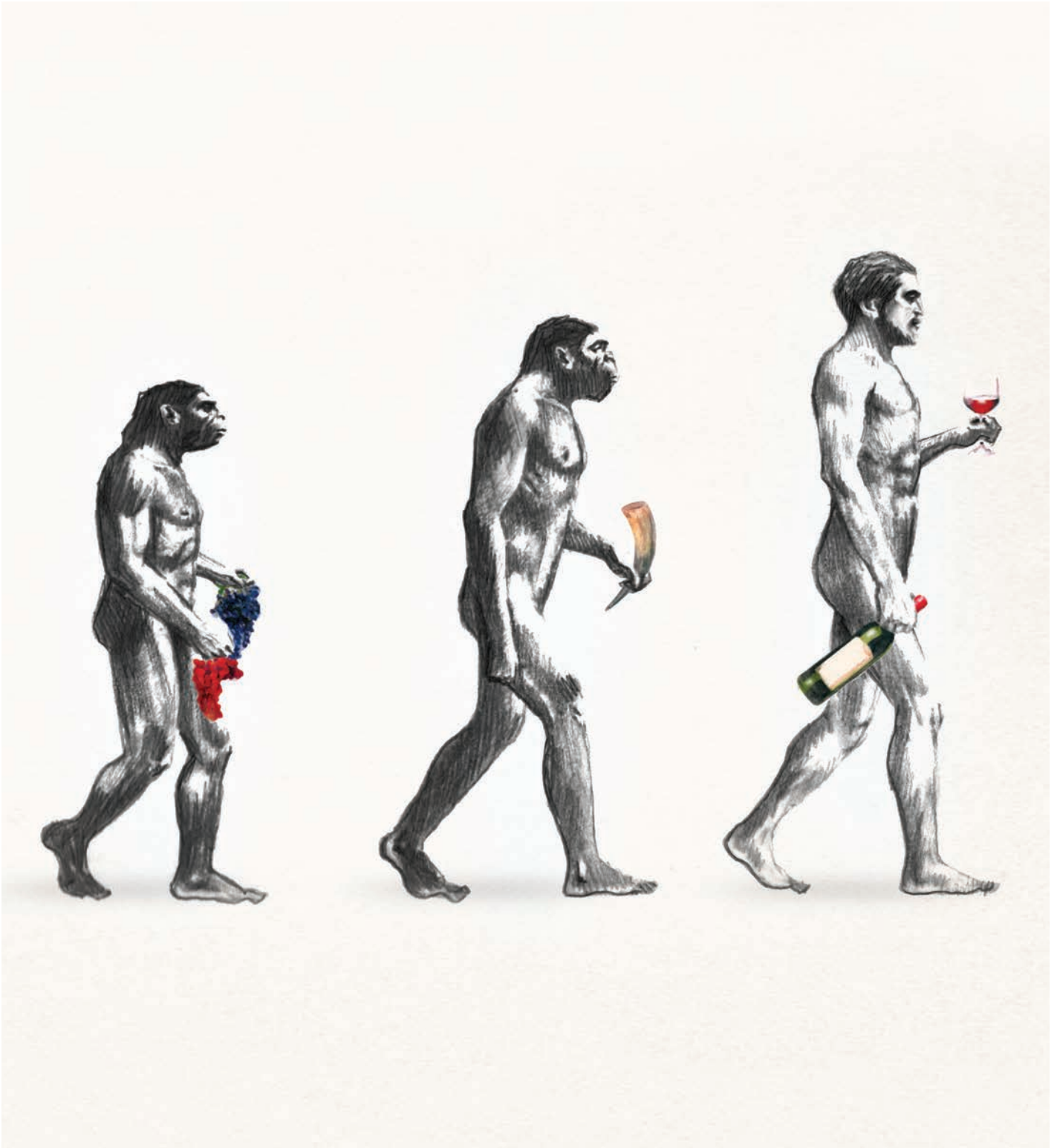


THE WORLD OF FINE WINE



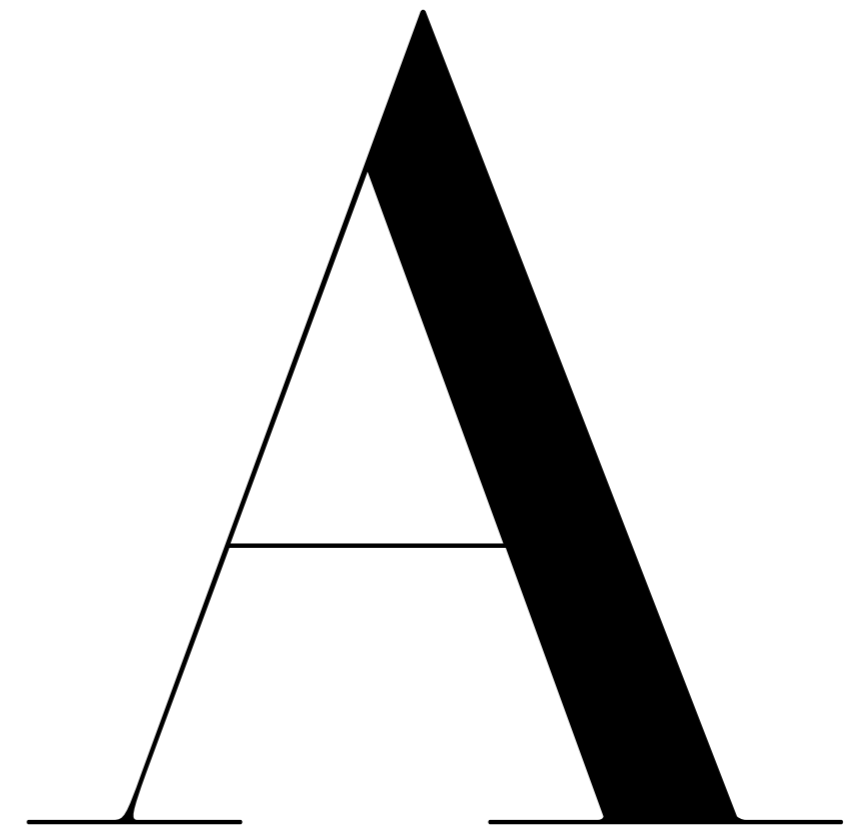
ISSUE 60 2018 / ANDREW JEFFORD ON THE ROAD TO HOMO IMBIBENS
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HOMO IMBIBENS THE WORK OF PATRICK MCGOVERN

by Andrew Jefford

Illustrations by Dan Murrell



glass of wine poured at the end of the day, quietly surrendering its scents and stories—we know no other moment quite like this. Daylight is going or gone and, with it, the obligation to work, to act, and to analyze; that glass marks the gateway to ease, imagination, and emotion, all of them proper to darkness and a fitting prelude to sleep. The wine nuances our lived experience, bringing both perspective and chiaroscuro. At times, indeed, it can seem to furnish a kind of spiritual nourishment. Our involvement with it triggers a cascade of sensual delight but, for any reader of this journal, much more than that, too: The wine will have been chosen with care and perhaps stored for some years; it will come laden with biography and pregnant with expectation. Those expectations will then be dashed, matched, or exceeded by its performance in nose and mouth. This sensual delight, in other words, is richly invested.

No moment like it, but no substance like it, either. Writing on wine is born out of our wonder at the multitudes it can contain; research into wine seeks to track and understand these multitudes.

Our enjoyment of that glass of wine, though, is also the individual successor to countless acts of drinking. We no longer fashion arrowheads and use them to kill our dinner; we no longer dry the skin and fur that our dinner was ripped from and use it to stitch our clothes and shoes together. Our ancestors, by contrast, never spent the day online, sat in traffic jams on the way home, or felt existentially superfluous. The consumption of an alcoholic beverage by candlelight or firelight is one of the few intimate daily acts we share with those who have gone before us; it may be the most culturally rich of these. But how far before? Shakespeare's Falstaff, alone in the forest, hymning sack; the Chinese Tang poet Li Po, watching snowflakes melt into his wine; Homer's Odysseus and his sailors, fortifying themselves with the "plentiful supply of meat, and sparkling ruddy wine" provided by Circe before braving Scylla and Charybdis: Literature provides us with a few delicious fragments—but then we lose the trace.

Traces have furnished a life's work for Patrick McGovern, scientific director of the Biomolecular Archaeology Laboratory for Cuisine, Fermented Beverages, and Health at the University of Pennsylvania Museum; his project is to piece together the "before." "What do you do?" I asked him, in one of two interviews conducted (in October 2017 and February 2018) for this piece. "I am a combination chemist and archaeologist," he replied. "The general idea is to recover the ancient organics that were contained within certain vessels and find out what they were." But as his books (notably *Uncorking The Past: The Quest for Wine, Beer and Other Alcoholic Beverages* [hereafter *UP*], published by University of California Press in 2009) make clear, in synthesizing both his own work and that of others, he suggests something dramatic and radical: that man is *Homo imbibens*, driven by biological, social, and religious imperatives to consume alcohol, and that this relationship with alcohol is a key to "understanding the development of our species and its cultures."

From murex to mead

A talented pianist who considered a career in music, McGovern opted to study undergraduate chemistry at Cornell, taking a minor in English literature, and soon after became fascinated by ancient history: You can see the rangy mind. He switched to Near Eastern archaeology and history for his doctoral research and began work studying pottery and glass fragments before specializing in the "royal purple" of the Canaanites and the Phoenicians (extracted from the Mediterranean murex mollusc and once the most expensive dye in the world). This in turn led him to specialize more generally in ancient organic materials and, in particular, the residues left inside pottery fragments of jars and other vessel forms.

It seems hard to believe today, but standard archaeological practice in the past was to clean away these residues with acid to remove carbonates, the better to see and understand the pottery itself. "We were always curious as to what was inside these vessels," he points out. "If you could identify the organic components, you could actually say something about the contents. Then you could say more about what it meant to humans—who are organic creatures." The great breakthrough

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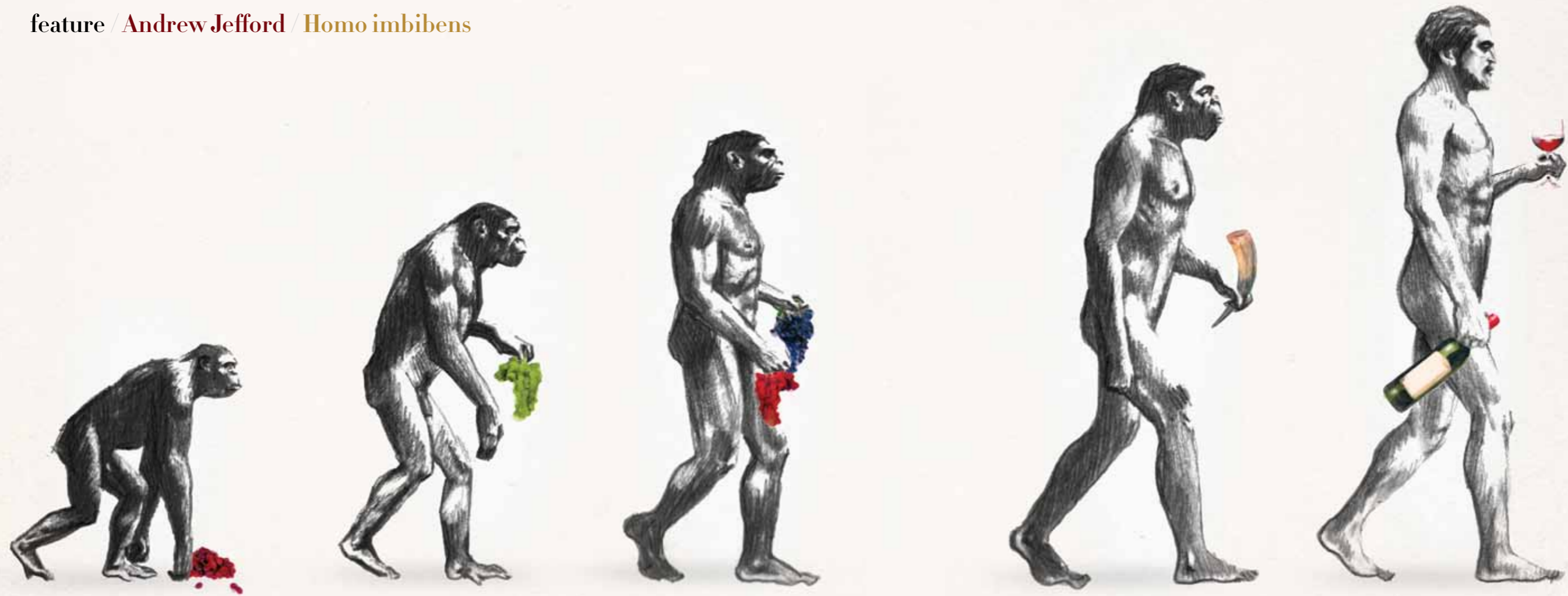
came with liquid and gas chromatography—and in particular, mass spectrometry. By looking for specific chemical markers of natural products (biomarkers or fingerprint compounds), you could then say what the jar or other vessel was likely to have contained.

Alcohol itself, alas, is entirely unrecoverable: It simply evaporates. But McGovern and his colleagues developed a series of tests for different alcoholic beverages. For Middle Eastern and European wines, for example, they test for tartaric acid, found in large quantity only in the Eurasian grape, together with other organic acids (lactic, citric, and succinic acid) common to this grape; background amounts produced by microorganisms are also checked. Grape pips and other remains, if they are preserved and recovered, help confirm the analysis. For mead, the analysts search for beeswax compounds, which are difficult to filter out, especially using ancient techniques. Beer is a more complex challenge, since few biomarkers exist for the different cereals (principally barley, wheat, rice, millet, sorghum, and maize). The fermentation of beer from barley, for example, produces calcium oxalate traditionally known as "beerstone," so that is what the team searches for in residues. Other archaeological criteria must be applied for substantiation, because this compound is widespread in nature—it is, for example, the most common constituent of human kidney stones.

Setting the clock

Humans are one of four extant hominid genera (*Pongo*, *Gorilla*, *Pan*, and *Homo*). The most recent common ancestor of all four lived around 14 million years ago, so we might choose to set our ancestral clock at that point. Alcohol (ethanol) itself is much older: "Sugar fermentation (or glycolysis) is thought to be the earliest form of energy production used by life on Earth," writes McGovern (*UP*, p.2), suggesting a date of about 4 billion years ago for microbial transformation of sugar to ethanol and carbon dioxide on planet earth. Clouds of ethanol and other alcohols billions of kilometers across, by the way, exist in star-forming regions elsewhere at the center of our galaxy, the Milky Way, and throughout the much larger universe.





Homo erectus appeared about 2 million years ago in Africa, from where the species migrated to Eurasia; it became extinct about 70,000 years ago. By then, however, *Homo sapiens sapiens* had evolved (from around 200,000 years ago), again in Africa, from which this new species migrated 60,000–100,000 years ago. It is now the only surviving member of the genus *Homo*, other archaic humans (such as *Homo neanderthalensis*) having become extinct around 40,000 years ago. Most of us carry the genetic signatures of interbreeding between these species.

Humans began making pottery in China from around 18,000 years ago. The oldest attested alcoholic beverage so far identified by McGovern's laboratory, working with colleagues from China, Germany, and the United States, is that of Jiahu in central China's Henan Province: It's 9,000 years old. Authenticated human consumption of alcohol thus begins at this point, though the relative sophistication of the site strongly suggests that it was itself an heir to earlier traditions. Teams are working on residues found in natural or artificial landscape features that might predate the creation of pottery, especially in Anatolia, but no earlier dates have yet been established, so we can only speculate on the use of alcohol by hominids prior to that point.

And not merely hominids. Fruits naturally ferment, producing "wild" alcohol, and fruit-eating animals (notably primates) gorge on this fermented fruit, becoming inebriated as a consequence. Primate lineage goes back some 65 million

"We're really set up," says McGovern, "to drink an alcohol beverage." When, I asked, might intentionality have begun in this process? "I see it as being way back into the higher primate era," he replied, contending that our intimacy with alcohol is not only as old as we are as a species but was a trait acquired by our monkey or primate ancestors

years, and the genetic equipment to deal effectively with the toxic by-products of ethanol digestion (notably acetaldehyde) dates from around 10 million years ago; this is the ALDH gene. (The ALDH1 gene, by the way, is responsible for the Asian flushing response to alcohol—probably a genetic mutation to prevent excessive alcohol consumption.) The link between the fruit-eating behavior of tree-dwelling primates and the evolution of the sensory skills required to identify ripe and fermented fruits is tackled by Robert Dudley, professor of integrative biology at UC Berkeley, in his 2014 book *The Drunken Monkey* (University of California Press). "We're really set up," summarizes McGovern of this body of research, "to drink an alcohol beverage. And we have the right apparatus to pick up all the sensory aromatics." When, I asked McGovern,

might intentionality have begun in this process? "I see it as being way back into the higher primate era," he replied, contending that our intimacy with alcohol is not only as old as we are as a species but was a trait acquired, with varying degrees of organization, by our monkey or primate ancestors—though we have no way of proving this at present.

Flute music at dusk

Let's now switch to what we do know. Jiahu was a substantial (5.5ha [13.5-acre]) Neolithic settlement surrounded by a moat and settled by between 250 and 800 people between 7,000 BCE and 5,700 BCE, when it was destroyed in a flood. So far, 45 residences have been excavated and nine pottery kilns found; analysis of the skeletal remains reveals that Jiahu inhabitants experienced improving health and longevity over the life of the settlement. They farmed millet and rice; they raised pigs, dogs, poultry, and cattle (using pig and cattle manure to raise rice yields); they gathered and foraged wild pears, apricots, chestnuts, broad beans, and soya beans; they fished for carp and hunted wild boar, deer, and rabbits. And come the end of the day, they drank alcohol.

Made from what, and in what form? One of the big surprises of McGovern's work is that the pure forms of alcoholic beverages with which we are familiar today are

Previous spreads: Shakespeare's Falstaff; the Chinese Tang poet Li Po. Above: Based on Rudolph Zallinger's "The Road to Homo Sapiens" in *Early Man* (Time Life Books, 1965).

exceedingly rare in the distant past. Analyses of the Jiahu residues (16 sherds) consistently revealed mixtures that included tartaric acid (derived from a native wild grape and/or hawthorn tree in China; note that the only seeds recovered at this site were of these fruits), fingerprint compounds of beeswax, and ferulate phytosterol esters pointing to rice. They drank, in other words, a mixed beverage made from wine made from either native wild grapes or hawthorn fruit (probably both) mingled with mead and rice beer. The beverage was likely to have been drunk from a communal vessel of some sort using straws to avoid floating debris, or so later traditions suggest. This drink, at least for the time being, is the first ancestor of Romanée-Conti and Montrachet, of Haut-Brion and Petrus.

That's not all, though. Jiahu has its own symbols—possibly pictograms since their similarity to later Chinese characters is striking; in that case they are a form of proto-writing. Nine were found on tortoise shells (used, in later Chinese culture, for divination) and two on bone. Even more movingly, Jiahu is celebrated for its 33 flutes (20 of them intact), all of them made from the wing bones of the red-crowned crane, a presently endangered species celebrated for its beautiful mating dance and a Taoist symbol of longevity and immortality. McGovern sees this as "the first glimmerings of a shamanistic cult adapted to the new circumstances of the Chinese Neolithic Revolution" (*UP*, p.40), which may well be the case; see below for more on his theories of the shaman. More simply, though, these silent

remains, and the Jiahu evenings they invoke, must seem plangent to those of us alive in the 21st century who have loved wine as a gateway to music, to poetry, to dance, and to an appreciation of the natural world.

Residue riches

Jiahu is just one of a number of Chinese Neolithic sites currently being excavated; indeed, McGovern has even examined and analyzed a liquid sample from Yinxu (“the ruins of Yin”) or Anyang, a Shang-dynasty capital city also in Henan Province, dating back 3,000 years. It had been hermetically sealed by the very tight fit of the lid of this bronze vessel. The liquid had evaporated to around one quarter of its original volume, and the vessel was eventually totally sealed by corrosion. It still retained a sensorial profile: “It had the characteristic fragrance of fine rice or millet wine made the traditional way,” recalled McGovern, “slightly oxidized like Sherry, with a perfumed bouquet” (*UP*, p.47). The chemical detection of triterpenoid compounds implied that a fragrant tree sap (perhaps of an elemi oleoresin type) or chrysanthemum had been added to the millet beverage, according to the isotope evidence. A second Shang-dynasty site in Henan (Changzikou) surrendered no fewer than 52 liquid samples inside bronze vessels; the analysis of one of these revealed a rice beverage with added China fir sap, chrysanthemum, and/or a member of the *Artemisia* (wormwood) family.

Given China’s 10,000-year pottery head-start on the Middle East, we might reasonably expect a large number of further discoveries and insights into Neolithic drinking habits from the Middle Kingdom in the years ahead. Another key area of interest for McGovern is whether further excavation in China reveals more about the domestication of the wild vine there. “China has more wild species than anywhere else in the world, and some of those species have a very high sugar content, up to 20 percent, but so far as we know these wild vines were never domesticated. Maybe archaeological investigation will show that the Chinese did domesticate at a much earlier date than previously determined. They are technologically advanced in so many areas.” Prior to the Chinese discoveries, though, it was excavations in the Near East, Anatolia, the Caucasus, and the Fertile Crescent that provided much of the excitement felt by McGovern and his colleagues, especially once highly sensitive and precise chemical techniques (such as infrared spectrometry, gas/liquid chromatography, and mass spectrometry) had opened up their field.

One of the oldest of these sites is Hajji Firuz Tepe, in present-day northwestern Iran (West Azerbaijan Province), excavated by the University of Pennsylvania Museum of Archaeology and Anthropology team between 1958 and 1968; the remains date back 7,000–7,400 years. The Neolithic inhabitants of this high-sited (4,260ft [1,299m]) village in the Zagros Mountains “appear to have enjoyed a very comfortable life. Animal and plant resources were abundant. Their well-made mudbrick homes [...] are nearly identical to those still seen in the area today and could have accommodated an extended family then as now” (*UP*, p.74). In one “kitchen,” six jars of 9 liters each had been set into the clay floor and lined up against one wall. The team initially concluded that they were used for some sort of dairy product, but analysis

This leads us to one of the most vexed questions of all in McGovern’s field—and one on which he is constantly called to pronounce: Which country can lay claim to being “the cradle of wine”? It is, in a way, an absurd question. But for a plant with the vine’s cultural significance, the claim matters and is immensely significant to modern nation states

eventually revealed not only that they contained wine flavored with a tree resin, but that they had probably also had clay stoppers to conserve their liquid contents. McGovern and his colleagues were surprised by their discovery. “If the six jars in the kitchen of one ordinary house are any measure, drinking in the village was not a privilege of only the rich and famous. [...] If the other households at the site (which has not been excavated fully) followed the same pattern of usage, we are talking about a lot of wine, roughly 5,000 liters for one hundred houses. The availability of such a large quantity of wine implies that the Eurasian grapevine had already come under cultivation at Hajji Firuz” (*UP*, p.76).

Finding the cradle

This in turn leads us to one of the most vexed questions of all in McGovern’s field—and one on which he is constantly called to pronounce: Which country in this region can lay claim to being “the cradle of wine” or “the birthplace of wine”? Even if it is eventually proved that China was cultivating one or some of its own wild vines at an earlier stage of the Neolithic, it seems likely that the vine that wine lovers continue to treasure today, *Vitis vinifera ssp. vinifera* (the Eurasian grape), was first domesticated in this part of the world.

It is, in a way, an absurd question, since all of the rival national entities trying to wrestle the archaeological crown from each other were undreamed of by the first tribal Caucasian or Anatolian vine tenders, setting about their work on rampant forest climbers. But for a plant with the vine’s cultural significance, the claim matters and is immensely significant to modern nation states—which was why the findings released in a paper called “Early Neolithic Wine of Georgia in the South Caucasus,” published in the *Proceedings of the National Academy of Sciences of the United States of America* on November 17, 2017, under an 18-author byline, were greeted with such elation in Georgia.

This study focused on two small Neolithic villages in the Georgian region of Lower Kartli: Shulaveris Gora and Gadachrili Gora. (These sites, by the way, lie only 300 miles [500km] north of Hajji Firuz.) Nineteen different jar samples were analyzed, of which eight tested positively for both tartaric acid and other organic acids (including malic, succinic, and citric acid). These pottery samples have been dated back 7,800 to 8,000 years, making this “the earliest biomolecular archaeological evidence for grapevine and viticulture from the Near East.” No less significantly, the Georgian finds do not contain resin or other flavorings; nor are they a mixed beverage, both of which are highly unusual for the ancient residues that McGovern has

spent much of his career analyzing. This in itself, believes McGovern, might be a kind of evidence for domestication in this zone. “The fact that there isn’t any tree resin in it and that it is from grape alone is very interesting. It suggests that they really appreciated the pure grape and that they could preserve their wines, which suggests a higher alcohol level and therefore higher sugar levels. Initially, the wild vine would have been more acidic than it is today, when it was a climber growing up trees and producing berries to attract birds. It wasn’t necessarily something that humans would have gravitated to.” However, once cultivation rendered the berries sweeter and juicier, “then you have a perfect resource for making a wine quite easily. It has the yeast nutrient you need on the skins, the fermentation starts naturally, and it produces 1,000 aromatic compounds by itself: It’s the perfect medium for fermentation.” It’s also perhaps worth noting that, even today, vines are trained up trees by a practice known as *maglari* in the western Georgian regions of Ajara, Guria, and Samegrelo: the transitional stage between wild-vine domestication and today’s lower-level cultivation systems.

Toasting Midas

Other residues analyzed by McGovern and colleagues from the Caucasus, Anatolia, and the Near East include those from the significant sites of Godin Tepe (in the central Zagros Mountains of western Iran, south of Hajji Firuz Tepe) and Gordion (on the central Anatolian plateau close to present-day Ankara), though both of these sites are more recent than the Georgian Neolithic villages of Shulaveris Gora and Gadachrili Gora, and the other Zagros site of Hajji Firuz Tepe.

Godin Tepe was a military or trading base dating to between 3,500 BCE and 3,100 BCE (the Late Uruk period), and the site contains different types of residues, both reddish, which analysis showed to be grape wine, and yellowish, whose analysis points to barley beer. “This period was the beginning of urbanism and the rise of the cities, of the first ‘civilization,’ you could say; it was characterized by a lot of specialized activities, in lower Mesopotamia, down in the Tigris-Euphrates valley. That was where they could produce a lot of grain, which was very important for beer, but if they wanted wine, that would have to take place up in the hill country, where the grapevine thrives, up in the Zagros Mountains.” One feature of Godin Tepe was the way that the wine jars had been laid on their sides so as to keep their clay stoppers moist inside narrow mouths and so prevent the contents from acetification, suggesting a process of maturation that might have lasted several years. The jars containing beer, by contrast, were wider-mouthed, suggesting more rapid consumption using straws, a scene often duplicated in pictorial form on Mesopotamian cylinder seals.

Gordion or Gordium (modern Yassıhöyük) was the capital of the Phrygians, a western Anatolian people who formed a dominant kingdom in Asia Minor between about 1,200 BCE and 700 BCE. According to *The Iliad*, they fought alongside the Trojans against the Achaeans. The excavation of the Gordion tumulus, or “Midas mound,” was carried out by the Penn Museum in 1957, and that of the adjacent city mound has continued for over 50 years. The tomb itself was opened and the riches within revealed in a moment of excitement similar to that of Howard Carter’s 1922 opening of Tutankhamun’s burial chamber. The “leftover” residues of a

The excavation of the “Midas mound” was carried out by the Penn Museum in 1957. The tomb itself was opened and the riches within revealed in a moment of excitement similar to that of Howard Carter’s 1922 opening of Tutankhamun’s burial chamber. “When excavators broke through the wall of the tomb in 1957, they came face to face with [...] the body of a sixty- to sixty-five-year-old male. In the background gleamed the largest Iron Age drinking set ever found: 157 bronze vessels, including vats, jugs, and drinking bowls, which were used in a dinner bidding farewell to the tomb’s occupant”

funerary feast for the king—whether Midas himself or his father, Gordias—suggested a wake. “When excavators broke through the wall of the tomb in 1957, they came face to face with [...] the body of a sixty- to sixty-five-year-old male, laid out on a thick pile of blue and purple textiles, the colors of regal splendor. In the background gleamed the largest Iron Age drinking set ever found: 157 bronze vessels, including vats, jugs, and drinking bowls, which were used in a dinner bidding farewell to the tomb’s occupant” (*UP*, p.131). The site was dated to 750 BCE to 700 BCE, and when McGovern and his team analyzed the yellowish residues found inside the situlae and the bowls that the tomb contained, they found that, as at Jiahu, it was a mixed beverage, in this instance containing Eurasian grape wine, barley (rather than rice) beer, and honey mead. (McGovern later worked with Sam Calagione of the Delaware-based Dogfish Head Brewery to “recreate” the Midas brew, and the resulting beer/wine/mead hybrid called Midas Touch is still available from Dogfish Head today.)

A final fascinating analysis of pottery vessel residues undertaken by McGovern and his colleagues is that of the tomb of the early Egyptian king Scorpion I, who died around 5,000 years ago (approximately 3,150 BCE)—an event roughly contemporaneous with dates assigned to the military or trading base of Godin Tepe, and half a millennium before the building of the first Egyptian pyramid. Three rooms in Scorpion’s tomb at Abydos, downstream from Luxor, were stacked with wine jars—some 700 altogether, amounting to around 4,500 liters of wine, underlining the high status of what was certainly an imported beverage at the time. Vines did not naturally grow in the Nile Valley and were not transplanted to the Nile Delta until several centuries after Scorpion’s death. The style of the jars, confirmed by chemical analysis of their clays, indicated that the vast quantity of wine that they contained had been imported from the area of the present-day Gaza, the Jordan Valley, and the adjacent hill country to the east (Transjordan) and west (the West Bank). A small number of the jars, indeed, seems to have originated in Petra.

Analysis of the residues inside Scorpion’s jars brought some fascinating results. All were, as so often in the ancient world,



resinated; any living human who would like to replicate the wine-drinking experience of our earliest ancestors should always begin with a bottle of Greek retsina. Some jars, moreover, contained whole preserved raisins and carefully sliced figs—perhaps to enhance the wines’ flavor, or perhaps as a fermentation aid. But a wide range of other flavorings was also chemically identified by McGovern and his colleagues, including savory, balm, senna, coriander, germander, mint, sage, and thyme. Rather than mixed beverages with multiple ingredients, these are best described as flavored wines.

The necessity for alcohol

In addition to his work with residues, McGovern also provides (notably in *Uncorking the Past*) a comprehensive overview of the astonishingly creative ways in which humans in different global locations and cultures have been able to produce alcoholic beverages. This account of raw materials, ways and means, via the archaeological record, goes some way to substantiate his theory that *Homo sapiens sapiens* might also be considered *Homo imbibens*. His overall suggestion is that alcoholic beverages became, from the earliest years of human cultural development, emotionally, religiously, and intellectually necessary to human health in the same way that food staples were physically necessary to human health; moreover, alcoholic beverages occupied, until relatively recently, a privileged place both as a medicine in its own right and as a means for preserving and ingesting medical plants, herbs, and roots.

“Which came first, bread or beer?” he asks. “You need food to exist. But if you want to have a good time, if you want to have something safer than water to drink, if you want to have something safe to take medicine in and so live longer, if you want social lubrication, if you want to up your sexual relations and so produce more children, then alcoholic beverages help. Then you get into the mind-altering effect, more or less having a mystery of sorts in that there seems to be some supernatural force at work both in fermentation and in your brain. You can relate that to some meaning in the universe, and that’s why alcoholic beverages are usually incorporated right at the center of all religions.”

The big challenge for those producing alcoholic beverages at all times and in all locations was that of having raw materials containing suitable levels of fermentable sugars; the fact that *Vitis vinifera* does this so admirably, McGovern believes, may be the key to the wine grape’s preeminence. “The Eurasian grape, once a juice has been expressed, is the perfect nutritional medium for native yeast to become active and produce a high-alcoholic beverage, a constant goal of humankind. Moreover, the Eurasian grape has been cloned and transplanted by humans to produce an enormous number of varieties (estimates vary from 8,000 to 10,000) with a seemingly infinite range of flavors and aromas, unlike any other plant. Its higher alcohol compared to beer assures its better preservation, and wine can be aged, thus adding to its mysterious allure and flavor and aroma profile.”

The cereal grains used for beer production, by contrast, do not as harvested contain fermentable sugars. They contain starch, which requires conversion to sugar. The classic means

McGovern’s suggestion is that alcoholic beverages became, from the earliest years of human cultural development, emotionally, religiously, and intellectually necessary to human health in the same way that food staples were physically necessary to human health; moreover, alcoholic beverages occupied a privileged place both as a medicine in its own right and as a means for preserving and ingesting medical plants, herbs, and roots

of doing this is by sprouting and malting, which releases the diastase enzyme that converts starch to maltose and then to glucose. This, though, is a process of some sophistication and may not have been the earliest technique used to render cereal grains fermentable. McGovern considers it most likely that the rice component of the Jiahu mixed beverage, for example, was prepared by mastication. When the rice grains are chewed, an enzyme called ptyalin (or salivary amylase) breaks starch down into maltose and dextrin. Further processing in the gut yields glucose, a simple sugar, ripe for yeast fermentation. “In remote areas of Japan and Taiwan,” he writes, “you can still find women sitting around a large bowl, masticating and spitting rice juice into the vessel as they prepare the rice wine for a marriage ceremony. In fact, this method of making an alcoholic beverage from a grain spans the globe, from the corn beers or chichas of the Americas, to the sorghum and millet beers of Africa” (*UP*, pp.38–39).

Another obvious source of fermentable sugar, particularly in high-latitude climates that did not produce sugar-rich fruits, was honey—but honey in its raw state is actually too sweet to be readily fermentable, and it needs dilution with between five and six parts of water to two to three parts honey to produce an ideal medium for fermentation, yielding a mead of between 8% and 13% ABV. Given the fact that modern humans originated in sub-Saharan Africa, spreading from the Great Rift Valley northward from around 100,000 years ago, it is noteworthy that even today Ethiopia’s national beverage, *tej*, is a mead flavored with *Rhamnus prinoides*, shiny-leaf buckthorn or *gesho*. “Many African peoples,” McGovern points out, “have been drinking some variation of a fermented honey beverage for a very long time throughout the continent” (*UP*, p.234).

He also notes that chimpanzees (our closest ancestor, and a hominid with whom we share 96 percent of our genome) are ingenious honey-hunters and beehive-raiders, improvising natural tools of all kinds to pry open the hive (such as a chisel-like branch) and swish out (with a willow-like branch) the honey within; 10,000-year-old rock paintings in the Matopo hills of Zimbabwe show human hunters smoking out beehives. “Perhaps, in Paleolithic times, the hunters brought back not only honey but also on occasion an animal skin or gourd full of mead. Rainwater might have filled the nest of a fallen tree and fermented the honey [...]. Eventually, an enterprising human might have thought of making mead in a more controlled fashion in a leather bag, gourd, or bark container” (*UP*, p.237).

Opposite: Based on a bust of King Midas in the Summer Garden, St Petersburg, Russia. Next spread: A early shaman, whose power may have been derived partly from alcohol.

Bags, gourds, and bark containers rot away in time, though, so no residues remain. Thus, the notion that our earliest forebears brought a mead-fermenting and mead-drinking culture with them when they came out of Africa must, like so much else, remain conjectural.

McGovern's account of the many plants used for the preparation of alcoholic beverages in *Uncorking the Past* is a dazzling one, and in particular he is in awe of the Mesoamerican domestication of maize from teosinte, thereby turning "a minuscule mountain grass into the world's most prolific source of alcohol" (*UP*, p.226). Other major sources of alcohol for different societies in the past have included cacao/chocolate, *Schinus molle* (the Peruvian pepper tree), manioc, cassava, sorghum, millet, date palm, and countless other local fruits and berries. He admits, though, to being perplexed as to why we have yet to find any evidence of alcohol consumption in two indigenous groups: the Native American Indians of North America and Australia's indigenous peoples.

"In the case of the Indians, corn made its way up to that area, but so far as we know they never used it for chicha. They also had maple syrup; they had fruits. After colonization, Europeans took the squashes, the pumpkins, all the natural products that had some sugar in them, as well as the carbohydrate resources like corn, and made them into beer or special beverages, so you wonder why the native people would not have done that. They would have stumbled on alcohol via natural fermentation, for sure, at some point or other. So, maybe it was banned or outlawed in some way. Maybe there was some sort of prohibitionist movement; or maybe having gone over to tobacco, they decided that that was sufficient and that they didn't need fermented beverages. Or maybe the gods told them in some way that they needed one and not the other. I think excavation will eventually change the picture. And it's the same with Australia. You have all the natural resources there, you have honey, some of the native Australian fruits are really high in sugar; I think those would eventually have been squashed and would have naturally fermented into an alcoholic beverage. Yet so far there's been no archaeological or chemical information as to whether they had a fermented beverage."

From silverback to Parker

One idea that McGovern constantly returns to in his work is that of the shaman. "Where artwork and artifacts have survived, they support the idea that the preparation and use of fermented beverages during the Paleolithic period was focused on an authority figure, the 'shaman,' who oversaw a community's religious and social needs. Even in this early period, tight bonds must have existed between fermented beverages, religion, music, dance, and sex" (*UP*, p.268). When we spoke in February 2018, he said he saw this "as going back to the higher primates again, the silverback, the alpha male that holds the troop together. That organization carries on into early human hominid groups. You would probably have a main figure heading up the group, who would be kind of a combination of food-resource searcher, who would keep everybody together, provide explanations of what to do, handle burial rites; they would stand out from the group and be leaders. They would maybe make fermented beverages, too,

So, are the efforts that are poured into encouraging and enforcing abstinence, whether from doctors or clerics, ultimately doomed? "I think so! Ultimately, humans will always come back to it. They have an urge to drink alcohol. Though I would also say that moderate consumption is what we are adapted to, and that also probably goes back to the Paleolithic period. Alcohol is so readily available now that people overdo it. But that doesn't mean you have to ignore its positive effects"

adding to the rituals, asking for input from the community as to whether something tasted good, how the beverage could be used to celebrate, to worship the gods and the ancestors [...]. It encompasses a lot of different roles. And by the way, such a figure could be female, too." Would it, I wondered, be fanciful to see the hieratic "wine writer" or "wine critic" figure, accorded a strange importance by fascinated consumers, as a kind of heir at least to the fermented-beverage role of the shaman, just as clerics and priests are heirs to the religious functions of the shaman, and politicians are to the coordinating and decision-making role of the shaman? McGovern laughed. He said he was willing to entertain the possibility.

Sometimes, though, I have wondered whether his notion of *Homo imbibens* might be pushing the evidence a little too far. Do critics, I asked him, ever suggest that he is according too prominent a role to alcohol consumption and the creation of alcoholic beverages in ancient societies? "Amazingly, that pushback hasn't come up too much. Of course it's true that other technologies have had a great influence, but I think in general that the importance of alcoholic beverages has been if anything rather overlooked. Ten percent of the enzymes in the human liver are devoted to processing alcohol, after all. We have enzymes in our mouths to convert starch to sugar. As I said earlier, we're set up to consume an alcoholic beverage. It's an important part of human biology, social relations, religions, economy. It has very far-flung dimensions to it, which aren't as widely appreciated as they could be."

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