. I worked for ten years as a children and family minister, serving two Lutheran congregations, in Wilmette and in Homewood. I retired in 2010, and wondered what I should do with the rest of my life.

I considered becoming a docent at other Chicago museums but decided on the OI, where I had begun exploring the collections. I was drawn in by the beauty of the objects and the stories those objects have to tell. When I called to inquire about volunteering, I was met with kindness and encouragement, and here I am, five years later, with my fascination for ancient cultures continuing to grow.

Did you have any interest or training in the ancient Near East?

My seminary study included some coursework on the Hebrew Bible and early Christianity, but most of my experience has been in South Asia, particularly in India. My husband, Jim, is the bibliographer for southern Asia at Regenstein Library. As I have accompanied him on his trips to South Asia, I am reminded frequently of the strong historical and cultural connections between South Asia and the Near East since antiquity.

What have you done at the OI since you became a volunteer? What do you do now?

I have always been a docent, now the Tuesday docent captain. Interacting with tour groups gives me great pleasure and keeps me constantly on my toes. I have given special tours



focused on the roles of women in the ancient world, a specific interest of mine. I also enjoy helping at events for families and for teachers.

What do you particularly like about being a volunteer?

It's a privilege talking to children and watching their eyes light up when their minds open up to discovering what life in the ancient world must have been like. It's also a joy to work with so many great volunteers, people who come from different backgrounds and careers, but who share a passion for the ancient Near East. We learn so much from each other.

I very much appreciate that the faculty and staff work to provide us with endless opportunities to learn and grow. At our monthly Volunteer Days, we hear lectures from faculty members about their research and fieldwork and about the work of OI scholars around the world.

What has surprised you?

The depth of the collections. Whenever I explore in the galleries, I find something I've never noticed or appreciated fully before. Lately it's been the beautiful Nubian pottery. Inspired by the recent special exhibit on Old Cairo, I've been exploring the period of late antiquity, when cross-cultural connections were particularly rich.

I'm also surprised by the strong feelings of loyalty and pride I've developed in the work of the OI, which is such a wonderful institution. I'm especially proud of the OI's supportive role in rebuilding the National Museum of Afghanistan.

What would you say to someone who is thinking of volunteering at the OI?

Jump right in and give it a try! There are many ways to be involved, depending on your interests and schedule. Whatever you do, you will be supporting the important work of the OI.

Explore becoming a volunteer at
oi.uchicago.edu/volunteer

FROM THE FIELD

The Oriental Institute has sponsored archaeological and survey expeditions in nearly every country of the Middle East, which have defined the basic chronologies for many ancient Near Eastern civilizations and made fundamental contributions to our understanding of basic questions in ancient human societies, ranging from the study of ancient urbanism to the origins of food production and sedentary village life in the Neolithic period. To learn more about the Oriental Institute's archaeology field projects, please contact Brittany Mullins, associate director of development, at bfmullins@uchicago.edu or 773.702.5062.

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Summer 2016



ADULT PROGRAMS

SUMMER NIGHTS VINTAGE FILM SERIES

Join a special gallery tour guided by Emily Teeter, PhD, Egyptologist and special exhibits coordinator for the Oriental Institute Museum, followed by a screening of some of America's favorite vintage and campy films on ancient Egypt. Films are screened in the Oriental Institute's atmospheric Breasted Hall. Seating is available on a first-come, first-served basis.

Optional pre-screening thematic gallery tour starts at 5:15pm in the lobby; screening begins at 6pm.
Registration not required.

Caesar and Cleopatra (1945)

Wed, Jul 20

Free.

Directed by Gabriel Pascal, starring Claude Rains and Vivien Leigh. 2h 3min

At the height of the Roman Civil War, a young Cleopatra meets a middle-aged Julius Caesar, who teaches her how to rule Egypt.

The Mummy (1932)

Wed, Aug 3

Free.

Directed by Karl Freund, starring Boris Karloff and Zita Johann. 1h 12min

A living mummy stalks the beautiful woman he believes is the reincarnation of his lover.

Land of the Pharaohs (1955)

Wed, Aug 17

Free.

Directed by Howard Hawks, starring Jack Hawkins and Joan Collins. 1h 46min

A captured architect designs an ingenious plan to ensure the impregnability of the tomb of a self-absorbed Pharaoh, obsessed with the security of his next life.

COMMUNITY SCHOLARS PROGRAM

We Bring the Oriental Institute to You!

In this new program, a faculty member, research associate, or content expert from the Oriental Institute can deliver an educational talk or presentation at your location. The Community Scholars Program provides presentations on themes ranging from exhibition highlights to our archaeological research and discoveries.

For more information, visit

oi.uchicago.edu/communityscholars

GALLERY TALKS

Traveling Back to Persepolis

Thu, Jul 7, 12:15–1pm

Free.

Registration not required.

Join Kiersten Neumann, PhD, curator of *Persepolis: Images of an Empire*, to explore what the large-scale archival photographs of Persepolis tell us about the Oriental Institute Persian Expedition to Iran (1931–1939) and the role of photography in representing the Achaemenid Persian empire — the “exotic Orient” of the early twentieth century.

Pottery as a Tool for Understanding the Past

Thu, Aug 4, 12:15–1pm

Free.

Registration not required.

Natasha Ayers, PhD candidate in Egyptian archaeology and Tell Edfu ceramicist, discusses how archaeologists use pottery to understand chronology, trade relations, and cultural practices in the ancient world. This exploration of pottery as a tool for understanding the past uses examples on display in the Oriental Institute Museum.

Kingship in Ancient Egypt and Beyond

Thu, Sep 1, 12:15–1pm

Free.

Registration not required.

Looking at objects in the collections, Jonathan Winnerman, PhD candidate in Egyptology, will guide visitors through the role of both the king and his office and explore whether he was a human, a god, or something in between.

TOUR

Stroller Tour: Animals in Ancient Art

Tue, Sep 13, 2–3pm

General \$15; members, UChicago students/faculty \$10, for up to two adults. General \$7, members \$5 for additional adult registrant. Babies in strollers are free.
Registration required.

What kind of animals — both real and imagined — can we find in the ancient Near East? How did ancient artisans and artists incorporate animal motifs into their work? Stroll through our Egyptian and Persian galleries to find out how animals inspired minor arts, architectural building, and even mummification.

ADULT PROGRAMS

COURSES

Online Course

Before the Alphabet: Writing Systems in the Ancient World (8 weeks)

Mon, Jul 11–Sun, Sep 4

General \$395, members \$325.

Registration required.

Registration deadline: Jun 27.

This course surveys the ways in which humans make language visible. Topics will include the definition of writing, the typology of writing systems (including logographic, syllabic, and alphabetic systems), the invention and evolution of writing, and some of the cultural issues that are intertwined with scripts. The earliest, original writing systems (the so-called pristine writing systems from Sumer, Egypt, China, and Mesoamerica) and the social, cultural, and historical contexts of their inventions will be a major focus of this course, as well as their decipherment by modern scholars.

Instructor: Massimo Maiocchi, PhD, is a historian with expertise in early urbanization, the social and political history of Mesopotamia, and cuneiform texts from the third millennium BC.

On-site Course

Fashion in the Nile: Textiles and Dress in Ancient Egyptian Society (3 weeks)

Sat, Aug 27, Sep 10, & Sep 17, 9:30am–12:30pm

General \$350, members \$295.

Registration required.

Registration deadline: Aug 19.

Have you ever wondered what ancient Egyptians wore? How much can we learn about their wardrobe through analyzing Egyptian art and by looking at the actual remains of their clothing? What can we infer about clothing by exploring the linen used as mummy wrappings? These and other questions will be answered during our discussions about ancient Egyptian clothing. Explore the ancient Egyptian wardrobe in visual and archaeological sources predominantly using the collections of the Oriental Institute Museum. Students will also have a chance to practice their skill in draping and wearing some Egyptian outfits.

Instructor: Aleksandra Hallmann, PhD, is an Egyptologist specializing in iconography, costume studies, and construction of identities through material culture. She is assistant professor at the Institute of Mediterranean and Oriental Cultures at the Polish Academy of Sciences.

FEATURE

Faces, Forms, and Poses — The Egyptian Style: A Multisensory Tour for Visitors Who Are Blind or Partially Sighted

Fri, Aug 19, 2–3pm

Free.

Registration required.

How did ancient Egyptians portray themselves, and how did they represent their identities artistically? Visitors who are blind or have low vision are invited to engage in a multisensory experience to learn about the lives of people who lived in antiquity. Sighted companions are welcome to join. Space is limited.



ADULT PROGRAMS meet at the Oriental Institute unless otherwise noted.

REGISTER To register, visit oi.uchicago.edu/register

For assistance or more information, email oi-education@uchicago.edu

EDUCATOR PROGRAMS

PROFESSIONAL DEVELOPMENT WORKSHOP SERIES

Inquiry and Discovery: Teaching through Primary Sources and Archaeology

Wed, Aug 31, 8:30am–3pm

General \$20, members \$15.

Registration required.

6.5 clock hours.

Includes instructional materials and lunch.

Teachers will learn how primary sources can be used to support inquiry learning that engages students in drawing on their prior knowledge, personal experiences, and reflective and critical-thinking skills to construct meaning. Try out the Oriental Institute's new student program, Ancient Innovators, and experience examples of the inquiry-based approach. Guided by museum educators, teachers will participate in group discussion and pre- and post-visit lesson-plan writing exercises.

Science and Technology in Ancient Mesopotamia and Egypt

Sat, Sep 17, 8:30am–3pm

General \$20, members \$15.

Registration required.

6.5 clock hours.

Includes instructional materials and lunch.

Adopting the model of an inquiry-based learning cycle, join a special gallery tour guided by an Oriental Institute Mesopotamian archaeologist and Egyptologist to gain insight into a specific ancient scientific or technological contribution. Listen to other educators and technology experts speak about their experiences with educational technology tools, and make connections between ancient inventions and modern societies. Get hands-on with selected platforms and apps for your classroom teaching.

EDUCATOR PASS

The Educator Pass provides two membership cards and all the benefits of a Friend of the Oriental Institute to two adults and their children or grandchildren under the age of 18. K-12 educators receive a special membership price of \$25 (regularly \$75).

BENEFIT HIGHLIGHTS:

- Discount for professional-development programs
- A print copy of *Field Trip Planning & Exhibition Guide*
- Special benefits at the Hyde Park Art Center

For more information, visit oi.uchicago.edu/educators

EDUCATOR PROGRAMS meet at the Oriental Institute unless otherwise noted.

REGISTER To register, visit oi.uchicago.edu/register

For assistance or more information, email oi-education@uchicago.edu

FAMILY & YOUTH PROGRAMS



DROP-IN | AGES 5-12

Come by the Museum on Tuesday mornings for free family fun. Visit us online at oi.uchicago.edu/programs for full descriptions.
Registration recommended.

One. Big. Egyptian. Mural.

Tue, Jul 5 & Jul 26,
10:30am-12:30pm
Free.

Secret of the Mummies

Tue, Jul 12 & Aug 2,
10:30am-12:30pm
Free.

Little Scribe

Tue, Jul 19 & Aug 9,
10:30am-12:30pm
Free.

DRAWING HOUR | AGES 5-ADULT

Spend your Wednesday morning exercising your creativity and learning how to draw from ancient art. Visit us online at oi.uchicago.edu/programs for a full description.
Registration recommended.

Wed, Jul 20 & Aug 10,
10:30-11:30am
Free.

FREE!

FAMILY WORKSHOPS | AGES 5-12

Join us Thursday afternoons for guided workshops with our museum educators. Visit us online at oi.uchicago.edu/programs for full descriptions.
Registration required.

Introduction to Hieroglyphs

Thu, Jul 7 & Jul 28,
1:30-3:30pm
General \$14, members \$10 (1 child + 1 adult); general \$7, members \$5 each additional registrant.

Junior Archaeologists

Thu, Jul 14 & Aug 4,
1:30-3:30pm
General \$14, members \$10 (1 child + 1 adult); general \$7, members \$5 each additional registrant.

Mummy Science

Thu, Jul 21 & Aug 11,
1:30-3:30pm
General \$14, members \$10 (1 child + 1 adult); general \$7, members \$5 each additional registrant.

FAMILY PROGRAMS meet at the Oriental Institute unless otherwise noted. Children under 13 must be accompanied by an adult.

REGISTER To register, visit oi.uchicago.edu/register
For assistance or more information, email oi-education@uchicago.edu

IN STORE THE SUQ



COLORING FOR ADULTS

Join the newest craze — coloring for adults, acclaimed to lower the stress of our busy lives. Each Artists' Colouring Book has sixteen exquisite drawings on superior acid-free drawing paper that you can color with pencils, markers, ink, crayons, or watercolors, then frame and mount on your walls. The drawings feature beautiful intricate, geometric, and floral designs from Egyptian, Arabian, and Turkish art and archaeology.

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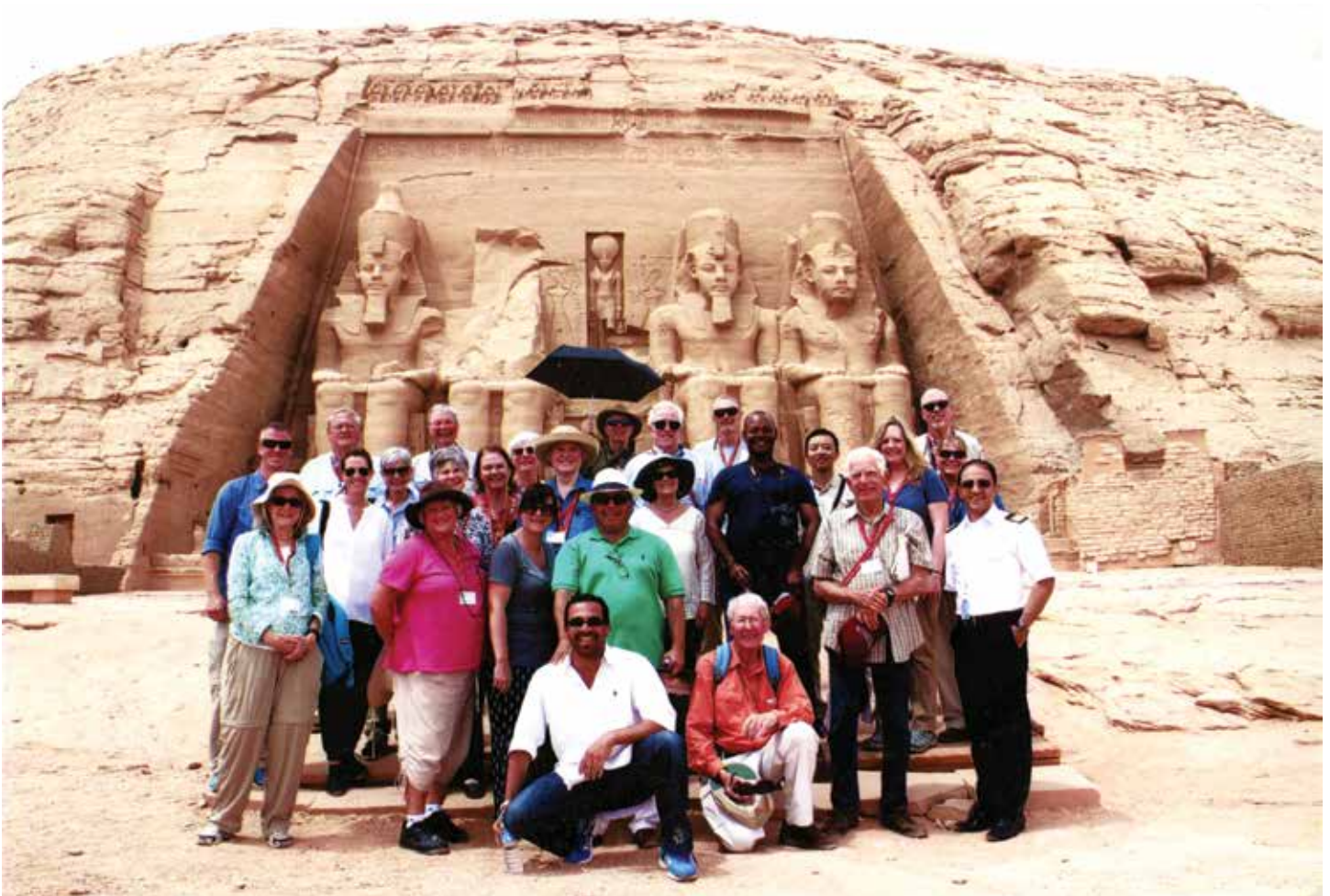


SUQ HOURS

MON: CLOSED
SUN-TUE, THU-SAT: 10am-5pm
WED: 10am-8pm

TRAVEL PROGRAM

THE WONDERS OF ANCIENT EGYPT TOUR



MARCH 12-27, 2016

Led by Lanny Bell

Twenty-one participants joined the Oriental Institute on an exclusive two-week adventure through the history, archaeology, and culture of Egypt.

Enjoy private tours with Oriental Institute scholars, and get up close and personal with an ancient civilization on Oriental Institute Travel programs.

For more information, please go to oi.uchicago.edu/travel

The Travel Program is a series of international travel tours designed exclusively for Oriental Institute members and patrons.



THE
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Chicago, Illinois 60637
oi.uchicago.edu

UCHICAGOArts

INFORMATION

MEMBERSHIP

YOUR PARTNERSHIP MATTERS!

The Oriental Institute depends upon members of all levels to support the learning and enrichment programs that make our Institute an important — and free — international resource.

As a member, you'll find many unique ways to get closer to the ancient Near East — including free admission to the Museum and Research Archives, invitations to special events, discounts on programs and tours, and discounts at the Institute gift shop.

\$50 ANNUAL / \$40 SENIOR (65+) INDIVIDUAL
\$75 ANNUAL / \$65 SENIOR (65+) FAMILY

HOW TO JOIN OR RENEW

ONLINE: oi.uchicago.edu/getinvolved

BY PHONE: 773.702.9513

ON SITE: at the Gift Shop

GENERAL ADMISSION

FREE

ADULTS

\$10 suggested donation

CHILDREN 12 OR UNDER

\$5 suggested donation

MUSEUM & GIFT SHOP HOURS

Closed Monday

Sun-Tue, Thu-Sat: 10am-5pm

Wed: 10am-8pm

THE MUSEUM IS CLOSED

January 1

July 4

Thanksgiving Day

December 25

ACCESSIBILITY

The Museum is fully wheelchair and stroller accessible. The University Avenue west entrance is accessible by ramp and electronic doors.

PARKING

FREE parking half a block south of the Museum on University Avenue, after 4pm daily and all day on Saturday and Sunday.

GROUP VISITS

For information about group visits, please go to:
oi.uchicago.edu/museum/tours.



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