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2012

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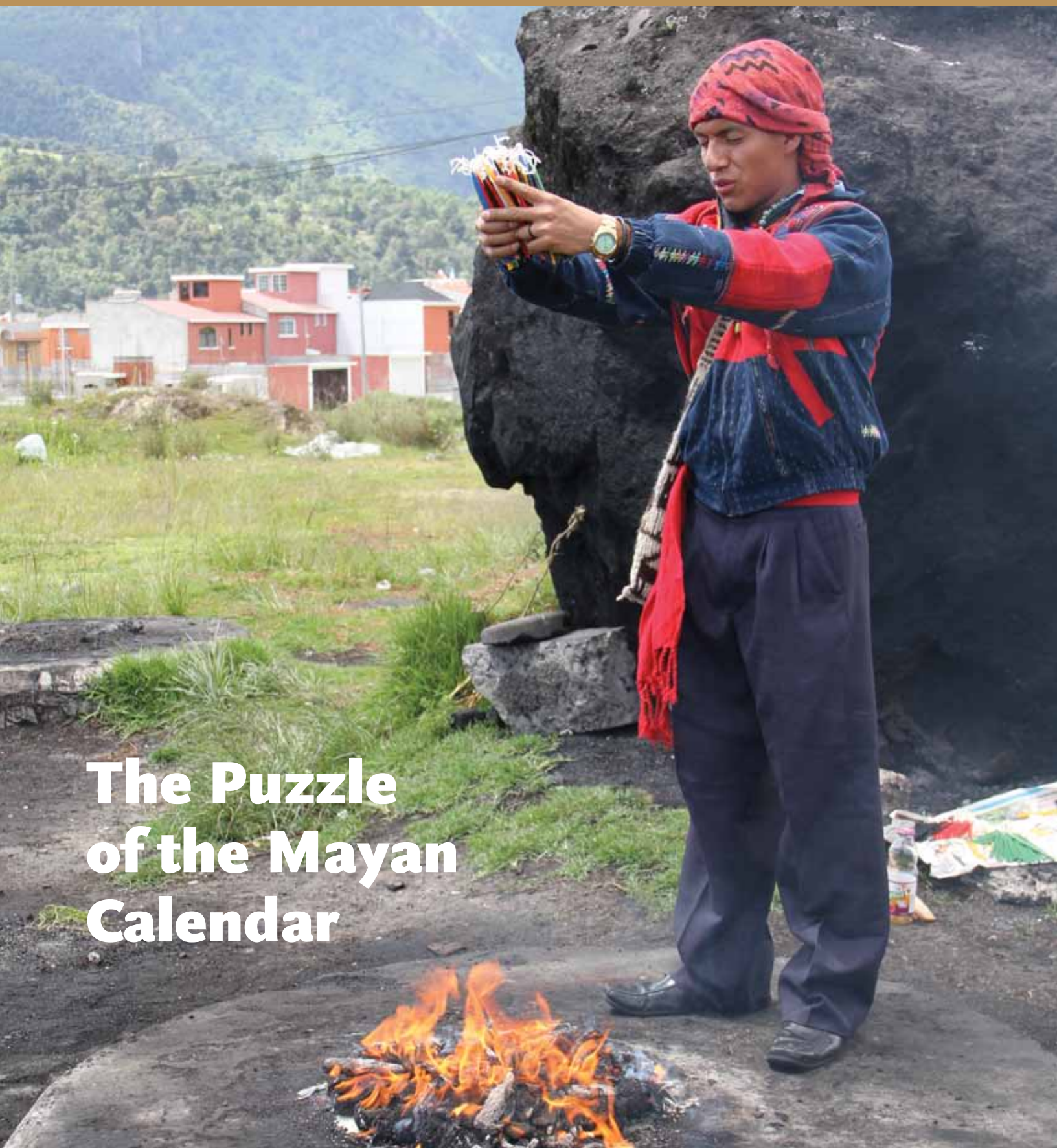

The Puzzle of the Mayan Calendar

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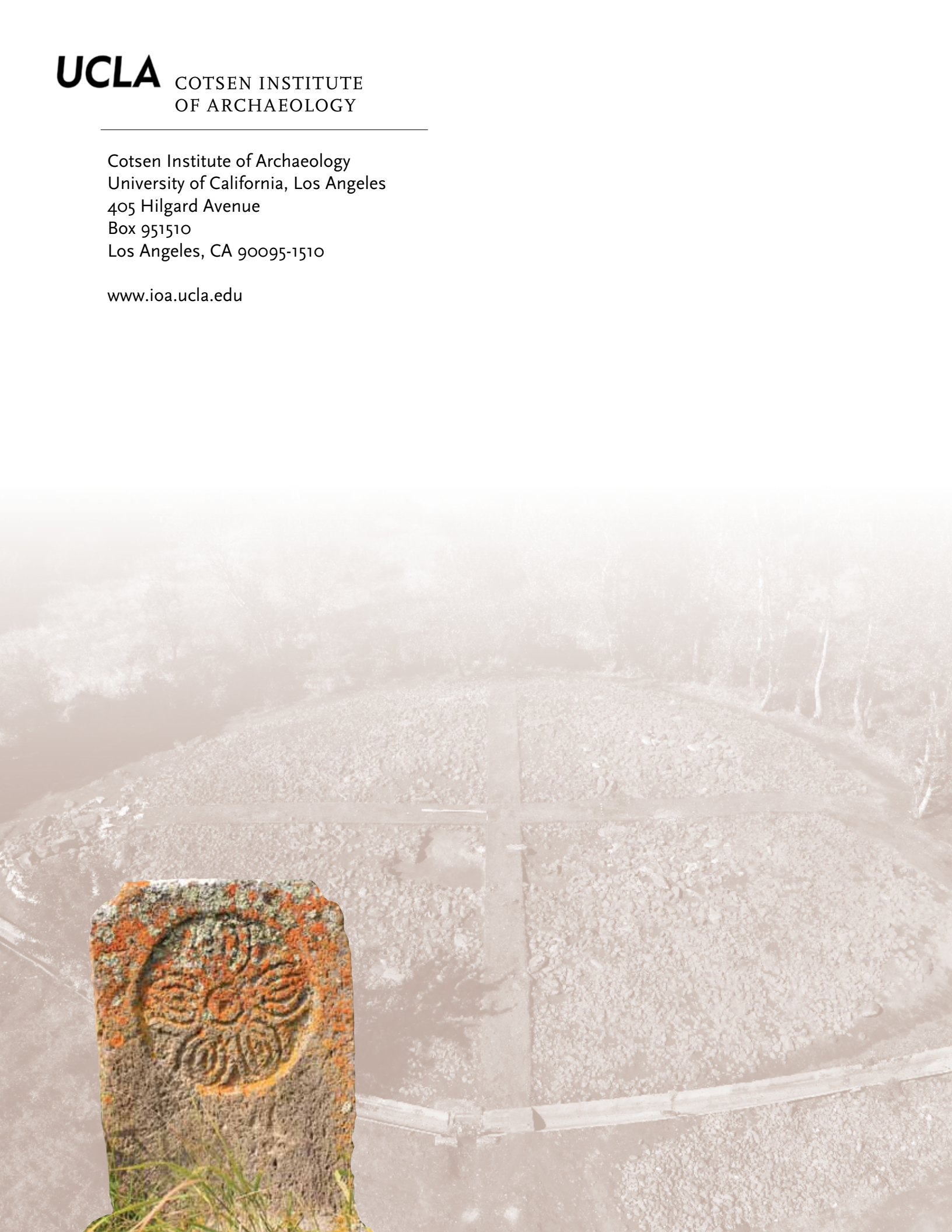

Wine and Death:

THE 2010 EXCAVATIONS SEASON AT THE ARENI-1 CAVE COMPLEX, ARMENIA

BY GREGORY E. ARESHIAN[1], BORIS GASPARYAN[2], KRISTINE MARTIROSYAN-OLSHANSKY[1], LYSSA STAPLETON[1], AND DIANA ZARDARYAN[2]

The excavations by the Joint Project of the Institute of Archaeology and Ethnography of the National Academy of Sciences of Armenia, the Cotsen Institute of Archaeology at UCLA, and the University College Cork, Ireland (co-directors Boris Gasparyan, Gregory E. Areshian, and Ron Pinhasi), conducted in 2007–2010 at the Areni-1 cave complex in the middle part of the Arpa River Valley (Vayots Dzor Province, Armenia), have already generated major international interest among scholars, the mass media, and the general public. This is due to several factors, most notably the outstanding preservation of organic material belonging to the later phases (ca. 4200–3500 BCE) of the Chalcolithic which is nearly unprecedented in Near Eastern archaeology (Areshian et al. 2012; Barnard et al. 2011; Pinhasi et al. 2010). The most significant finds of 2007–2009 included the world's oldest leather shoe known at present, the wine-pressing installation (excavations of which were completed in 2010), enigmatic clay structures inside the cave galleries, a number of copper artifacts, and a heterogeneous assemblage of pottery reflective of long-distance cultural interactions.

The long field season of 2010 started on June 20 and closed on September 9. Excavations were conducted in four areas currently designated as Trenches 1–4, with most efforts concentrated on Trench 2 (T2) and Trench 1 (T1) inside the galleries of the cave complex. We also carried out smaller-scale excavations in the Rock Shelter Area of the complex in front of the mouths of cave galleries designated Trench 3 (T3), and in Trench 4 (T4) on the slope of the talus slanting from the RockShelter Area toward the Arpa River bank.

The goal of the excavations in the newly opened T2 was to establish whether the so-called Central Gallery had, in the past, ended at the point where it ends today, before our excavations, or continues deeper and farther. Work in T1 continued exploration of the upper (first) Chalcolithic layer and was intended to complete the excavations of the Chalcolithic wine-pressing structure dated by ^{14}C to ca. 4000 BCE. In T3, further stratigraphic investigations were carried out. Finally, more data was collected from the mostly Chalcolithic midden uncovered in T4. One of the most important conclusions from this season was that the stratigraphy of each of the trenches is drastically different from the others. As a result, future research should take two directions: (1) each stratigraphic unit of every trench must be individually correlated, both chronologically and contextually, one with another; (2) explanations of the stratigraphic differences must follow the establishment of such correlations.

TRENCH 2. The grid of T2, which consisted of 13 complete and 10 partial 1 × 1 m squares, was affixed above the present floor of the cave at the presumed end of the Central Gallery. To a depth of 1.85 m, the deposits in T2 consisted of slightly slanting layers of cultural fill of different colors (brown, light gray, and dark gray), disturbed by an intrusion dated to the sixth to eighth centuries CE by the finding of two silver Sassanian coins. Artifacts in the fill were infrequent, and its nature should be further investigated through micromorphological studies. At the depth of 1.85 m below the modern surface of the gallery, samples of pottery clearly identifiable with the early stage of the

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Kura-Arax assemblage were uncovered. They include a carinated shallow bowl with a red-burnished external surface and small handle under the rim, a large gray globular vessel with a prototypical semi-globular lug, and others. Further study of the stratigraphic and chronological position of these samples is especially important because it may clarify the process of formation of one of the geographically largest typological associations of artifacts of the Early Bronze Age (ca. 3300–2300 BCE) of the ancient Near East. The Kura-Arax samples found in T2 immediately overlaid an earlier Chalcolithic layer represented by painted black-on-red vessels characteristic of the uppermost Chalcolithic layer in T1 dated to 4100–3800 BCE (calibrated ^{14}C). The chronological and cultural relationship between the Kura-Arax ceramic assemblage and the underlying Chalcolithic layer in T2 requires further investigation during upcoming fieldwork seasons. Three hypothetical research questions can possibly be answered: (1) Does the Kura-Arax ceramic assemblage appear within the upper Chalcolithic layer together with the painted black-on-red pottery? If not, (2) does the immediate stratigraphic superposition of the Kura-Arax assemblage reflect an uninterrupted chronological sequence? And, if not, (3) what is the probable time span of the break that may have existed between these two primary depositional contexts despite the fact that the upper stratigraphic unit with the Kura-Arax pottery immediately follows the lower with painted pottery? One of the most important findings made in T2 during the season was the presence of a narrow corridor continuing from the Central Gallery deep into the cliff and the discovery of a new passage branching westward from the same gallery. Both clearly indicate that our previous research had underestimated the size and complexity of the cave complex.

TRENCH 3. Excavations in T3 refined our understanding of the upper part of the stratigraphic sequence of the RockShelter Area in front of the cave galleries' mouths. The identification of two layers of medieval structures has been confirmed. Dating to the late thirteenth and fourteenth centuries CE, the uppermost layer is represented by bread ovens (Armenian *tonir*) dug into the underlying layer which is dated to the period of the Islamic Caliphate's domination of Armenia (late seventh to the first half of the ninth century CE). This layer, second from the top, is represented by the lowest portions of the walls of small dwellings built of river boulders, pebbles, and rock conglomerate and plastered with dirt containing chaff. The absence of remains belonging to the preceding Sassanian period (other than the aforementioned Sassanian coins, which may have continued to circulate during the first century of the Caliphate) underneath the lower medieval layer, and the gap in occupation between the two medieval layers—that is, during the High Middle Ages (tenth–thirteenth centuries CE)—may indicate that caves of the Arpa River Valley were used as hideouts by the local population during periods of wars, political instability, and economic destitution, and abandoned in times of political stability and economic prosperity. No definable cultural stratigraphic unit has been identified thus far between the lower medieval layer and the upper Chalcolithic layer. However, the presence of a few scattered potsherds typologically dated to the Early Iron Age (ca. eleventh–ninth centuries BCE) and to the beginning of the Middle Bronze Age (ca. 2000 BCE), together with animal dung deposits, suggest that the cave complex was most likely visited and used by herdsmen as a sheep shelter during those periods. Underlying the second medieval layer, three consecutive Chalcolithic layers have been identified. These are represented by packed clay floors with crushed vessels and other artifacts found in situ and cylindrical bins made of light-brown clay with traces of replastering. The bins become narrower toward their mouths. Multiple artifacts related to household and other production activities were found in the three Chalcolithic layers of T3. This assemblage includes the remains of hearths, grinding stones, animal bones, seeds, awls, looms, and even the remains of copper smelting and casting. The metallurgical assemblage consists of piles of raw ore (Figure 1), casting waste, a mold for casting ingots, and final products (knives) made of arsenical copper. The majority of stone implements found in T3 are of obsidian, although chert artifacts are also present in the assemblage. The coloration of obsidian may suggest that it originated from two groups of sources: P'ok'r Spitakasar (or Geghasar) and the Vorotan group, located at of 90 km and 95 km from Areni-1, respectively; hopefully, forthcoming analyses will identify the sources more precisely. Judging from the presence of fragmentary cores and flaking products, the production of chipped-stone tools took place in the rockshelter area, though a specific manufacturing area has not been identified thus far. High-quality flint deposits are easily accessible within a distance of 20 km or less from Areni-1, whereas obsidian does not occur in the Arpa River Valley. The predominance of obsidian in the Chalcolithic lithic assemblage at the site may reflect a traditional preference for, and experience in, manufacturing obsidian implements despite the obvious economic rationality

Figure. 1. Copper ore and crushing/grinding pebble pestle from the upper Chalcolithic layer (first half of the fourth millennium BCE).

Figure. 2. Trench 1; general view of the upper Chalcolithic layer, ca 4000-3800 BCE.

of using chert tools in this particular location. At the same time it suggests an intensive interregional network of commodities exchange. The most common stone tools are retouched blades, end scrapers, backed knives, burins, and chisels. Artifacts with bifacial processing include sickle inserts and arrowheads. One obsidian artifact was shaped by polishing of the edges and parts of the surface. As a whole, the assemblage of stone tools is characteristic of hunting, crop harvesting, and household activities related to secondary processing of products such as skins, bone, and wood. Artifacts related to spinning and weaving suggest that textiles, mats, and basketry were also produced in the Rock Shelter Area.

TRENCH 1. Excavations of T1 revealed a pattern that is entirely different from T3. Three goals were pursued in that trench in 2010: (1) exploration at the western end of the trench where a new opening in the wall of the gallery was uncovered during the previous season; (2) completion of the excavations of the wine-pressing structure in the second (from top) Chalcolithic layer; (3) further excavations of stratigraphic units identifiable as the first (uppermost) Chalcolithic layer (Figure 2.) Excavations of the opening at the western end of T1 uncovered a passage leading into a new cavity. In this passage a human mandible was found, as well as fragments of Chalcolithic pottery, a segment of a plastered floor, and traces of fire. The unexpected discovery of the front half of a goat was made deep into this corridor. The remains of the goat, including skin, desiccated flesh, and hair, were preserved due to a process of natural mummification that occurred in the extremely dry environment of the cave. Since the goat was found in the transitional stratigraphic unit between the desiccated dung layer dating to post-Chalcolithic periods of occupation (Bronze Age and medieval) and the first Chalcolithic cultural layer, the goat mummy must be dated by ^{14}C.

Excavations of the "wine-pressing structure" discovered during the previous season in squares Q19/R19 of the second Chalcolithic layer (dated ca. 4000 BCE) of T1 were completed in 2010. This installation consists of a 1 m wide shallow clay tub (Locus 1) with raised edges made of packed clay slanting toward the mouth of a large jar (Locus 2) inserted into its lower end. This design suggests that a liquid originating on the platform was meant to flow into the jar, interpreted as a vat. The basin may well have been for the pressing of grapes on its surface, with the juice flowing into the mouth of the jar in the center of the installation, an interpretation endorsed by the discovery of desiccated grapes, pomace, grape seeds, and grape skins still attached to pedicels, and even of grape rachises (stems) and desiccated vines in close proximity (Areshian et al. 2012; Barnard et al. 2011). The identification of malvidin

(pigment responsible for the color of red wine) by means of biochemical analysis of residues on potsherds from Loci 1 and 2 strongly suggests the pressing of red grapes (Barnard et al. 2011). It is logical to assume that red grape juice had to stay for awhile in the vessels in order to leave any traces and residues, which is an indication that fermentation of grape juice into red wine most likely occurred. The jar/"vat" is a 62 cm high, dark gray vessel with an ovoid base. After completing the excavation inside the jar and taking out a part of its bottom for residue analysis, it became evident that the jar was broken and then restored with bitumen, placed into an admirably preserved net of knotted rope, and installed in a pit dug into the surface of the second Chalcolithic layer. After that, the pressing basin was built around the mouth of the "vat." To our surprise, inside the "vat," together with grape seeds, a single human tooth was found mixed with dried and carbonized organics. Some 15 cm below this, a human long bone was uncovered under a large rock slab (15 × 23 cm). Unfortunately, both the distal and proximal ends were broken, making a more specific identification difficult. The long bone was mixed with several fragments of rope and various dried and carbonized floral detritus. Several centimeters below this, a 5 cm long, thin copper sheet was found. The copper sheet was neatly cut from a larger artifact, possibly the wall of a drinking bowl or cup. The contents of the jar also included pieces of charcoal. The whole context suggests that wine pressing in the cave was not intended for regular consumption or, generally, for a variety of feasting ceremonies. Rather, it took place in connection with, and for the purpose of, rituals related to the deposition of human remains.

Excavations of other loci in the two upper Chalcolithic layers of T1 confirmed the connection between wine making in the cave and funerary and sacrificial rituals. A total of 11 loci (including the "vat" of the wine pressing structure) were excavated in T1 during the 2010 field season. Two of the eleven loci (Loci 2 and 69) belong to the second Chalcolithic layer (ca. 4200–4000 BCE), while the other nine belong to the first (uppermost) Chalcolithic layer (ca. 4000–3800 BCE) of T1. The loci can be subdivided into two groups: six fired vessels and five circular plastered structures. Both the ceramic vessels and plastered structures contained human and/or other organic remains. Within these loci, a variety of well-preserved artifacts were excavated, including basketry, wool and linen textiles, cordage, fragments of copper objects, and implements of wood and bone. In the first (uppermost) Chalcolithic layer, three loci were especially distinguished.

Locus 14 (in squares P17/18 and Q17/18) is a large plastered circular basin with a diameter of 1.5 m and a height exceeding 65 cm. The locus was excavated down to a flat plastered bottom, with the exception of a 20 cm wide section left along the southern part of the circular wall. The contents were primarily composed of a substantial quantity of potsherds, fragments of plaster, several small stone slabs, fragments of human and animal bones, charcoal, carbonized floral remains, a single semicircular copper object (broken bracelet?), and a single twig painted with blue pigment and partially burnt after painting (Figure 3). The function of this structure still remains unclear. It must also be noted that in several areas small round spots of orange pigment appear on the walls and base of the structure.

Locus 40 (in square L17) is a red-burnished vessel elaborately painted with black paint. The mouth of the vessel was sealed by placing the neck of another red-burnished vessel over the painted vessel's rim and plastering the two together. A wooden peg was pushed into the plaster seal. The function or significance of these pegs found throughout the trench is yet unclear. The top half of the complete vessel is decorated with a row of vertical alternating lines and dots, while the ovoid base is decorated with the images of the sun, a body of water running around the lower body of the vessel, mountain goats, and snakes (Figure 4).

As of today, the pictorial composition on this vessel is the first of its kind found in the Caucasus and in the highlands of the Near East. Morphotypologically it belongs to the group of

Figure. 3. Trench 1; painted and subsequently burnt twig, upper Chalcolithic layer, ca 4000-3800 BCE.

Figure. 4. Trench 1; black-on-red painted clay funerary urn, upper Chalcolithic layer, ca 3900 BCE.

black-on-red (BOR) Chalcolithic painted pottery well known in the area spanning from southwestern Turkmenistan to the central part of western Iran. The wealth of its decoration is matched by its contents. The vessel clearly served as—and most likely had been made with an initial intent to serve as—a funerary urn. It contained the remains of the right half of the body of an adult woman wrapped in reed mats and tied with cordage. Small pieces of the desiccated soft tissue were still attached to her skeleton. The cranium and the left half of the body were absent. There could be little doubt that the body was cut into parts and the skeleton carefully defleshed after death, before the soft tissues were allowed to naturally disintegrate. Thus, Locus 40 can be characterized as a dismembered primary burial which was part of rituals performed in the cave complex during the Chalcolithic. Other finds from within the urn include potsherds, organic detritus, charcoal, and pieces of plaster.

Locus 63 (in squares L17/M17) is a plastered clay cylindrical structure which yielded one of the most significant finds of the season: a well-preserved and complete primary burial of an infant with accompanying grave goods. The deposition of the infant's body was preceded by placement of several objects. The infant was buried atop an animal hide with the fur still intact; a ceramic bowl was placed upside down near her/his feet, and a cup carved from animal hor (Figure 5) was placed near the head. The torso was covered with a coiled bowl-shaped basket (Figure 6). Atop these a stone slab was placed, which was, in its turn, covered with large fragments of bicolored matting and potsherds. Above these were placed a few cremated bones of an adult, which were covered with more matting and potsherds. The care with which this infant was buried, together with the accompanying goods, make this burial stand out from others found in the cave. Its significance also lies in the phenomenal preservation (by natural mummification) of such fragile remains: a significant amount of soft tissue is still extant and hair is still attached to the scalp. Additionally, this concrete evidence of cremation of the deceased leads us to believe that the ash concentrations observed in other loci may also be the remains of cremations. This hypothesis is strengthened by the discovery of small fragments of human bones with traces of burning within those ash concentrations; however, micromorphological analyses will be necessary to confirm or reject this hypothesis.

Figure 5. Trench 1; drinking cup made of horn, upper Chalcolithic layer, ca 3900 BCE.

Figure 6. Trench 1; painted basket from a child's burial, upper Chalcolithic layer, ca 3900 BCE.

The excavations season of 2010 substantially advanced our understanding of the Areni-1 cave complex and brings up a number of questions concerning social complexity and trajectories of transformation of Chalcolithic societies in the Near Eastern highlands. The virtual absence of evidence of household activities inside the galleries of the cave complex clearly indicates that those areas were not inhabited during the Chalcolithic. Rather, the inner space of caves was used as sacred area for complex rituals that included both primary and secondary depositions of dismembered and complete human remains. Wine played an important role in those rituals. The very substantial scale of ritual activities performed by a large community of people is confirmed by the discovery in several Chalcolithic layers both in T1 and T2 of multiple loci interpreted as remains of such activities. Judging from household remains found in the Rock Shelter Area (T3) outside of the mouths of the cave galleries, only a small group of Chalcolithic people actually lived there. This group may have guarded the sacred caves and serviced the performers of rituals who came from other locations. This hypothesis creates an enigmatic situation, because it assumes the presence of a substantial Chalcolithic population inhabiting the Arpa River Valley outside caves, despite the fact that, at present, Chalcolithic settlements are virtually unknown in that area. Discovering sites and patterns of Chalcolithic occupation in the valley will be an important goal for future explorations.

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