Did the Ancients Know the Artichoke?

Above: *Roman mosaic from El-Jem, Tunisia, of an unidentified* Cynara. *Bardo Museum, Tunis.*
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The next time you eat an artichoke, consider for a moment how odd it is: you are eating the base of the flower head (*capitulum*) of an otherwise inedible thistle. What possessed someone to first grow or develop an artichoke, let alone eat it? The plant's nearest relative, the cardoon, has an inedible flower-head base and bitter-tasting stems and would not have looked promising as a food source. Perhaps the discovery was accidental, or perhaps it occurred during times of multiyear famine when sustenance was sought in all manner of foods. Maybe some farmer saw the beautiful but inedible flower of the cardoon and thought, "Wouldn't it be nice if you could eat that?" We don't know how the process of artichoke development began, but however it occurred the artichoke is a plant worthy of our interest. It is a vegetable rich in vitamin C, dietary fiber, micronutrients like folacin, and has myriad culinary possibilities.

The popularity of the artichoke today has led many food writers and food historians to seek its roots in the classical world in what I believe is a gastronomic form of the neoclassicist fallacy.[1] Concerning artichokes it is common to read that the "Greeks and Romans…enjoyed eating them" or they were "known to the Romans."[2] In fact, the historian T. Sarah Peterson argues that it was

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the Humanists who lent credence to the false idea that Renaissance society ate the same thistles as the ancients.[3] Some food historians and botanists suggest that the Roman mosaics from Tunisia, especially the ones from El-Jem in Tunisia depicting the *capitulum* of an unidentified thistle (now in the Bardo Museum in Tunis), are conclusive iconographical evidence of a classical-era artichoke.[4] *The Oxford Book of Food Plants* claims that the globe artichoke was known to the Greeks and Romans and states that cardoon leaves are spinier than those of the artichoke, and that its flower heads have spine-tipped bracts.[5] But this claim is contradicted by the evidence in Désiré Bois's *Les plantes alimentaires* and, more important, by *Flora Europaea*, volume 4: *Plantaginaceae to Compositae (and Rubiaceae)*, which gives a botanical description for identifying cardoons and artichokes. It demonstrates the impossibility of conclusively identifying the mosaics from the Bardo Museum and affirms that the artichoke is "unknown in the wild state" and therefore logically derived from the cardoon.[6] The historian Lucie Bolens also agrees that the plants that grew in Roman Tunisia were cardoons, not artichokes.[7]

I have never been convinced that the Greco-Roman world knew the artichoke. Attributing knowledge of the artichoke to the Greeks and Romans has always struck me as one of those pieces of "received wisdom" in the food-writing world that is in the same category as the arguments—now known to be false—that spices were used for preserving meat in medieval times or that Marco Polo brought back macaroni from China. It is not implausible to claim that had the Romans known of the artichoke, then the contemporary Italian word for the plant, *carciofo*, would be related to the Latin *cynara*. Furthermore, why did the Romans not distinguish between the cardoon and the artichoke? My initial disbelief in attributing the artichoke to the ancients was based mostly on the fact that the word for "artichoke" in all neo-Latin languages derives from the Arabic *al-kharsūf*, not from Latin or Greek. In fact, the Modern Greek word for artichoke, *agkinara* or *anginara*, itself appears to derive from some Arabic words for artichoke, namely, *qināriyya* or *kankar*.

My research leads me to conclude that the artichoke was unknown in the ancient Greco-Roman world, and that it was most likely developed from the cardoon by Arab cultivators at some as-yet-undetermined time and place, but most probably sometime between the ninth and eleventh centuries A.D. in Sicily.[8] I believe that the mosaic from El-Jem depicts a cardoon, not an artichoke. In any case, the literary and historical evidence, especially texts dealing with agriculture, farming, and cuisine, do not support the notion of the mosaic showing an artichoke.

What makes the artichoke, a member of the genus *Cynara*, unique as a food is that it has an edible *capitulum* foundation, edible flesh on the inside of the bracts, and no bitterness, unlike other thistles, such as the cardoon. The large, edible part (called the *heart*, *base*, or *foundation* among cookbook writers) can be stuffed for cooking, a preparation popular in all Mediterranean countries. Cultivators have successfully bred the artichoke for larger and fleshier capitula.

The genus *Cynara* L. (*Asteraceae*) comprises thistles characterized by large spiny leaves and flower heads. They include wild Mediterranean species as well as two crops: the artichoke, cultivated for its edible heads and pharmaceutical properties; and the cultivated or leafy cardoon, grown for its fleshy stems and leaf stalks. Botanists recognize eight species in this genus,[9] although a ninth, *C. tournefortii* Boiss. & Reuter., has recently been added to this genus.

The wild cardoon seems to be constituted by at least two gene pools, one with a Western Mediterranean distribution (*Cynara algarbiensis*, *C. baetica*, *C. humilis*, and *C. tournefortii*), the other with an Eastern Mediterranean one (*C. cornigera*, *C. cyrenaica*, and *C. syriaca*). *Cynara cardunculus*, which is present throughout almost the entire Mediterranean, contains two wild subspecies, *cardunculus* and *flavescens*, which differ in the character of their bracts and in their geographical distribution. *Cardunculus* is found from Cyprus to Greece, central and southern Italy, Sicily and Sardinia, while *flavescens* is diffused in the Iberian Peninsula and some Atlantic islands.

One problem that arises when historians and botanists talk about artichokes and cardoons in the vernacular is that in all languages of the Mediterranean, as well as in English, precision is lacking. That is why it is important to use Latin binomials when discussing the history of artichokes. For clarity we can consider as a benchmark the research by professors Domenico Pignone and Gabriella Sonnante of the Institute of Plant Genetics, National Research Council, in Bari, Italy, on genetic variability and relationships between cultivars and wild taxa. Sonnante, Pignone, and their colleagues have pointed out that synonymy, the fact that a plant can take different names according to where it is cultivated, complicates collection management and study and creates confusion.[10]

The Genus *Cynara*

The evolution of *Cynara* is still unclear. One possible reason, Sonnante and colleagues convincingly propose, is uncertainty in the taxonomical delimitations of the species,

some of which are not completely accepted. Another possible reason is the relatively small number of collections available to scientists, so that genetic studies based on living material are normally limited to a few samples, with little or no recognition of intraspecific variation.[11]

So before we look at the historical and linguistic records we must try to be clear as to which plants we are talking about. This is not easy, as the vernacular terms are simpler to use and more engaging to read about. In trying to determine the lineage of the contemporary cultivated globe artichoke, for instance, one often encounters the expression "wild artichoke," even though I claim that the artichoke does not grow wild. What is being referred to, then?

The expression "wild artichoke" is a reference to *Cynara cardunculus* L. var. *sylvestris* (Lam.) Fiori—a plant that, frankly, should be called "wild cardoon," the progenitor of the cultivated artichoke. The cultivated artichoke is *Cynara cardunculus* L. var. *scolymus* (L.) Fiori (syn. *Cynara scolymus* L.). Among the cardoons, the cultivated leafy cardoon (*C. cardunculus* L. var. *altilis* DC), the other cultivated taxon of this species, may be the progenitor of *C. cardunculus* subsp. *cardunculus* and *C. cardunculus* subsp. *flavescens* Wikl. These two subspecies of wild cardoon, differing mainly by a yellowish margin on the middle involucral bracts, coexist in the very south of mainland Italy and Sicily. It's possible, Pignone and Sonnante suggest, that the plants known to the Romans were these last two mentioned, both subspecies of wild cardoon. It is also possible, they argue, that these two species result from a natural hybridization event between cultivated and wild plants.[12]

The Genetic Research on *Cynara*

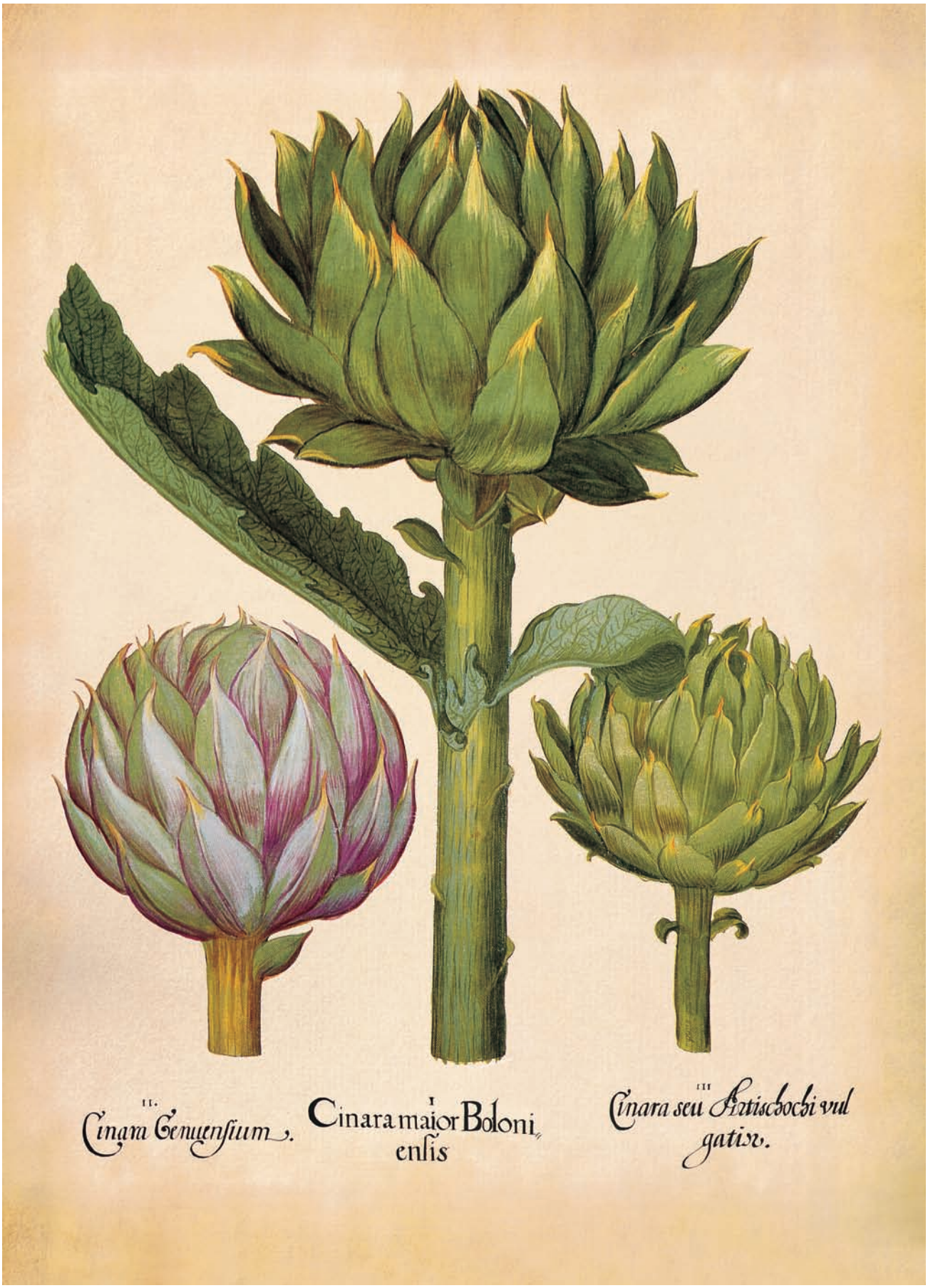
The most important genetic research on artichokes being conducted today is by Sonnante and Pignone and their colleagues. These researchers accept C. Foury's notion that the globe artichoke (*C. cardunculus* L. var. *scolymus* (L.) Fiori) is a relatively recent crop from about the first century A.D. But I disagree—this date is too early, and Foury's source is Jacques André, who is not reliable in this matter.[13] (I will address André's interpretation of classical sources later in this paper.)

Included in the *Cynara* species are two more botanical varieties: *C. cardunculus* var. *altilis* (the cultivated leafy cardoon) and *C. cardunculus* var. *sylvestris* (the wild progenitor of artichoke), both of which are completely interfertile with the cultivated globe artichoke. Isozyme markers confirm *C. cardunculus* var. *sylvestris* as the progenitor of cultivated artichoke, since the similarity between these two taxa is much higher than that between other wild *Cynara* species and artichoke. Pignone and Sonnante's research has confirmed that random amplified polymorphic DNA (RAPD) markers can be used to determine genetic diversity in an artichoke collection and to assess the genetic relationships among wild and cultivated artichokes and cardoons.[14]

Based on morphological and productive traits, the cultivated globe artichoke can be divided into four main groups, although each group contains a variety of cultivars that are not the subject of this inquiry. The Spinosi group includes varieties with long, spiny thorns on bracts and leaves; the Violetti group comprises types with violet-colored heads harvested in the early springtime; the Romaneschi includes the big, spherical-headed varieties harvested late in the spring; Catanesi is characterized by varieties with elongated heads harvested for a longer period, from late autumn to spring. Even though thornless varieties are considered more evolved than spiny ones, the spiny ones have been preferred in some areas because they are considered tastier.[15]

The accepted evolutionary line for artichoke is wild cardoon—Spinosi—Violetti—Catanesi—Romaneschi, since less spiny and bigger *capitula* have been progressively selected by humans. The highest variation for cultivated artichoke is found in Italy; furthermore, Italy has the highest concentration of Spinosi types, which are the most primitive group with spiny leaves and bracts. Therefore, it could be hypothesized that Italy, and in particular southern Italy and its major islands—primarily Sicily—could be the place were the artichoke was first domesticated.[16]

In their collecting Pignone and Sonnante discovered that where "wild artichoke" (*C. cardunculus* var. *sylvestris*) populations clustered, the soil was deep, sandy, clayey, and loamy with high sun exposure. "Wild artichokes" tend to grow with other *Cardueae* that show the same edaphic preference. Thus Pignone and Sonnante suggest that the Romans collected the young *capitula* of "wild artichokes" and cooked them or preserved them—a practice very similar to the contemporary one in rural areas of these regions where "wild artichokes" grow abundantly. One must be careful with this attribution and description, however, because some of the "wild artichokes" sold today are actually the Spinosi variety of cultivated artichoke. This practice indicates that the more primitive types of cultivated artichoke are, in fact, Spinosi; they resemble "wild artichokes" because of their spines. Since this variety is grown particularly in Sicily, Pignone and Sonnate suggest that Sicily may be the home of artichoke domestication.[17] Their research also suggests that because there are at least two gene pools of wild cardoons—eastern and Mediterranean—there



BASILIUS BESLER, *L'HERBIER IV*

is evidence that the domesticated (cultivated) artichoke developed from the eastern gene pool, while the cultivated cardoon developed from the western one.

One thing seems clear: the identification of the cultivated artichoke's home of domestication and its development from cardoon or "wild artichoke" will probably not be settled by a study of morphological characteristics. Further studies using DNA-based molecular markers such as RAPD, simple sequence repeats (SSRs), and amplified fragment length polymorphisms (AFLPs) are needed. The germplasm research of Pignone and Sonnante clearly points to Sicily as a prime candidate for the locale of artichoke domestication. Furthermore, given that the word for "artichoke" in all neo-Latin languages derives from the Arabic; and that the Arabs were responsible for many agricultural introductions to Sicily over the course of nearly four hundred years; and that the Arab presence in Sicily was contemporaneous with the emergence of the artichoke from the wild cardoon, it seems likely that the Arabs in Sicily developed the artichoke.[18]

Historical, Literary, and Linguistic Evidence: The Classical Writers

Can any historical and linguistic evidence throw some light on the question of the origin of the artichoke? The historian Andrew M. Watson, following the botanist Georges Gibault, claimed that the artichoke does not grow wild. He claimed that it was developed from the cardoon, which both grows wild and is cultivated, and that contrary to what is sometimes stated, only the cardoon was known in the Greco-Roman world, designated by names such as *kaktos*, *cynara*, *carduus*, *scolymus*, and *spondylium*, and that there is no reference in classical literature to a plant of this family with edible flesh on the bracts.[19]

As far as the classical authors go, André suggests that several knew the artichoke and knew it by the word *carduus*.[20] But there is a serious problem with André's interpretation of his sources as Palladius (fl. ca. A.D. 407–460) and Pliny (A.D. 23–79) say nothing that would make one think it is anything but the cardoon. In the Roman cookery book of Apicius, compiled in the fourth century but written in the first century A.D., a recipe sounds as if it was meant for the soft stems of the cardoon rather than the artichoke. Theophrastos (ca. 372–ca. 287 B.C.) says explicitly that the stem of the *kaktos* is eaten, almost certainly the cardoon. He goes on to mention another "thistle," the *pternix*, which has an edible receptacle but inedible bracts. In conclusion, the descriptions given by Palladius, Pliny, Apicius, and Theophrastos do not suggest that the plant they were familiar with was anything other than the cardoon.[21] Gibault concludes that "it is certain that in antiquity the cultivated and wild cardoon was known under the name *cactos*, *scolymos*, *cynara*, *cinara*, and *carduus*."[22] The first-century Roman agricultural writer Columella has a careful, slightly poetic, description of *cinara* that C. Foury takes to be a possible description of the artichoke because of Columella's advice concerning its planting which happens to coincide with that of the artichoke. But there is nothing in Columella's description that would lead one to believe it's the artichoke and not the cardoon.[23]

Historical and Literary Evidence: Arabic and the Arabic Writers

Any attempt to track the meanings, derivations, and references of the Arabic words for "cardoon" and "artichoke" from medieval times up to the present leads to a morass of confusion. In Arabic the word for "artichoke" is, variously, *kharshūf*, *ḥarshuf*, *qināriyya*, or *kankar*. (Incidentally, the Modern Standard Arabic word for "artichoke," *arḍī shawkī*, derives from the Spanish transformation of the original Arabic for "artichoke," *al-kharsūf*.) The Arabic word *kankar* is something of a problem, as it is sometimes thought to mean "artichoke" but usually refers to *Acanthus mollis L.*, a cultivated plant resembling the wild cardoon. This Arabic word comes from the Persian *kangar*, which means "cardoon" or "thistle." The meaning of the word becomes even more confused in that the Spanish-Arab physician Ibn al-Bayṭār (1197–1228) wrote that *kankar* is the *ḥarshuf* of the garden, implying that *kankar* is a cardoon and *ḥarshuf* an artichoke. A similar description appears in the anonymous seventeenth-century Moroccan medical glossary *Tuḥfat al-aḥbāb*. Elsewhere, Ibn al-Bayṭār wrote that the plant in question has leaves longer and wider than lettuce and is the *akanthos* referred to by Dioscorides (fl. first century A.D.). Watson thus concludes that *kankar* could hardly have been the artichoke.

Abū Ḥanīfa al-Dīnawarī (d. 895), one of the fathers of botany, believed that the Persian word *kankar* or *kangar* was used to designate the cardoon, a plant then sometimes cultivated but more likely growing wild;[24] he went on to say that this plant was known by the Arabic word *ḥarshuf*, which meant "cardoon" in the ninth century but would later come to mean "artichoke." The Persian mystic Abū al-Khayr (d. 1049) wrote of *qināriyya*, which appears to be the wild cardoon, being cultivated in the gardens of Seville.[25] But the great twelfth-century Spanish-Arab agriculturalist

Ibn al-ᶜAwwām noted that there were two types of *qināriyya*, those of the fields and those of the garden, the latter of which appears to have been the artichoke.[26] Regarding *kinaria* (*qināriyya*), Ibn al-ᶜAwwām identified a cultivated artichoke (which he associated with Egypt)[27] and a wild one, namely the cardoon. It is impossible to tell whether the *kharshūf* mentioned in the thirteenth-century Hispano-Muslim cookery book *Kitāb al-ṭabīkh fī al-Maghrib wa'l-Āndalus* was an artichoke or cardoon. In any case, other early cookery manuscripts from the same period, such as *Le ménagier de Paris*, the anonymous fourteenth-century Italian *Libro di cucina*, and the *Viandier of Taillevent*, conspicuously do not mention artichokes.

Watson believed that the artichoke was developed in the Islamic world. But where? There are several Berber words for the plant—*taga*, *tifrhūt*, and *fegane*—all of which differ from the Arabic. Although the Berber *taga* might have yielded the Spanish word for cardoon, *tagarnina*, as well as the dialectal Arabic of Marrakesh for cardoon, *garnina* (and *kannariya* in Tangiers), it may very well have derived from the Persian *kangar* through the Arabic.[28] Since Arabic terminology for the artichoke and cardoon is completely confused, it is impossible to track the artichoke's early progress. But by the time the vegetable moves to Europe in the late Middle Ages tracking becomes easier, because in all European languages the names for the artichoke derive from the Arabic.[29]

Watson's detailed research on the diffusion of the artichoke nevertheless left him uncomfortable about including the artichoke in his book on Arab agricultural diffusion.[30] Although he thought that there might be a somewhat clear reference to artichokes in Pliny, he could not find it again and therefore doubted his judgment on that matter. I also have not found a clear reference to artichokes in Pliny; the only clear references are to the cardoon.[31]

The Emergence of the Artichoke

That there is great confusion about this matter is widely recognized.[32] Some European botanists believe that both artichokes and cardoons were derived from a wild perennial herb sometimes known as "wild artichoke" (*Cynara cardunculus* var. *silvestris*), which grows in southern Europe and North Africa. American taxonomists, on the other hand, thought that there were two distinct species, cardoon (*C. cardunculus*) and artichoke (*C. scolymos*). Other botanists consider the globe artichoke to be a cultivated form of cardoon. The wild species of cardoon is of medium size, growing to 1 meter (3 feet). It has many thorns, and its flowers are much smaller than those of the globe artichoke. The cultivated leafy cardoon (*C. cardunculus* var. *altilis*) is very different from the original form of the vegetable. It is much taller (2.5 meters or 7 feet), with fleshier leaves and fewer thorns. Cardoons look even more different when they arrive in today's markets, because they have been artificially blanched, like endives.

In his nineteenth-century history of plants the Italian botanist Antonio Targioni-Tozzetti dates the introduction of the artichoke to Tuscany to around 1466, pointing out that the sixteenth-century Italian botanist Pierandrea Mattioli said it was brought to Naples from Sicily. This introduction is more than likely true, although the date may actually be a bit earlier. Targioni-Tozzetti claims that Theophrastus was talking about the "wild artichoke," another name for the cardoon.[33] This position is also supported by the nineteenth-century botanist Alphonse de Candolle in his *Origin of Cultivated Plants*, where he writes that the cardoon is the wild artichoke, and that the artichoke exists only in cultivated form and is not wild.[34]

As for the early European distinction between the cardoon and the artichoke, the French historian Henri Bresc cites evidence of the artichoke being grown in the gardens of Palermo in the early fifteenth century; these documents distinguish the plant from the cardoon.[35] This reference is the earliest unequivocal written reference to artichokes in Italy. *Kitāb al-ṭabīkh fī al-Maghrib wa'l-Āndalus* contains two recipes for what might be artichokes, although the method does not provide any clear indication beyond their name, *kharshūf* (translated by the Spanish translator as *alcachofas*).[36] For this reason the "wild artichoke" described by Rodrigo Zamorano in 1513 seems to be the cardoon, because it is contrasted with the cultivated artichoke.[37]

In his 1530 *In Dioscoridem corollariorum libri quinque* Hermolai Barbari writes that at the end of the fifteenth century artichokes were not always available in Italy, meaning that they must have been familiar, if not common, to cooks by that time. But in reference to Venice he notes that artichokes are to be found only in the foreign gardens in the Moorish quarter, which again suggests that it was Arab Muslim cooks who were using the artichoke, while Christians apparently were not.[38] Barbari probably contributed to the notion that the Romans knew the artichoke because he identified Pliny's *carduus* as an artichoke, which I believe is incorrect.[39] In France, the botanist Charles Estienne argued in 1536 that "the *cinara* is a kind of cultivated *carduus* of which we eat the topmost fruit (which the Greeks call *scolymus* and the Latins *strobilum*), because its prickly husk or seed capsule is like a pine nut. And in

fact Hippocrates calls this fruit *cocalum*, to which word the Arabic article was prefixed, and so it was called *alcocalus*. Then, in fact, the article was corrupted and the word became *alcocalus*."[40] Estienne's comment would indicate that the diffusion of the artichoke was well advanced by the mid-sixteenth century.

Historical research on North Africa supports the contention by Pignone and colleagues that the cardoon is the ancestor of the artichoke. The French-Algerian botanist and plant breeder Louis Trabut wrote that many gardens in Algeria have a plot of wild cardoons growing, and that in the spring the very young leaves of the cardoon are eaten.[41] Trabut tells us that the artichoke is called al-*kharshūf naṣara*, or "cardoon," by Christians in some regions of the Maghrib.[42] Anthropologist Joëlle Bahloul claims that the cardoon (*Cynara cardunculus* L.) is the ancestor of the artichoke (*Cynara cardunculus* var. *scolymus*) and that Algerian Jews call it *al-khorshuf* [*sic*], after the Arabic.[43] A wealth of other research on North Africa points to a progression of development from the cardoon to the artichoke.[44]

In conclusion, I disagree with the contention that the ancients knew the artichoke and that the mosaics in the Bardo Museum depict artichokes. I believe that these are more than likely cardoons. Therefore, I concur with Georges Gibault, who wrote in his 1912 *Histoire des Légumes* that the ancients knew only the cardoon and not the artichoke.[45] The artichoke was derived from the wild cardoon through a process of cross-fertilization, a technique already well known and well practiced in the Middle East. Although some authors claim that the artichoke was developed by Italian horticulturalists in the fifteenth century, their argument is not compelling.[46] Furthermore, evidence from genetic research as well as from the historical and linguistic records heavily supports the notion that Arab or Arab-influenced cultivators developed the artichoke from the cardoon in Sicily in the early medieval period.

NOTES

1. See, for example, Mary Taylor Simeti, *Pomp and Sustenance: Twenty-Five Centuries of Sicilian Food* (New York: Alfred A. Knopf, 1989), 19, among many others.

2. David Plotnikoff, "Tender at Heart," *Saveur* 118 (March 2009), 69; Maguelonne Toussaint-Samat, *A History of Food*, trans. Anthea Bell (Oxford: Blackwell Reference, 1992), 706.

3. T. Sarah Peterson, *Acquired Taste: The French Origins of Modern Cooking* (Ithaca and London: Cornell University Press, 1994), 112.

4. C. Foury, "Some Historical Sketches on Artichoke and Cardoon," *Acta Horticultarae* (ISHS) (2005) 681: 32.

5. S.G. Harrison, G.B. Masefield, and Michael Wallis, *The Oxford Book of Food Plants* (Oxford: Oxford University Press, 1969), 164–165.

6. Désiré Bois, *Les plantes alimentaires chez tous les peuples et à travers les ages* (Paris: Paul Lechevalier, 1927–37), vol. 1, 279 ff.; *Flora Europaea*, vol. 4: *Plantaginaceae to Compositae (and Rubiaceae)*, edited by T.G. Tutin, et. al. (Cambridge: Cambridge University Press, 1976), 249.

7. Lucie Bolens, *La cuisine Andalouse, un art de vivre: XIe-XIIIe siècle* (Paris: Albin Michel, 1990), 136.

8. This is an argument made by Andrew M. Watson among others. See, especially, Andrew M. Watson, *Agricultural Innovation in the Early Islamic World: The Diffusion of Crops and Farming Techniques, 700–1100* (Cambridge: Cambridge University Press, 1983), 64–65 and 177–178; but also Andrew M. Watson, "A Medieval Green Revolution: New Crops and Farming Techniques in the Early Islamic World," in *The Islamic Middle East, 700–1900: Studies in Economic and Social History*, edited by A.L. Udovitch [Princeton Studies on the Near East] (Princeton: The Darwin Press, 1981), pp.29–58 and Andrew M. Watson, "The Arab Agricultural Revolution and Its Diffusion, 700–1100," *Journal of Economic History* 34:1 (March 1974): 8–35. Recent genetic research supports the idea of Sicily as being the home of the cultivation of the artichoke; see Domenico Pignone and Gabriella Sonnante, "Wild Artichokes of South Italy: Did the Story Begin Here?" *Genetic Resources and Crop Evolution*, vol. 51 (2004), 577–580. The possibility that the cultivated artichoke escaped to the wild at some point, leading some researchers to have discovered a "wild" artichoke, is an issue that will be left aside in this article.

9. The species are *C. cardunculus* L., *C. syriaca* Boiss., *C. auranitica* Post, *C. cornigera* Lindley, *C. algarbiensis* Cosson, *C. baetica* (Spreng.) Pau, *C. cyrenaica* Maire & Weiller, and *C. humilis* L.

10. G. Sonnante, A. De Paolis, and D. Pignone, "Relationships among Artichoke Cultivars and Some Related Wild Taxa Based on AFLP Markers," *Plant Genetic Resources* 1 (2–3) (2004), 126.

11. Gabriella Sonnante, Anna Vittoria Carluccio, Roser Vilatersana, and Domenico Pignone, "On the Origin of Artichoke and Cardoon from the *Cynara* Gene Pool as Revealed by rDNA Sequence Variation," No. 78, Institute of Plant Genetics, CNR, University of Bari, N.D.

12. Pignone and Sonnante, "Wild Artichokes of South Italy."

13. C. Foury, "Ressources génétiques et diversification de l'artichaut (*Cynara scolymus* L.)," *Acta Hortica* 242 (1989), 155–166. Jacques André, *Lexique des termes de botanique en Latin* (Paris: C. Klincksieck, 1956).

14. For help understanding the methodology see www.ncbi.nlm.nih.gov/projects/genome/probe/doc/TechRAPD.shtml.

15. V.V. Dellacecca, V. Magnifico, V. Marzi, E. Porceddu, and G.T. Scarascia Mugnozza, "Contributo alla conoscenza delle varieta di carciofo coltivate nel mondo," *Proceedings of the International Congress on Artichoke*, Bari 1973 (Turin: Minerva Medica, 1976), 199–316.

16. Sonnante, De Paolis, and Pignone, "Relationships among Artichoke Cultivars," 131.

17. Pignone and Sonnante, "Wild Artichokes of South Italy."

18. Ibid.

19. Watson, *Agricultural Innovation*, 64–65 and 177–178; Georges Gibault, *Histoire des Légumes* (Paris: Librarie Horticole, 1912).

20. André, *Lexique des termes*, 72.

21. Watson, *Agricultural Innovation*, 177, note 3, citing Jacques André, J., Lexique des termes; Palladius, *De re rustica Palladii Rutilii Tauri Aemiliani viri inlustris Opus agriculturae*, ed. J.C. Schmidt, (Leipzig: B.G. Teubneri, 1898), 122; Pliny the Elder, *Historia naturalis*, Book XIX, 19 and 42; Apicius, *De re coquinaria*, Book III, 19; Theophrastos, *Enquiry into Plants*, Book VI, 4.

22. Georges Gibault, *Le cardon et l'artichaut* (Paris: Gibault, 1907), 4.

23. Foury, "Some Historical Sketches," 31–32.

24. Watson, *Agricultural Innovation*, 177, note 1.

25. Bolens, *La cuisine Andalouse*, 138.

26. Ibn al-ʿAwwām, *Kitāb al-filāḥah*. Translated by J.-J. Clément-Mullet as *Le livre de l'agriculture*, 2nd ed. (Tunis: Editions Bouslama, 1977), vol. 2, 291.

27. Ibn al-ʿAwwām, *Kitāb al-filāḥah*.

28. B. Rosenberger, "Cultures complémentaires et nourritures de substitution au Maroc (xve-xviiie siècle)," *Annales: E.S.C.* 35: 3–4 (May–August 1980), 492.

29. The French historian Maxime Rodinson also believes that the artichoke developed from the cardoon, as evidenced by his question as to whether the artichoke was developed by the Christians or Muslims. In any case, the etymology of the Spanish, Provençal, and French words for artichoke strongly suggests an original Arab-Spanish introduction into those regions. See Maxime Rodinson, "Les influences de la civilisation Musulmane sur la civilisation Européenne médiévale dans les domaines de la consommation et de la distraction: l'Alimentation," *Oriente e Occidente nel medioevo: filosofia and scienza*, Accademia Nazionale dei Lincei, Fondazione Alessandro Volta, Atti dei Convegni 13. Convegno Internazionale, 9–15 April 1969 (Rome: Accademia dei Lincei, 1971), 484.

30. Andrew M. Watson, correspondence with the author, 1994.

31. Pliny the Elder, *Historia naturalis*, Book xix, 43.

32. See, for example, Foury, "Some Historical Sketches," 29–38; and F. Bianchini and F. Corbetta, *The Complete Book of Fruits and Vegetables*, Italia and Alberto Mancinelli, trans. (New York: Crown, 1976), 60.

33. Antonio Targioni-Tozzetti, *Cenni storici sulla introduzione de varie piante nell'agricoltura ed orticoltura* (Florence: Tipografia Galileiana, 1853), 43.

34. Alphonse de Candolle, *Origin of Cultivated Plants*, The International Scientific Series, xlviii (New York: D. Appleton, 1885), 93–94.

35. Henri Bresc, "Les jardins de Palerme (1290–1460)," *Mélanges de l'École Française de Rome—Moyen Age, Temps Modernes* 84: 1 (1972), 73, where he describes there being in Cassaro a garden of *cacochuli* (artichokes) and of *cardonibus domesticis* (domesticated cardoons) cited in a document in the Archivio di Stato di Palermo, Sezione Notai Defunti, Giovanni Traverso, 780, 20 March 1439. Artichokes were grown in the Sabugia quarter of Palermo, probably in the late fourteenth century. (Watson, in *Agricultural Innovation*, 178, note 7, has a mistaken citation about artichokes being grown in Norman Sicily; the Bresc source Watson uses seems to indicate a later date.)

36. "Kitāb al-ṭabīkh fī al-Maghrib wa'l-Āndalus," *Revista del Instituto de Estudios Islámicos en Madrid*, vols. ix and x (1961–1962), 130; *Traduccion española de un manuscrito anónimo del siglo xiii sobre la cocina hispano-magribi*, Ambrosio Huici Miranda, trans. (Madrid: Maestre, 1966), 161–162.

37. Rodrigo Zamorano, *Reasons for the Seasons: Weather Prediction in the Year 1513*, Harry Andrew Marriner, trans. (Bogota: Harry Andrew Marriner, 1989), 19.

38. Hermolai Barbari, *In Dioscoridem corollariorum libri quinque* (Cologne: Ioan. Soterem, 1530), 44 verso.

39. Ibid. on *scolymos*.

40. Charles Estienne, *De re hortensi libellus, vulgaria herbarum, florum, ac fruticum, qui in hortis conseri solent nomina Latinis vocibus efferre docens ex probatis autoribus*, (Paris: Roberti Stephani, 1536), 80–81. Text: *Cinara, cardui satiui species, cuius summitate & veluti fructu (quem Graeci scolymon, Latini strobilum vocant, quod sit ipse echynus vel capitulus nici pineae similis) in edulijs vtimur: atque hunc quidem Hippocrates cocalum vocat cui dictioni articulus Arabum, subinde a quibusdam est additus, & alcocalus dictus est: deinde vero corrupto articulo, articocalus, vulgo* artichault. Also see Columella, *De re rustica*, Book ii, ch. 3.

41. L. Trabut, *État de l'horticulture en Algérie* (Alger: de Giralt, 1900), 53.

42. L. Trabut, *Répertoire de noms indigènes des plantes spontanées, cultivées en Afrique du Nord* (Alger: J. Carbonel, 1935), 85.

43. Joëlle Bahloul, *Le culte de la Table Dressée: rites et traditions de la table juive Algérienne* (Paris: A.-M. Métailié, 1983), 93–95.

44. It is probable that the artichoke of the Maghrib developed from the wild cardoon, called *al-kharsūf* by local Arabs and found in the food of the inhabitants of the Aumale region, of which M'Hamsadji gave an inventory in 1956. See N. M'Hamsadji, "Usages et rites alimentaires d'une contrée rurale d'Algerie," *Annales de l'Institut d'Etudes Orientales*, t. xiv (1956), 257-329. Ernest-Gustave Gobert (1879–1973) speaks confusingly of two categories of wild artichokes in the *Scolymos* genus (*gernina* or *garnina*, i.e., the cardoon): a kind of thistle called *zarniz* (*Scolymos grandifolius*) and another thistle called *feryas*. In both cases only the stem is eaten. See E.G. Gobert, "Usages et rites alimentaires Tunisiens leur aspect domestique, physiologique et social," *Archives de l'Institute Pasteur de Tunis*, vol. 29 no. 4 (December 1940), 561. As far as its presence in North Africa, the "wild artichoke" mentioned by Paula Wolfert called *coques* (properly, *quq*) is *Cynara humilis*, the name coming from the ball-like *capitulum*, and also known generally as *kharshaf*, or cardoon. See Paula Wolfert, *Couscous and Other Good Food from Morocco* (New York: Harper and Row, 1973), 262. I have not been able to determine what the *simmag*, described as a wild artichoke by E.G. Gobert, actually is, but based on the work of Tunisian food writer Mohamed Kouki I believe it might be related to sumac. See Gobert, "Usages et rites," 520. Mohamed Kouki considers both *sumaq* and *qarnin* to be wild artichokes. See Mohamed Kouki, *La cuisine Tunisienne d'ommok sannafa* (Tunis: Maison Tunisienne de l'Edition, 1971), 205, 222. See also Rosenberger, "Cultures complémentaires," 502, note 113. The *tesekăra* (*tasakra*) of the Berbers, which is eaten by animals, is *Carduus sphærocephalus*. See R. Dozy, *Supplément aux dictionnaires Arabes* (Leyden: Brill, 1881) [repro. Beirut: Librarie du Liban, 1991], vol. 1, 138.

45. Gibault, *Histoire des Légumes*, 16; see also his *Le cardon et l'artichaut*.

46. Luigi Messedaglia, *Vita e costume della rinascenza in Merlin Cocai*, Medioevo e Umanesimo 14 (Padua: Antenore, 1974), vol. 1, 233; Alberto Capatti and Massimo Montanari, *Italian Cuisine: A Cultural History*, Aine O'Healy, trans. (New York: Columbia University Press, 2003).