Between the Oak and the Olive: Environment and Society in Byzantium, 650-1150

By

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For
Danielle

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The Byzantine Aegean Littoral

Introduction

At some point, probably in the eleventh century, a Byzantine man named Pantoléôn engaged in the arduous work of clearing a field in northern Greece's Chalkidike peninsula.[1] With an axe he cut down the trees' trunks, and then, painfully stooped for long periods of time, dug up roots with a pick, possibly setting fire to the deadwood in order to expedite the process. Perhaps the only aspect of the situation that was positive for this Byzantine fellow was the cool weather, as it is most likely that he carried out this exhausting work that did not yield a meal (at least in the short term) during the winter when harvests and the vintage were not pressing concerns. Pantoléôn's relationship with trees was not entirely adversarial though, despite the fact that he was removing them. In the midst of his clearing, he noticed a tall evergreen oak and a deciduous oak with exceptionally tasty acorns, and he decided to leave these two trees untouched.[2] In fact, when all this back-breaking work was complete, these two trees stood right in the middle of Pantoléôn's newly-cleared field. His choice was a sensible one. These oaks could provide leaf fodder for goats, acorns for pigs, possibly even for himself and his family given that these acorns were mentioned as especially edible. Finally, these two oaks could provide shade for Pantoléôn and his wife (whose name is not given in the text) if they took a break from reaping and gathering their field's cereal.

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[1] *Actes d'Iviron*, eds. Jacques LeFort, Nicolas Oikonomides, and Denise Papachryssanthou, Vassiliki Kravari, and Hélène Métrévéli, vol. II Archives de l'Athos 16 (Paris: P. Lethielleux, 1985), pp. 187, no. 48, lines 4-5. The relevant passage and the translation are as follows. "…And it comes down to the two trees that have been inscribed, that is the prickly-oak and the edible acorn-bearing oak, and cuts in half the small farm cleared by Pantoléôn, the son-in-law of Dobrobétés…" διἔρχ(ε)τ(αι) τὰ δυο δένδρ(α) τὰ ἐσφραγισμ(έ)ν(α), ηγουν τὸν πρινον (καὶ) τὸ ἡμεράδ(ιον), καὶ κόπτ(ει) μέσον τὸ χωρ(άφιον) τὸ ὑλοκωπηθ(ὲν) π(αρὰ) Παντ(ο)λ(έοντος) γα(μβροῦ) Δοβροβήτ(ου). On page 187 the editors render the word ἡμεράδιον as an edible acorn-bearing oak. Pantoléôn receives a brief reference in Jacques LeFort, "The Rural Economy, Seventh-Twelfth Centuries," in *The Economic History of Byzantium from the Seventh through the Fifteenth Century*, edited by Angeliki Laiou (Washington, DC: Dumbarton Oaks, 2002), 271, n. 281.

[2] *Actes de Iviron II*, pp. 187, no. 48, lines 4-5 (line 7 in the edition contained in the Thesaurus Linguae Graecae, hereafter referred to as the TLG).

While the document that provides us with the only known evidence of Pantoléôn's existence was focused on determining what lands were owned by a large monastery, called Iviron (and for that reason the document only treated this peasant tangentially) the text reminds one that Byzantines, like most people in the pre-industrial Mediterranean, had to pursue their existence next to, and often within, woodland. Indeed, woodland was central to the lives of Byzantine peasants who represented the vast majority of the population: it provided food, fuel, and building materials. It was a place in which economic actions were carried out, social relations expressed, and where much of the rhythm of daily life transpired. With such importance in mind, if one really wants to obtain a better understanding of the Byzantine economy, material culture, and landscapes, then it is necessary to situate these historical actors within or alongside this woodland. This woodland's form varied considerably across the Aegean littoral, which is the region that this dissertation examines, ranging from the bushy scrub consisting of evergreen oak, wild olives, and drought-resistant shrubs that often covers the drier locales of Greece and Turkey, to the canopied woodland dominated by deciduous oaks accompanied by handfuls of chestnut, beech, or fir trees in cooler and wetter areas. Regardless of its form, this woodland was very important to the Byzantines who utilized it on a constant basis. Indeed, Byzantines' choices and attitudes had significant effects on woodland composition and scope because they promoted certain arboreal species in its midst. At the same time, certain types of trees pressured Byzantine cultivators, with varieties such as evergreen oak presenting a formidable challenge to anyone who did not actively prevent it from spreading into their fields. As the great Mediterranean historian Fernand Braudel noted in his influential work on Mediterranean history:

> "The stony fields must be cleared by hand, the earth has to be prevented from slipping down hill, and, if necessary, must be carried up to the hilltop and banked up with dry

> stone walls. It is painful work and never-ending; as soon as it stops, the mountain reverts to a wilderness and man must start from the beginning again."[3]

His quote was specifically in reference to Mediterranean agricultural practice in hilly areas, but it adequately reflects the challenges that Mediterranean farmers face, not only from working around sharp relief, but from working against the tenacious vegetation that characterizes the region's ecology.

It is this interplay between Byzantine people and their physical environment that is the subject of this dissertation, and consequently this work adopts the set of concerns and interests that are central to the sub-discipline of environmental history. At its most basic level environmental history is, as the environmental historian John McNeill defines it, a form of history that includes the environment as a component of its analysis or story.[4] More specific definitions are possible, although there is disagreement within the field as to what these definitions should include or exclude. As Donald Worster, an early practitioner of the field, suggested in a canonical work, environmental histories can have three layers in their focus: changes in the physical environment, humans' material and economic interaction with this environment, and, lastly, humans' cultural interaction with nature.[5] Broader models and different focuses have also been proposed. Another notable scholar in the field, William Cronon, has implored environmental historians to figure out "the role and place of nature in human life,"[6] and to focus on relationships between people and ecosystems as opposed to modes of production.[7] Medieval historians, often analyzing very different contexts from those of their Americanist

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[3] Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, trans. Siân Reynolds, 2 vols. (London: Collins, 1973), 43.
[4] John McNeil, "The State of the Field of Environmental History," *Annual Review of Environment and Resources* 35 (2010): 346.
[5] Donald Worster, "Doing Environmental History," in *The Ends of the Earth: Perspectives on Modern Environmental History*, ed. Donald Worster (Cambridge: Cambridge University Press, 1988), 293-294.
[6] William Cronon, "Modes of Prophecy and Production: Placing Nature in History," *The Journal of American History* 76, no. 4 (1990): 1130.
[7] Cronon, 1126.

counterparts, have produced their own works that recognize how a combination of peoples' perceptions, values, and material demands shaped their landscape, which in turn acted on the minds and material conditions of people.[8] While highly varied topics and methodologies are clearly possible in environmental history, it is clear that an interest in the interaction between people and their environment, however defined, greatly enriches any type of historical study, including those of medieval Europe. Yet such works are still relatively few for the pre-modern European context, and especially rare for the study of Byzantium.

Furthermore, a specific focus on trees can be very beneficial in the realm of environmental history. Some scholars have already used trees as a focus of their work, broadening fellow historians' perspectives on specific historical cultures and economies in the process.[9]

Indeed, scholars of Byzantium, with one notable exception,[10] have not made the Byzantine interaction with woodland a primary focus of their works. However, several historians have touched on various other themes or aspects of the Byzantine interaction with woodland or the changing landscape history of Byzantium, and thus their work merits discussion here. In several works, John Haldon has made use of fossilized pollen samples and historical texts to argue that the Caliphate's seventh-century warfare directed against Byzantium led to land

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[8] For a great discussion of the dialectic and feedback between people and their environment in the medieval context, see Richard C. Hoffmann, *An Environmental History of Medieval Europe* (Cambridge: Cambridge University Press, 2014), especially pages 7-15. For some notable examples of how medievalists have produced environmental histories, touching on different aspects of the relationships between people and their environments, see Paolo Squatriti, *Water and Society in early medieval Italy, AD 400-1000* (Cambridge: Cambridge University Press, 2002); Ellen F. Arnold, *Negotiating the Landscape: Environment and Monastic Identity in the Medieval Ardennes* (Philadelphia: University of Pennsylvania Press, 2012).

[9] For medieval Italy, see Paolo Squatriti, *Landscape and Change in Early Medieval Italy: Chestnuts, Economy, and Culture* (Cambridge: Cambridge University Press, 2013); for modern (and not so modern) Indonesia, see Nancy Lee Peluso, "Fruit Trees and Family Trees in an Anthropogenic Forest," in *Natures Past: The Environment and Human History*, ed. Paolo Squatriti, 54-102 (Ann Arbor: The University of Michigan Press, 2007); for modern California, see Jared Farmer, *Trees in Paradise: a California History* (New York: W. W. Norton and Company, 2013).

[10] Archibald Dunn's work, discussed below.

abandonment in central Anatolia and a consequent increase in tree cover.[11] Another Byzantinist, Adam Izdebski, has produced work with a similar research interest and has synthesized Byzantine history with environmental data from the Anatolian portion of the Empire. His analysis of the amalgamated texts and pollen data argued that Asia Minor's landscape became differentiated in the early middle ages, with changes in the environment arising from land abandonment and shifts to other forms of cultivation in light of the seventh-century's political and economic transformation.[12] In essence, these environmentally inclined works examine the breakdown and adaptation of the Byzantine state and its ability to harness the region's agrarian resources in the face of repeated foreign incursions. Put simply, they examined how warfare changed people's ability to pursue agriculture and the consequent transformation of the ecology of Anatolia, not how such vegetation could reflect peasants' choices. In addition, these works, which are the most ecologically informed of any that treat Byzantium, primarily examine the seventh century, not the following centuries, and their geographical focus is the Anatolian plateau, not the Aegean littoral.

Regarding the Aegean Basin, the early Byzantine period saw an increase in arboreal cover, but this story has received far less attention than the tale of postclassical Anatolia's vegetation. Jacques LeFort, Johannes Koder, and Archibald Dunn have all acknowledged the littoral's more wooded environment of the eighth and ninth centuries, with Dunn providing some

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[11] For examples of Haldon's work on this topic, see John Haldon, "'Cappadocia will be given over to Ruin and Become a Desert': Environmental Evidence for Historically-Attested Events in the 7th-10th Centuries," in *Byzantina Mediterranea, Festschrift Johannes Koder*, ed. K. Belke et al. (Vienna, 2007), 215-230; Warren J. Eastwood, Osman Gumuscu, Hakan Yigitbasioglu, John F. Haldon, and Ann England, "Integrating Palaeoecological and Archaeo-Historical Records: Land Use and Landscape Change in Cappadocia (central Turkey) Since Late Antiquity," in *Archaeology of the Countryside in Medieval Anatolia*, edited by Tasha Vorderstrasse and Jacob Roodenberg (Leiden: Nederlands Institut voor het nabije oosten, 2009); John Haldon et al., "The Climate and Environment of Byzantine Anatolia: Integrating Science, History, and Archaeology," *Journal of Interdisciplinary History* 45, no. 2 (2014): 113-161.

[12] Adam Izdebski, *A Rural Economy in Transition: Asia Minor from Late Antiquity into the Early Middle Ages*, The Journal of Juristic Papyrology, Supplement 18 (Warsaw: University of Warsaw, Faculty of Law and Administration; University of Warsaw, Institute of Archaeology; Fundacja im. Rafała Taubenschlaga, 2013).

further analysis, by means of both textual sources and studies of fossilized pollen, of later clearance and the general role of the state in utilizing woodland.[13]

These works, while they have provided valuable new data, established that there was a significant change in the amount of arboreal pollen in the air, and illustrated the role of foreign invasions in changing the landscape, have not focused on how the environmental data is indicative of cultivators' choices, or, conversely, on how cultivators adapted to a landscape that changed on its own in the face of a reduced human presence. It is this dissertation's conviction that certain trees enable another level of cultural and economic analysis, and that they shed light on the ideas that shape land use. These alternative points of focus will receive elaboration further below.

Several agrarian historians (who, given their interests, could fit under the more recent label of environmental history) have treated at length the agricultural regimes and choices of Byzantine cultivators, and their arguments have import regarding the interaction between people and their environment. Jacques LeFort and Alan Harvey in particular have advanced theses regarding demographic, economic, and environmental change in Middle Byzantium. The condensed version of their body of work runs as follows: monastic and imperial documents provide a picture of an increasingly cultivated landscape in the Aegean basin between the ninth and fourteenth centuries on account of population growth and monastic and lay landowners' quest for profit. These landowners invested in irrigation works, watermills, vineyards, and large-scale cultivation of cereal in order to sell agricultural surplus in growing urban centers and thus

[13] A. Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," *Byzantine and Modern Greek Studies* 6 (1992): 235-298. LeFort acknowledges that natural vegetation returned to abandoned land in the Byzantine Dark Ages, see Jacques LeFort, "The Rural Economy, Seventh-Twelfth Centuries," 269-271. For a brief but important argument for reforestation in the postclassical Aegean Basin, see Johannes Koder, "Historical aspects of a recession of cultivated land at the end of the late antiquity in the east Mediterranean," in *Evaluation of land surfaces cleared from the forests in the Mediterranean region during the time of the Roman Empire*, eds. Burkhard Frenzel in *Palaoklimaforschung, Palaeoclimate Research, 10* (Stuttgart, 1994), 157-167.

acquire profit in the form of coins.[14] This trend, combined with population growth, led to an increase in the amount of cultivated land and less forest. Other agrarian historians, such as Michel Kaplan and Kostis Smyrlis, have examined Byzantine agrarian practices in depth, but have focused on estate management, livestock, cereal, and viticulture as opposed to woodland or even, as will be elaborated in chapter 3, the olive.[15] Thus there has been a group of scholars who have approached key aspects of environmental history in Byzantium, examining how people worked the land and even altered it. However, the agrarian historians of Byzantium treated the human-environment interaction as one in which plants had no real agency. Essentially they told a story about people growing crops, but plants' abilities to improve their profile in a landscape remained neglected. Nor did these historians generally engage the role of woodland in both the economy and in people's lives (Dunn is the exception here), instead treating the topic tangentially.

Moreover, the agrarian historians did not have much available archaeology or environmental proxy data with which to work, almost exclusively making use of documentary evidence in their analysis of the Byzantine economy and, at times, its ramifications for the environment. While completely understandable at the time when they produced most of their works, a reliance on textual sources presents serious problems for understanding the Byzantine economy and society of the postclassical period. First, while a gargantuan body of saints lives,

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[14] For this general argument, see Alan Harvey, *Economic Expansion in the Byzantine Empire, 900-1200* (Cambridge: Cambridge University Press, 1989), especially chapter 4; Jacques LeFort, "Rural Economy and Social Relations in the Countryside," *Dumbarton Oaks Papers* 47 (1993); Jacques LeFort, "The Rural Economy, Seventh-Twelfth Centuries."

[15] For example, see Michel Kaplan, *Les Hommes et la Terre a Byzance du Vie au XIe siècle: propriete et exploitation du sol* (Paris: Sorbonne, 1992); Michel Kaplan, "L'activité pastorale dans le village byzantin du VIIe au XIIe Siècle," in *Animals and Environment in Byzantium (7th-12th C.)*, ed. Ilias Anagnostakis, Taxiarchis G. Kolias, and Eftychia Papadopoulou (Athens: The National Hellenic Research Foundation/Institute for Byzantine Research, 2011), 407-420; Kostis Smyrlis, "Settlement and Environment in Halkidiki, Ninth to Fifteenth Century AD," in *Mines, Olives and Monasteries: Aspects of Halkidiki's Environmental History*, ed. Basil C. Gounaris (Thessaloniki: Epikentro Publishers and Pharos Books, 2015), 109-121.

called *vitae*, and a chain of significant histories and chronicles survive from Byzantium, texts dealing with landownership, prices, agriculture, and sylviculture are very rare, making it hard to draw conclusions about such topics. Second, as John Haldon noted in his book on Byzantium in the seventh century, the Byzantine world in the aftermath of Avar and Arab invasions looked very different from the "traditional narrative representation of the world" passed down from Greco-Roman antiquity.[16] Essentially, Middle Byzantine authors (I use the term to describe the period in Byzantine history between the end of Late Antiquity and the fourth Crusade in 1204, a year marking a major shift in Byzantine politics and culture)[17] were often loathe to write material that departed from their classical templates, and as a result mostly neglected the world "as it was" in the majority of their texts. Consequently, a reliance on much of the textual source base of Byzantium leaves readers with either no image of the landscape and economy or, at best, a very skewed one. In addition, the monastic archival sources upon which so much of the economic historical scholarship of Byzantium is based, present another problem for historians. The vast majority of that particular body of texts were written towards the end of the Middle Byzantine period and reflected the interests of a newly-emerged monastic landowning class that desired a countryside defined by clear ownership and consisting of productive, orderly estates with fields, vineyards, and fruit trees. These monastic record keepers did not want peasant villages with dynamic, relaxed, and fluid ideas of land use instead of ownership, nor were they interested in significant utilization of woodland and scrubland, nor did they want an economy that emphasized subsistence as opposed to coin-generating surplus. Despite this large corpus of

[16] John Haldon, *Byzantium in the Seventh Century*, rev. edition (Cambridge: Cambridge University Press, 1990), 440.

[17] Other definitions of when the Middle Byzantine period begins are possible, including 600 and 843. Periodization is obviously arbitrary, but it is useful to have a term that describes the Byzantine world during the period that this dissertation examines, a period that was socially, culturally, politically, and economically different from that of the ancient world and that of the thirteenth century.

monastic records, scholars must remember that the peasants' security-seeking economy was probably the predominant one in the Aegean part of Byzantium right until the eleventh century. In other words, in order to understand much of Middle Byzantine history, one has to work backwards from this larger body of sources and place greater emphasis on woodland's role.

Finally, previous scholarly work, on the rare occasion that it addressed the interaction between people and the environment in Byzantium, provided a rather negative depiction of this relationship. For instance, scholars have claimed that Byzantines viewed mountains and the sea as dangerous places,[18] or that Byzantine people were responsible for significant environmental degradation.[19] The latter idea is in line with declensionist narratives of human-environment interaction that have been popular in the study of ancient history until fairly recently, often attributing soil erosion and deforestation in the Mediterranean to ancient Greek and Roman actions.[20] This dissertation does not agree with such views.

Thus scholarship has left several gaps. Because it has often been restricted to textual evidence, there has been relatively little light shed on the economies of the eighth- through tenth-century Aegean Basin, including the so-called Byzanitne "dark ages" for which textual remains are distinctly meager. The surviving texts have also mainly focused on cereal and vines to the exclusion of woodland and, surprisingly given the Mediterranean context, olives. What about the choices of Byzantine cultivators? How did such choices work in an absence of significant markets between the mid seventh and tenth centuries? And how did such choices work as the

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[18] For example, see Alexander Kazhdan and Giles Constable, *People and Power in Byzantium* (Washington, D.C.: Dumbarton Oaks, 1982), 41-42.
[19] Bernard Geyer, "Physical Factors in the Evolution of the Landscape and Land Use," in *The Economic History of Byzantium from the Seventh through the Fifteenth Century*, edited by Angeliki Laiou (Washington, DC: Dumbarton Oaks, 2002), 38 and 42.
[20] For examples of such thought, see Donald J. Hughes, *Ecology in Ancient Civilizations* (Albuquerque: University of New Mexico Press, 1975); J. Donald Hughes, *The Mediterranean: An Environmental History*, Nature and Human Societies (Santa Barbara, California: ABC-Clio, 2005).

Empire and its economy changed yet again in the eleventh and twelfth centuries? Can we possibly get closer to the experiences and rationale of a figure such as Pantoléôn?

In an attempt to answer such questions and to deal with these various lacunae in the scholarship, while at the same time approaching issues of environmental change with respect both for human economic choices and arboreal species' abilities to increase their own number within a landscape, this dissertation uses two types of trees as platforms from which to launch its analysis. While this dissertation broadly treats woodland, it privileges two particular types of trees, oak (*Quercus*) and olive (*Olea*), in order to look at the ways in which Byzantine society interacted with woodland, and to see what this interaction can tell us about ecological, economic, and cultural change in the Aegean littoral between the mid seventh and mid twelfth centuries.

Such a focus, making use of archaeological and environmental data, enables this dissertation to make some arguments that run against what previous scholarship has postulated. While many Byzantinists have promoted the notion that Byzantines viewed the lands outside of their fields as scary desert or unprofitable waste, this dissertation takes the opposite stance, claiming that it looked very different, with woodland being more prominent than usually thought, and that people had a fruitful relationship with such spaces.[21] In one vein, this dissertation tells a story about people interacting with their woodland that was not based on thoughtless exploitation or irreversible destruction. Furthermore, this work argues that Byzantine peasants followed relatively labour-saving relations with such environments until the elite reasserted themselves in the eleventh century, and directed the general Byzantine population to

[21] For a notable exception to this negative viewpoint, see A. Dunn, "Rural Producers and Markets: Aspects of the Archaeological and Historiographic Problem," in *Material Culture and Well-Being in Byzantium (400-1453)*, ed. Michael Grunbärt et al. (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 2007), 107. For a critique of Geyer's claim, see Archibald Dunn's review of *The Economic History of Byzantium from the Seventh through the Fifteenth Century* in *Speculum* 80, no. 2 (2005): 617. Dunn notes that Geyer did not address the significant contributions of various studies on the post-Late Antique landscape that actually reflect increases in arboreal cover and a lack of erosion.

pursue more laborious surplus-yielding agriculture. Much like some of the historians above have argued, this dissertation proposes that woodland species such as pine and oak did very well at increasing their presence in the depopulated countryside of the seventh through ninth centuries. However, it expands upon these scholarly assertions by emphasizing that Middle Byzantines in the following centuries worked with these arboreal landscapes differently than their predecessors had done in the ancient world, even privileging deciduous oak amidst the clearances that accompanied the economic growth of the later tenth and eleventh centuries in the Byzantine Aegean Basin. Further, it argues that the olive, far from being a constant feature of Aegean rural life, for the most part ceased to receive agricultural maintenance from many Byzantines in the Aegean littoral between the seventh and tenth centuries. This dissertation suggests that it became alternatively feral, a source of fuel, or a provider of leaf fodder. Around the year 1000 *Olea*'s status increased once again, and its return is used to shed light on monastic economies that sought massive quantities of oil for lighting with a secondary need for diet, and on peasant economies that sought to obtain a few coins by means of a couple of tree's worth of oil in order to meet demands from a reinvigorated Byzantine monetary economy and state.

The conceit of this work is that *Quercus* and *Olea* are good focal points for historians who want to examine the interaction between people and their environment in a preindustrial Mediterranean setting. Their existence in the landscape in that part of the world is contingent on people's willingness and ability to support their presence at the expense of other forms of vegetation. In other words, when one encounters deciduous oak or domesticated olive in historical Mediterranean contexts, historical human actors wanted those species to be there, either planting them or preferring them over alternative forms of vegetation. Furthermore, many Byzantine writers were helpful in making these trees known to us, specifically mentioning them

in several texts with the distinct labels "drus (δρῦς)" for deciduous oak, "prinos (πρίνος)" for evergreen oak, and "elaia (ἐλαία)" or various derivatives of that word for olives. Such labels stand in sharp contrast to many other trees in the Byzantine case, a context in which most arboreal species were simply lumped together under the all-encompassing term "tree" or "dendron (δένδρον)" in Greek. Thus, as far as Byzantine texts are concerned, oak and olive were significant and separate from the ill-defined amorphous mass of other arboreal varieties.

Quercus and *Olea* are also fairly talented at making themselves known to posterity, further enabling historical study of these trees and humans' interaction with them. The olive, provided that humans prune and tend to it, is a powerful wind pollinator, spreading its seed over large distances and in significant quantities, and thus it survives very well in fossil pollen studies. Hence, its pollen signature is an indirect piece of evidence both that *Olea* was established in a given locale at a given time and that humans were pruning and maintaining it. In addition, olives, with the prominent archaeological remains of people's interaction with them such as olive crushers, presses, and amphorae, enable another layer of historical analysis. Consequently, by focusing on *Olea* one can trace long-term shifts in the economy and the environment that would otherwise be obscured for those studying the past. In contrast, other human-tended forms of vegetation such as cereal and the vine do not provide us with the same opportunity given their less detectable pollen signatures and less visible accompanying agricultural implements.

The Oak, while less capable of dispersing its pollen than the olive, has its own set of traits that leave prominent footprints in the environmental record. For example, its deciduous varieties need to be situated in relatively moist soils in order to survive. Such a requirement is useful to bear in mind because such soils are both the locations from which pollen cores are extracted *and* the locations in which agriculture is historically practiced. Consequently, *Quercus*'

presence is more reliably traceable in pollen studies than many other species, allowing those who study past environments to be sure of when it was, or was not, present in a local landscape. In addition, its presence in a pollen study can tell us a lot about people's choices regarding how to use such valuable soils in the relatively dry Mediterranean. Because it competes with the vine and cereals, deciduous oak's presence is accordingly a useful indicator of human choices regarding how to use land with richer soils. Another specific utility of *Quercus*, as far as historians are concerned, is humans' long-lasting interest in that particular genus, an interest evident in its alleged supernatural attributes and role in folklore and in its roles as a provider of fuel, fodder, and building materials.[22] The above factors, when combined, reinforce the utility of the oak as an important object for shedding light on the interactions, both material and mental, between people and the environment.

Both the olive and the oak live for hundreds of years, and this lengthy lifespan can facilitate another layer of analysis regarding environmental and social transitions in the *longue durée*. While Braudel's magisterial work popularized the useful concept of truly long-term history, its discussion of the olive treated the tree more as a constant part of Mediterranean ecology and agriculture, a treatment that this work hopes to problematize.[23] In a sense, these trees can function for the historian as archival sources, reflecting changes in human interests over time. Consequently, these species can demonstrate transformations of priorities as the Byzantine population that lived around the Aegean Basin found themselves moving from a Late Antique world of large urban centers and a massive resource-demanding Roman state to a Middle Byzantine one of subsistence farmers living with a lean government, and then finally to the

[22] For further information on people historical interests in the oak, see chapter 7 of Gregory Nagy, *Greek Mythology and Poetics* (Ithaca, NY: Cornell University Press, 1990); James Frazer, *The Golden Bough*, 12 vols., (London, 1913).
[23] See Braudel, 234 and 236. On another note, he did not discuss the oak at length.

Komnenian period (1081-1185) that included a bigger population, Italian merchants, growing settlements, and an increasingly monetized economy.

One can understandably be tempted to attribute changes in the profiles of arboreal species to climatic fluctuations as opposed to human choices or botanical traits. Such an attribution does not appear to work in the case of the Middle Byzantine Aegean. Scientists who have studied the historical ecology of Anatolian uplands have noted that the major shifts in the vegetative cover of the region during the period that this dissertation treats do not seem to have been significantly influenced by climate change.[24] In the case of this dissertation's geographical focus, the lowlands surrounding the Aegean Sea (a body of water that acts as a moderator of climate), any hypothetical climatic shifts would have been even less significant than on the highly elevated Anatolian Plateau. Indeed, based on the current level of evidence, it appears that the climate of Greece and the Aegean lowlands was pretty constant during the early middle ages and that the changes in vegetation are indicators of human activity rather than climate change.[25] Thus, while I believe that climate changes can have massive implications for people and plant life in various times and places, I privilege people's choices and botanical agency over climate as explanations for changes in the vegetative cover of the Aegean Basin during the Middle Byzantine period.

Thus *Quercus* and *Olea* act well as objects that can shed light on changing land use, material culture, and mentalités. In effect, they allow one to examine the various facets that comprise environmental and social history, revealing changes in the economic choices and strategies of the people who made up the bulk of the Byzantine population, and yet receive such

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[24] S. Bottema and H. Woldring, "Late Quaternary vegetation and climate of Southwestern Turkey II," *Palaeohistoria* 26 (1984): 140; Marleen Vermoere, *Holocene Vegetation History in the Territory of Sagalassos (Southwest Turkey): A Palynological Approach* (Turnhout: Brepols, 2004), 167.

[25] Ioannes Telelis, "Medieval Warm Period and the Beginning of the Little Ice Age in the Eastern Mediterranean: An Approach of Physical and Anthropogenic Evidence," in *Byzanz Als Raum*, ed. K. Belke et al. (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 2000), 223-243; Florin Curta, *The Edinburgh History of the Greeks, c. 500 to 1050: the Early Middle Ages* (Edinburgh: Edinburgh University Press, 2011), 210.

scarce mention in the texts: the peasantry. A focus on these species can move scholars and readers away from a world of emperors, bishops, armies, and doctrinal disputes and towards a world of peasants, livestock, provincial elite figures, and monks all living in an active dialectic with their landscape; a landscape that was not a passive backdrop to their existence but one that these provincial subjects both shaped and were influenced by.

Finally, it is worth pursuing an environmental history of the Byzantine world that works with trees simply to get a better understanding of the history of the physical environment itself and how human actions have altered it. Indeed, learning about woodland and its recession, growth, and the changing proportions of trees within it can tell us much about the dynamism of Mediterranean vegetation.

This dissertation specifically focuses on the Aegean littoral, the ring of land that surrounds the Aegean Sea. The choice for this geographical focus is two-fold. First, as Leonora Neville articulated in a crucial work regarding Byzantine social history, this region represents the "core" of the Byzantine Empire: an area that was within imperial control and was worked to obtain taxes.[26] Thus, it was economically and culturally a Byzantine region. However, I have circumscribed this area defined by Neville slightly so that Constantinople does not fall directly within its purview because I intend to keep the dissertation's focus on provincial contexts where woodland was a part of peoples' daily lives. Second, the Aegean littoral has a very different climatic regime and ecology than the Anatolian plateau, arguably another "core" of Byzantium, and an area that has received much more attention from scholars interested in the Byzantine interaction with the environment.[27] The large grasslands and cold winters of the plateau are not a

[26] Leonora Neville, *Authority in Byzantine Provincial Society, 950-1100* (Cambridge: Cambridge University Press, 2004), 2-3.
[27] For example, see Warren J. Eastwood, Osman Gumuscu, Hakan Yigitbasioglu, John F. Haldon, and Ann England "Integrating Palaeoecological and Archaeo-Historical Records: Land Use and Landscape Change in Cappadocia

feature of this Aegean world, but a collection of hills, small coastal plains, mild winters, hot summers, and Mediterranean vegetation is. Environmental differences certainly exist within the Basin, some regions being more arid with light soils and others being comparatively wet with deeper soils.

For the Aegean Basin, the available and often overlapping, textual, archaeological, and environmental proxy sources lead to a preponderance of specific locales in this dissertation: Lakonia, the Argolid, eastern Attika, southwestern Boeotia, the Chalkidike peninsula, and a strip of territory in southwestern Anatolia that includes the Maiandros and Kaystros river valleys. For the purpose of studying Byzantium, this approach to the Empire's geography is beneficial because it provides an opportunity to look for overall patterns and connections in Byzantine society and culture, while remaining appreciative of regional variation. There was plenty of ecological and regional diversity in the Byzantine world, and this diversity both enables and invites comparative study within the empire and it can make our understanding of Byzantine history that much richer, moving away from an overly palace-centered view. Further information on these locales is presented in chapters 1 and 2 as they crop up in the discussion.

The chronological parameters of this study are the mid-seventh and mid-twelfth centuries. The mid-seventh century is a definite starting point for the greatly simplified material culture that accompanied the Byzantine "dark ages," and that represented a changed interaction with the environment from that of Late Antiquity. Thus, the mid-seventh century constitutes a logical beginning for this work. The terminus of the project is the mid-twelfth century, a time by which the Athonite monastic archival sources with which this dissertation works had become less ample compared to the preceding centuries, and it is also a time when an important piece of

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(Central Turkey) Since Late Antiquity," in *Archaeology of the Countryside in Medieval Anatolia*, eds. Tasha Vorderstrasse and Jacob Roodenberg (Leiden: Nederlands Institut voor het nabije oosten, 2009).

provincial hagiography, the *Life of Nikon*, which this work draws upon for studying the region of Lakonia, was completed.[28] Furthermore, after the mid twelfth century the Byzantine world began to fragment, becoming more difficult to treat as a conceptual whole.

This work uses a wide-ranging set of sources, given that this dissertation treats a broadly construed region over several centuries. The challenge for anyone approaching such a topic is that Byzantine texts of almost any type, whether a saint's life, a chronicle, or a document from a monastic archive, were rarely written with the intention of directly addressing peoples' interaction with the environment.[29] Like any Byzantine social or economic historian, I have read Byzantine texts in an effort to find information on a topic that most Byzantine authors did not intend to be a focus of their work. These snippets of information pertaining to trees, woodland, or olive oil will compile a general picture of these subjects, especially when combined with archaeological and environmental data.

Monastic archival documents are very important to this work, and underpin much of the analysis in chapters 4, 5, and 6, and to a lesser extent in chapter 2.[30] Such sources have

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[28] For the composition of Nikon's *vita*, see Pamela Armstrong, "Merchants of Venice at Sparta in the 12th Century," in *Sparta and Laconia: from Prehistory to Pre-Modern*, ed. W. G. Cavanagh, C. Gallou, and M. Georgiadis, British School at Athens Studies 16 (London: Short Run Press, 2009), 317.

[29] A notable exception is the eleventh-century courtier and judge Michael Attaleiates who demonstrated a remarkable interest in natural phenomena in his text, the *History*. Another example is the *Geoponika*, a tenth-century agrarian treatise briefly discussed below.

[30] For the Chalkidike peninsula, *Actes de Lavra*, eds. Paul Lemerle, André Guillou, Nicolas Svoronos, and Denise Papachryssanthou, vol. I, Archives de l'Athos 5 (Paris: P. Lethielleux, 1970); *Actes d'Iviron*, eds. Jacques LeFort, Nicolas Oikonomides, and Denise Papachryssanthou, vol. I Archives de l'Athos 14 (Paris: P. Lethielleux, 1985); *Actes d'Iviron*, eds. Jacques LeFort, Nicolas Oikonomides, and Denise Papachryssanthou, Vassiliki Kravari, and Hélène Métrévéli, vol. II Archives de l'Athos 16 (Paris: P. Lethielleux, 1985); *Actes du Prôtaton,* ed. Denise Papachryssanthou, Archives de l'Athos 7 (Paris: P. Lethielleux, 1975); *Actes de Vatopédi,* eds. Jacques Bompaire, Jacques LeFort, Vassiliki Kravari, and Christophe Giros, vol. I, Archives de l'Athos 21 (Paris: P. Lethielleux, 2001); *Actes d'Esphigmenou*, ed. Jacques LeFort, Archives de l'Athos 3 (Paris: P. Lethielleux, 1973); *Actes de Xenophon*, ed. Denise Papachryssanthou, Archives de l'Athos 15 (Paris: P. Lethielleux, 1986). Hereafter, I refer to these texts as *Actes de Lavra*, *Actes d'Iviron I*, *Actes d'Iviron II*, *Actes du Prôtaton*, *Actes de Vatopédi*, *Actes d'Esphigmenou,* and *Actes de Xenophon* respectively. For Lakonia and Southwestern Boiotia, there are a few typika contained in Thomas, John, and Angela Constantinides Hero, (eds.). *Byzantine Monastic Foundation Documents: A Complete Translation of the Surviving Founders' Typika and Testaments*, 5 vols. Dumbarton Oaks Studies 35 (Washington, DC, 2000); for the lower Maiandros valley, there are *typika* in the said volumes edited by Thomas and Hero, and additional monastic documents for the region's monasteries (especially those of Latros) are available in Franz

limitations and are distorted geographically and socially, the majority dealing with the region of the Chalkidike in northern Greece, and, of course, with monks. Despite these limitations, these sources are extremely useful, often detailing elements of village and monastic landholdings and activities (even if they are presented through the hegemonic lens of the monasteries) making such sources practical for accessing broader Byzantine peasant interactions with the environment. I contend that the peasants discussed in these archival sources, often from the villages of Siderokausia and Hierissos, were not unusual: they simply had unusual neighbours in the large and powerful Athonite monastic houses that produced these surviving documents.

Another form of textual evidence that this dissertation utilizes is provincial saints' lives, called *vitae*.[31] Such sources, like the monastic archival ones, present challenges to those trying to interpret them because these texts adhered closely to a specific set of literary conventions.[32] But, one cannot be dismissive of the *vitae* as completely rhetorical works, and these texts, despite their limitations, have some notable benefits for analyzing regional economies and cultures. Often the hagiographer knew the *vita*'s subject personally and was writing for an audience that was familiar with experiences, stories, anecdotes, and landscapes from the saint's life.[33] Thus,

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Miklosich, and Joseph Müller (eds.) *Acta et diplomatica graeca medii aevi sacra et profana*, 6 vols. (Vienna, 1860-1890). Hereafter, I refer to their collections as Thomas and Hero, and Miklosich and Müller, respectively.

[31] For Lakonia, Dennis Sullivan, ed. *The Life of Saint Nikon: Text, Translation, and Commentary* (Brookline, MA, 1987). For Boeotia, *The Life and Miracles of St. Luke,* translated by Carolyn Connors and Robert Connors (Brookline, MA: Hellenic College Press, 1994). For the lower Maiandros, see *The Life of Lazaros of Mt. Galesion: An Eleventh-Century Pillar Saint*, translated by Richard P. H. Greenfield, Byzantine Saints Lives in Translation 3 (Washington, DC, 2000); *Life of Paul of Latros*, edited by Hippolyte Delehaye, "Der Latmos," in Milet: *Ergebnisse der Ausgrabungen und Untersuchungen seit dem Jahre 1899* 3.1, edited by Theodor Wiegand (Berlin, 1913). Hereafter, I refer to these texts as *Life of Nikon*, *Life of Luke*, *Life of Lazaros*, and *Life of Paul*, respectively.

[32] For example, in hagiographical works it was imperative that the saintly protagonist pursue an ascetic life for a period (which was analogous to Christ's forty days in the desert) in order for the Saint to return to the world with no more weakness of the flesh. In this form, the Saint could be an agent of God. Other key elements had to be included, such as a miracle at birth, a precocious desire to pursue the ascetic life, a sweet smell upon the Saint's death, and posthumous miracles. See Mark Whittow, *The Making of Byzantium, 600-1025* (Berkeley: University of California Press, 1996), 12.

[33] Rosemary Morris, *Monks and Laymen in Byzantium, 843-1118* (Cambridge: Cambridge University Press, 1995), 60, 69-70.

when we see events and descriptions that do not conform to the typical model of a saint's life, we can be sure that we are getting some real Byzantine social history.[34]

Other texts, such as chronicles and a set of laws for agricultural concerns, are used when they can assist in answering this work's questions. In some cases, they do not neatly overlap with this work's geography, but their utilization makes sense because they still make useful observations about Byzantine society, economy, and their interaction with the environment. Scholars familiar with Byzantium may find it odd that the text known as the *Geoponika* is practically absent in this work. This absence is deliberate because that particular text is a tenth-century compilation of ancient authors' statements regarding agriculture, thereby representing Byzantine classicism and not environment or economy as they were in the Middle Byzantine Aegean Basin.[35]

Archaeological surveys provide an invaluable contribution to this topic because they reveal important aspects of the countryside, such as settlement presence, density, and location.[36] Material from archaeological excavations will also occur in this work, because such information

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[34] Whittow, 13-14.

[35] For the text's probable commissioning at the behest of the Emperor Konstantinos VII (r. 913-959), see Alan Harvey, "The middle Byzantine economy: growth or stagnation?" *Byzantine and Modern Greek Studies* 19 (1995): 243. For further discussion of the various Byzantine elite figures who made use of the text for their purposes (such as beautifying a garden), see John L. Teall, "The Byzantine Agricultural Tradition," *Dumbarton Oaks Papers* 25 (1971): 42-44.

[36] This following list is by no means exhaustive. For Lakonia, see Pamela Armstrong, "The Survey Area in the Byzantine and Ottoman Periods," in *Continuity and Change in a Greek Rural Landscape: The Laconia Survey*, ed. William Cavanagh et al., vol. 1, 2 vols., Annual of the British School at Athens, Supplementary Volume 26 (London" British School at Athens, 2002), 339-402. For Boiotia, see John Bintliff, Phil Howard, and Anthony Snodgrass, *Testing the Hinterland: The Work of the Boeotia Survey (1989-1991) in the Southern Approaches to the City of Thespiai*, McDonald Institute Monographs (Cambridge: McDonald Institute for Archaeological Research, 2007); Bintliff, J. L. and A. M. Snodgrass. "The Cambridge/Bradford Boeotian Expedition: the first four years." *Journal of Field Archaeology* 12 (1985): 123-161; For the Argolid see Michael H. Jameson, Curtis N. Runnels, and Tjeerd H. van Andel, *A Greek Countryside: The Southern Argolid from Prehistory to the Present Day* (Stanford: Stanford University Press, 1994); Tjeerd H. van Andel and Curtis Runnels, *Beyond the Acropolis: A Rural Greek Past* (Stanford, California: Stanford University Press, 1987). For the Maiandros Valley, see Hans Lohmann, "Survey in Der Chora von Milet: Vorbericht über die Kampagnen der Jahre 1996 und 1997, *Archäologischer Anzeiger*, no. 3 (1999): 439-473; Helmut Brückner, "Geomorphologie und Paläo-Environment der Milesia," *Archäologischer Anzeiger*, no. 2 (1995): 330-333.

can reveal other facets of the human-environment interaction, such as building materials or remains from peoples' diets.

Finally, this dissertation uses pollen studies as a body of sources for analyzing woodland's composition in the Aegean Basin between the seventh and twelfth centuries. What pollen studies are and the benefits and drawbacks of their use will receive extended treatment in Chapter 2. For now, suffice it to say that this technique is a well-established, and widely utilized method for studying and reconstructing past environments. For the Aegean littoral, a handful of useful studies are available.[37] Dendrochronological (dating wood via analysis of tree rings) and archaeofaunal (analysis of animal bones) evidence supplement the pollen studies where possible.

This dissertation adopts some methodology and arguments that may appear bold or perhaps speculative given the paucity of the evidence. That said, any conclusion regarding Byzantine social, economic, or environmental history, will appear speculative because of the lack of sources for those aspects of Byzantium's history. If historians work strictly on the basis of the surviving Byzantine texts that tangentially touched on the economy, then they will be constricted to discussions of fiscal assessments, the tax status of the peasantry, and the number of oxen that peasant families owned or did not own. But if one wishes to understand how Byzantines interacted with their landscape, or what Byzantine peasants' economic strategies

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[37] For the Argolid, see Susanne Jahns, "On the Holocene Vegetation History of the Argive Plain (Peloponnese, Southern Greece)," *Vegetation History and Archaeobotany* 2, no. 4 (1993): 187-203. For Attika, see Katerina Kouli, "Vegetation Development and Human Activities in Attiki (SE Greece) during the Last 5,000 Years," *Vegetation History and Archaeobotany* 21, no. 4-5 (2012): 267-278. For the Chalkidike, see S. Bottema, "Palynological investigations in Greece with special reference to pollen as an indicator of human activity," *Palaeohistoria* 24 (1985): 257-289; Sampson Panajiotidis, "Palynological Investigation of the Tristinika Marsh in Halkidiki (North-Central Greece): A Vegetation History of the Last Three and One-Half Millennia," in *Mines, Olives and Monasteries: Aspects of Halkidiki's Environmental History*, ed. Basil C. Gounaris (Thessaloniki: Epikentro Publishers and Pharos Books, 2015), 303-322. For the lower Maiandros valley, see M. Knipping, M. Mullenhof, and H. Bruckner, "Human induced landscape changes around Bafa Gölü (Western Turkey)," *Vegetation History and Archaeobotany* 17 (2007): 365-380. For southwestern Anatolia, see Marleen Vermoere, *Holocene Vegetation History in the Territory of Sagalassos (Southwest Turkey): A Palynological Approach* (Turnhout: Brepols, 2004); W. J. Eastwood, N. Roberts, H. F. Lamb, J. C. Tibby, "Holocene environmental change in southwest Turkey: a palaeoecological record of lake and catchment-related changes." *Quaternary Science Reviews* 18 (1999): 671-695.

were, or how much of a given agricultural product a monastery consumed, then one must utilize different types of sources, such as oaks and olives, and make use of some temporal comparisons in order to better understand what is possible with such trees. Consequently, at times, this dissertation will go past the bounds of the mid seventh and mid twelfth centuries, even going beyond Byzantine evidence altogether, making use of material and examples drawn from ancient Greece, the western Mediterranean in the ancient Roman period, pre-industrial Greece, and even pre-modern California. The justification for roaming in this fashion is simple: interactions between people and oaks and olives are predicated on botanical characteristics that are relatively consistent across time and space, and thus examples from other periods and locales can provide insight into the actions and motivations of Byzantine actors when working with those trees. Such digressions are meant to shed light on aspects of Byzantine history when pertinent Byzantine sources are unavailable or minimal.

This work makes generalizations about Byzantine society, its environment, and the ways in which the two interacted. Small pieces of evidence, taken from regions as diverse and far apart as Lakonia and the Chalkidike, are put together to argue that overarching processes took place across the landscape of the Aegean littoral between 650 and 1150. These generalizations are meant to present a story, and the goal is to show large-scale trends and transformations. We know that after the sixth century, the Byzantine world witnessed a decline in rural sites, shrinking urban centers, a marked decline in pollen for certain types of human-encouraged species (such as vines and olives), a surge in naturally-occurring arboreal pollen, a dramatic drop in coin circulation, and the emergence of a state service elite that had little apparent interest in estates or agriculture. The society that lived in this world had to have lived very differently than

those that came before or followed. Generalizations and synthesis of disparate information are required in order to explain how that society interacted with the Aegean Basin's environment.

The organization of this dissertation is as follows. Chapter 1 provides a snapshot of the economy and the interaction between people and the environment in the Aegean littoral right before the period that this dissertation examines. It establishes, largely in agreement with other scholarship, that the economic system and cultural priorities of the eastern Roman Empire in Late Antiquity had profound impacts on ordering the countryside, driving people to produce and consume massive quantities of cereal, wine, olive oil, wood, and meat. Once this culture and economy underwent a major upheaval and disappeared in the seventh century, the landscape changed accordingly. The second chapter examines how the environment responded to these economic and cultural shifts and how people worked within that transformed environment. It argues that certain species, such as pine and oak, took over much of the Aegean littoral's landscape and that the region's inhabitants adopted strategies that meshed well with these species, strategies that embraced usufruct and the use of materials obtained in woodland. Chapter 3 is the chronological companion of the second chapter, but it focuses on the olive and how that particular tree's relationship with humans changed after the seventh century, as people produced much less olive oil than before, but also used the tree differently. Chapters 4, 5, and 6, focus on the period between the late tenth and mid-twelfth centuries. The fourth and fifth chapters examine how social and economic changes in the Byzantine Aegean resulted in modest changes in woodland composition, with people privileging oak amidst other clearance and bringing back the olive in a piecemeal fashion. The roles of these trees in the landscape and people's imaginations receive elaboration there. The final chapter looks at the changing landscape in the eleventh and twelfth centuries through the lens of monastic archives and hagiography, arguing

that the social, economic, and environmental changes of this period led to a clash between *how* peasant villages and monastic communities used the land. It also resulted in monastic writers using their saintly subjects as claimants to locales in this more conflicted society.

Chapter 1
Middle Byzantium's environmental and economic antecedents

For the purposes of this dissertation, it is important to briefly examine what the interaction between the economy, society, culture and the physical environment looked like in the late antique (third-sixth century) Aegean Basin. This chapter follows the idea that any attempt to understand the succeeding human-environment interaction in Middle Byzantium will benefit from comparison with that of Late Antiquity. In order to provide an image of how people fashioned their landscape in the Late Antique Aegean Basin, this chapter combines the historiography of the Eastern Roman Empire's economy with specific archaeological evidence for the Aegean littoral. In other words, this chapter does not seek to innovate so much as to summarize what historians and archaeologists have found. Having done so, it will help the reader appreciate the topic of subsequent chapters which adopt as their focus what was different about the Middle Byzantine economy, society, and environment that followed the much better studied Late Antique one.

The general impression of the Late Antique economy in the Eastern Roman Empire is that of a big population of peasants and slaves who produced vast quantities of cereal, wine, olive oil, pottery, meat, and other agricultural products. These products then proceeded to move along exchange networks that either sold these commodities to obtain coins with which to pay taxes and rents or that redistributed them to the big urban populations that characterized this period, or to feed and provision the army, or to feed and enable the conspicuous consumption of the urban-dwelling elite. This characterization of the Late Antique economy and society in the eastern Mediterranean is not novel; rather it is something that recent scholarship is generally consistent in portraying. However, the environmental implications of this situation need fleshing

out for the reader's benefit. Essentially, the Late Antique society and economy created and maintained a patchwork of large cities surrounded by massive numbers of rural sites, fields, vineyards, olive groves, deciduous oak woodlots, and orchards of fruit- and nut-bearing trees, an image that this chapter will briefly present.

After discussing the environmental implications of this Late Antique economic and cultural context, this chapter will demonstrate that due to a combination of factors, namely decline in population, a weakened state apparatus that was less able to redistribute bulk commodities, an aristocracy less interested in large building projects, and a reduced market, Byzantine society and its state became less demanding of its physical environment during the seventh century. While these general developments are well known to historians of this period of Byzantine history, the archaeological consequences are not and thus need to be presented here, once more for the reader's appreciation. Such archaeological consequences included the shrinking of urban centers, the breakdown of bulk exchange networks, and the shift to a countryside that had almost archaeologically invisible rural sites. Having established the transitions outlined above, this chapter will propose (as some scholars have done for other parts of the postclassical world) that within this transformed landscape, the landowning elite and their demands for resources had basically disappeared and that Byzantine peasants engaged in more fluid and less exacting relationships with the natural environment than their ancient predecessors had done, shifting from a relatively intense agricultural economy driven by the late antique landowners and Roman state to a more autarchic economy that attributed greater importance to meeting peasants' caloric needs and desire to avoid extra work. Or as the medievalist Chris Wickham would say, Byzantium's economy in the early medieval period came to largely resemble a peasant mode of production that was based on communities providing a very limited

surplus and making use of local resources in a labour-saving fashion. I believe that by keeping the ancient Roman economy in mind, one can obtain a better understanding for the degree to which peasants were "coerced" or "manipulated" into providing surplus production.[38] Finally, this chapter will briefly present more recent archaeologists' and historians' argument and findings for a general increase in vegetative cover and wetlands in the landscape of Byzantium's Anatolian possessions in this period (the Byzantine "dark ages"), acknowledging that some work has been done on this topic in the part of the Empire that this dissertation does not treat.

Taxes and Rents, Olives and Vines, Slaves and Cattle

Between the fourth and early seventh centuries, the economy of the Eastern Mediterranean intensified, largely under the influence of the new Imperial Capital of Constantinople. Such economic changes had important repercussions for the local landscapes throughout the Eastern portion of the Roman Empire, including those that surrounded the Aegean Sea. The debate about the extent and character of the ancient economy remains a lively one, and its questions, such as how growth-oriented this economy was, or to what extent the Roman state's demands versus the profit-seeking aspirations of individuals drove it, continue to animate the discussion.[39] Despite this debate's vigour, there is a general agreement among scholars that the third- to seventh-century economy in the eastern portion of the Roman world, referred to by scholars as "Late Antique" or "Late Roman" or "Early Byzantine," was a large and heavily monetized one. The archaeological work of the last few decades has reinforced this view

[38] These terms are the most useful ones I have come across for understanding social and economic dynamics in the Byzantine (and for that matter, pre-modern) world. See Neville, *Authority in Byzantine Provincial Society, 950-1100* (Cambridge: Cambridge University Press, 2004), 1, for their use in describing provincial social relations in Byzantium.

[39] For a concise explanation of the life that this debate has taken on, see Richard Saller, "Framing the Debate over Growth in the Ancient Economy," in *The Ancient Economy*, ed. Walter Scheidel and Sitta Von Reden (New York: Routledge, 2002), 251-269.

and is discussed at greater length below. While debate around the previously mentioned questions continues, for the purposes of this dissertation, we simply need to acknowledge that Roman hegemony facilitated interregional trade and bulk exchange in several ways. First, it underpinned the existence of a wealthy elite who owned land across the Mediterranean, dominated large numbers of slaves and tenant farmers, and required considerable material wealth in order to keep up their own conspicuous consumption, to display their status, and to meet their financial obligations. Second, via its road networks and its practical monopolization of violence on the Mediterranean Sea, Roman hegemony made it easier to move goods from one part of the Mediterranean littoral to another, thereby facilitating trade and taxation.[40] Third, the Roman Empire required hefty taxes, sometimes in coins and sometimes in kind, in order to maintain its army, bureaucracy, and the unique privileges of the Roman and Constantinopolitan urban populations via the state-sponsored *annona* (a system that redistributed food either for free or at a subsidized price to designated members of these urban populations).[41] These respective beneficiaries of Roman rule often resided a considerable distance away from the areas that produced this food, and thus, via their demands and entitlement, they helped drive bulk exchange. These key factors combined, as Keith Hopkins persuasively argued in his influential works, to promote a certain degree of economic growth in the Roman world. Essentially, in order to pay taxes and rents owed to the Roman state and its elite, people had produce a surplus and

[40] For the Roman state's ability to make trade more secure, particularly through the removal of piracy in the Mediterranean, see Keith Hopkins, "Rome, Taxes, Rents and Trade," in *The Ancient Economy*, ed. Walter Scheidel and Sitta Von Reden (New York: Routledge, 2002), 219.

[41] For a good introductory description of the *annona* in the city of Rome in this period, see Bertrand Lançon, *Rome in Late Antiquity: Everyday Life and Urban Change, AD 312-609*, trans. Antonia Nevill (New York: Routledge, 2001), 46 and 119. The subsidized distribution to the urban populace of Constantinople was more modest than that of Rome, but significant nonetheless, see Averil Cameron, *The Later Roman Empire, AD 284-430* (Cambridge, MA: Harvard University Press, 1993), 122. For a discussion of the massive numbers of ships required for the *annona* in Constantinople in Late Antiquity, see Michael McCormick, *The Origins of the European Economy: Communications and Commerce, AD 300-900* (Cambridge: Cambridge University Press, 2001), 86-92 and 101-114.

engage in some level of trade in order to obtain the necessary coins.[42] Such trade went well beyond small-scale transport of luxury items to colossal-scale trafficking of basic commodities such as grain, olive oil, wine, pork, and pottery.

Similar to Hopkins' model, and specifically treating the eastern Mediterranean during Late Antiquity, Jairus Banaji has argued for a picture of a broad, if not direct, intervention in the ancient economy on the part of the Imperial apparatus.[43] Essentially, he argues that because of an imperial effort to circulate a greater quantity of gold coinage during the fourth and fifth centuries (in comparison to previous centuries), the eastern Roman Empire experienced an increase in intensive agriculture. Banaji emphasizes the investment of gold into the countryside for the production of olive oil, wine, grain, and fruit, specifically for the purpose of obtaining a return on investment in the form of profit.[44] Accompanying this growing economy was an alleged rise in population.[45]

Indeed, archaeologists and historians now generally view the eastern Mediterranean as a busy, heavily human-populated, and heavily worked region in the fourth, fifth, and sixth centuries, with perhaps the discoveries of intensive agriculture and inhabitation in the Levant's Negev desert perhaps constituting the best-known example of this image.[46]

While this dissertation looks at the Eastern Roman world, it does so specifically in the Aegean, a very different region than the Levant or Egypt, to which scholars such as Tchalenko, Decker, and Banaji have all devoted their attention. Thus I shall turn to the archaeological

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[42] Hopkins, 208-209.
[43] Jairus Banaji, *Agrarian Change in Late Antiquity: Gold, Labour, and Aristocratic Dominance* (Oxford: Oxford University Press, 2001); Jairus Banaji, *Agrarian History and the Labour Organization of Byzantine Large Estates* (Oxford: Published for the British Academy by Oxford University Press, 1999).
[44] Banaji, *Agrarian Change in Late Antiquity*, 218-219.
[45] Banaji, *Agrarian Change in Late Antiquity*, chapters 7 and 8.
[46] First made well-known amongst specialists in G. Tchalenko, *Villages antiques de la Syrie du Nord. Le Massif de Bélus à l'époque romaine*, 3 vols. (Paris, 1958). For more recent treatment of this subject, see Michael Decker, *Tilling the Hateful Earth: Agricultural Production and Trade in the Late Antique East* (Oxford: Oxford University Press, 2009).

findings from the environs of Sagalassos and the southern Argolid in order to get "snapshots" of what the local landscapes surrounding the Aegean Basin looked like in the context of the Late Antique economy and society.

Sagalassos, an ancient urban center located in the upland regions of the southwestern corner of Asia Minor, is a testament to the busy countryside of the Late Antique Eastern Mediterranean. Archaeological surveys that incorporate significant environmental data reveal that the city's hinterland was heavily worked in the first six centuries that it was under Roman rule, and that Roman hegemony brought with it a new agricultural regime. Archaeologists and palynologists have found evidence of intensive olive cultivation around Sagalassos, for there are remains of many olive presses and of fossilized olive pollen from around the city, despite its high elevation; an elevation that typically discourages people from growing olives due to the possibility of frosts that will severely damage the trees.[47] Indeed, this is a region in which the olive is entirely absent today and was also fairly rare in Hellenistic times. Like olives, cattle became more numerous in the area with the Roman economic and political system. Analysis of the faunal remains at Sagalassos have shown that during the ancient Roman period, there was a steady increase in the proportion of cattle around Sagalassos at the expense of sheep and goats.[48] Cattle of course required fodder and, unlike sheep and goats, simply could not feed themselves on "marginal" lands, thus requiring people to set aside further space in order to cultivate it for animal feed.[49] The greater allotment of land for the cultivation of grain means that, in turn, there would also be more people using cattle for farming purposes in order to farm *that* land.[50] It has

[47] Marleen Vermoere, *Holocene Vegetation History in the Territory of Sagalassos (Southwest Turkey): A Palynological Approach* (Turnhout: Brepols, 2004), 242.
[48] Bea De Cupere, *Animals at Ancient Sagalassos. Evidence of the Faunal Remains* (Turnhout, Belgium: Brepols, 2001), 141. The study emphasized that the proportion of pigs in the faunal finds remained constant from the first to the early seventh century, whereas the proportion of sheep and goats changed considerably against that of cattle.
[49] De Cupere, 174.
[50] De Cupere, 141.

also been conjectured that a significant proportion of these large numbers of cattle may have lugged clay from the nearby valley of Çanaklı to Sagalassos where the clay was accordingly mass-produced into red slipware pottery that was then exported throughout central Anatolia.[51]

Such dynamics as the interplay of olives, cereal, cattle, and clay at Sagalassos, characterizes the ancient Roman period in the region, and highlights the relationship between the ancient economy and the environment in which it was located. People, notably those who could tolerate the risk of frosts killing their olives at such high elevations, were using resources such as clay and olives to create products, many of which travelled well beyond the immediate area for the purpose of exchange. Such industry and transport also required more of a certain species of animal (cattle), which in turn required more land to be cleared in order to feed that particular species. Essentially, intensification led to further intensification in the case of Sagalassos. Sagalassos was not exceptional. Studies of the sediment in the Maiandros River, located on the other side of the uplands that lie to the west of Sagalassos, have demonstrated that the Late Roman period saw the greatest amount of human influence of any layer, with considerable quantities of charcoal, ceramic, olive and vine pollen in the deposits.[52]

These cases from the Late Antique Anatolian context, represent illustrative examples of how cities in the Roman Empire were linked into a broader interregional trade network, and how this link drove changes in how local people interacted with their physical environment, and in the composition of that environment's crops and fauna.

Across the Aegean, one sees a similar situation of regional exchange networks driving local landscape change, this time in a coastal context, specifically in the environs of the Southern

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[51] De Cupere, 141; Chris Wickham, *Framing the Early Middle Ages: Europe and the Mediterranean, 400-800* (Oxford: Oxford University Press, 2005), 715.
[52] Helmut Brückner, "Geomorphologie und Paläo-Environment der Milesia," *Archäologischer Anzeiger*, no. 2 (1995): 329-330.

Argolid between the third and sixth centuries. Thanks to another case of impressive archaeological survey work that included environmental data, it is apparent that economic growth in the Southern Argolid, beginning in the third century, peaked in the fifth and sixth, with important results for the local landscape. Indeed, this particular period left more sites of human settlement in this locale than at any other time aside from the late classical era, along with 14 olive crushers.[53] Beyond the impressive number of rural sites and the evidence of intensive oleiculture, this region's Late Roman landscape includes several kilns that produced amphorae (in addition to bricks and roof tiles). Oddly, these kilns were located in coastal sites that had no good-quality clay, at least none that was readily accessible. The archaeologists who studied this landscape wondered if the clay was brought in as ballast by ships that were intending to take finished products, such as cereals or wine or olive oil, back to a different market.[54] Such a situation is at home in this Late Antique context, a scenario in which products were sought in bulk, and the ships that arrived with mainly empty holds found it worthwhile to move another bulk product in the process in order to fulfill a demand (for pottery and tiles in this case), even if the production of that particular product was not ideally suited to the locale in which it was crafted.

A more somber element accompanies the evidence of the Southern Argolid's busy Late Roman countryside. A local site, Halieis, has a "Roman villa rustica" complete with a bathhouse, but also "poor graves" for a work force.[55] It is impossible to tell if the deceased were slaves or tenants, although agricultural slaves were less common in the eastern Mediterranean than in Italy

[53] Tjeerd H. van Andel and Curtis Runnels, *Beyond the Acropolis: A Rural Greek Past* (Stanford, California: Stanford University Press, 1987), 113-115. For a more in-depth discussion of the sites, see Michael H. Jameson, Curtis N. Runnels, and Tjeerd H. van Andel, *A Greek Countryside: The Southern Argolid from Prehistory to the Present Day* (Stanford: Stanford University Press, 1994), 255-256. See pages 400-401 for second-order sites increasing from 6 in number to 16, and for third-order sites increasing in number from 17 to 82 in the Late Roman period.
[54] van Andel and Runnels, 115-116.
[55] van Andel and Runnels, 115.

throughout the Roman era.[56] Regardless of these unfortunate peoples' legal status, it is clear that this economy was a surplus-producing and export-driven one that left copious material remains for posterity, but also required substantial human labour and suffering in order to operate.

Archaeological surveys from elsewhere in the Aegean littoral, such as Boiotia, tell similar stories to those of Sagalassos and the Southern Argolid, finding an increase in rural sites in late antiquity and a pursuit of intensive agriculture. The Boiotia survey's work on the environs of the ancient *polis* of Thespiae, located on the eastern segment of the Helicon massif in central Greece (but close to the Aegean Sea nonetheless),[57] has provided a general picture of modest growth between 100 and 200AD, followed by a significant increase in sites, as well as several sites' sizes, between 200 and 650AD.[58] Notably, there were areas in the western part of Thespiai's hinterland, called *chora* in Greek, that had not been worked before but that were home to newly established rural sites between 400 and 650.[59] The authors of the survey note that, based only on archaeological remains, it is impossible to determine whether (or which of) these sites were home to peasants tied to the land or to prosperous independent farmers.[60] However, the authors do claim that there is simply no doubt that the survey's area around Thespiai had more land set aside for "rural occupation" between 400 and 650 than at any time in the area's history, suggesting that it was for surplus agriculture.[61]

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[56] For slavery in the Late Antique Roman Empire, see Cameron, 118-121. For slavery in Byzantium, see Günter Prinzing, "On Slaves and Slavery," in *The Byzantine World*, ed. Paul Stephenson (London and New York: Routledge, 2010), 92-102; Youval Rotman, *Byzantine Slavery and the Mediterranean World*, trans. Jane Marie Todd (Cambridge, MA: Harvard University Press, 2009).
[57] John Bintliff, Phil Howard, and Anthony Snodgrass, *Testing the Hinterland: The Work of the Boeotia Survey (1989-1991) in the Southern Approaches to the City of Thespiai*, McDonald Institute Monographs (Cambridge: McDonald Institute for Archaeological Research, 2007). For the site location, see page 95.
[58] Bintliff, Howard, and Snodgrass. Pages 175-178 provide a clear summary of this process.
[59] Bintliff, Howard, and Snodgrass, 175.
[60] Bintliff, Howard, and Snodgrass, 177.
[61] Bintliff, Howard, and Snodgrass, 175. For the suggestion of surplus agriculture, see page 178.

The nature of the late antique archaeological finds throughout the region that this dissertation treats further reinforces the view that this economy was suited for surplus production. Archaeologists have noted that many of these "Late Roman" sites in Greece were geared toward producing and storing surplus agricultural products because they have little in the way of domestic remains but possess high levels of "tile and amphora finds" that are associated with storage and shipping.[62]

Late Antique society's cultural priorities further intensified the interaction between people and their environment. Notables in the Eastern Roman world, as cultural continuers of the Greek *polis* and its civic culture, were preoccupied with "evergetism," a cultural phenomenon that permeated civic life in the ancient Roman and Hellenistic worlds and that drove members of the local elite to spent their money on local building projects and other acts that benefited the local population in return for recognition. In their quests to obtain status, the Eastern Roman imperial elite that lived around the Aegean sometimes altered the landscape in ways that went beyond surplus-seeking agrarian strategies. A notable example was the sixth-century Milesian rhetor, Hesychius Illustris, who had worked at the imperial court of Justinian. For the benefit of his fellow inhabitants of the ancient city of Miletos (situated at the mouth of the Maiandros River in southwestern Anatolia), Hesychius utilized his connection with the Emperor Justinian and brought about, by means of Imperial funding, the diversion of the Maiandros to prevent the silting of the harbour of Miletos.[63] Such an example highlights the roles of both the Late Antique Imperial state apparatus and the ancient elite civic culture's standards of evergetism, in altering the physical environment.

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[62] John Bintliff, *The Complete Archaeology of Greece: From Hunter-Gatherers to the 20th Century A.D.* (Malden, MA: Wiley-Blackwell, 2012), 375.
[63] Clive Foss, "Archaeology and the "Twenty Cities" of Byzantine Asia," *American Journal of Archaeology* 81, no. 4 (1977): 477; Peter Thonemann, *The Maeander Valley: A Historical Geography from Antiquity to Byzantium* (Cambridge: Cambridge University Press, 2011), 315-317.

Of course, the *culture* of the cities in the Greek-speaking eastern portion of the Roman Empire altered their environment in other ways that were wide-ranging, even if less direct than acts of evergetism such as that of Hesychius. The aristocracy promoted expense and consumption, and patronage of civic structures and institutions, many of which required wine, olive oil, fuel for baths, and building materials. And of course the wealth to fund such consumption (and to meet the expenses of civic offices) came from agrarian sources. For it was the local elite of the eastern Mediterranean world in the ancient period, the town-dwelling elite called the Decurions, who were expected to spend money on local projects.[64] The Civic governments paid for the maintenance of aqueducts, "repair of buildings, provision of fuel for public baths," and provided for "religious festivals and games," that would probably include lots of food and wine as well.[65] Between the third and sixth centuries this decurial class declined considerably, but their outlays of resources were simply taken up by new figures such as church or state service officials.[66] Thus, while it may be difficult or even impossible to distinguish between economic or cultural causes of land clearance, choices of crops or types of livestock, and shipping of agricultural materials, it is clear that the Late Antique Aegean Basin was a world typified by the movement of agricultural surplus and the constant effort to maintain a landscape that could meet the needs of those producing surplus within it. This context was pre-industrial, but its landscape was thoroughly altered to serve humans' demands.

[64] Peter Garnsey and Richard Saller, *The Roman Empire: Economy, Society and Culture* (Berkeley and Los Angeles: University of California Press, 1987), 114-115.
[65] Garnsey and Saller, 32-33.
[66] For this shift, see Cameron, 8 and 126.

A Transformed Economy, Culture, and Environment

At the opening of the seventh century, the state, society, and urban centers that had underpinned the Late Antique economy collapsed. Byzantium, exhausted after winning a long and destructive war with their Persian neighbours, lost the bulk of its territory, including the rich tax bases of Egypt and the Levant, to the emerging Caliphate. At the same time, its Balkan possessions were lost, the area's soldiers having been transferred east to deal with the Arab conquests, these provinces drifted from the imperial orbit and were partially settled by migrating Slavic populations.[67] By the year 700, the Roman state was no longer a hegemonic entity that dominated the Mediterranean world but a polity on life support that clung to the interior plateau of Anatolia and the coastlands of the Aegean Basin, sandwiched ominously between two new political entities, the Umayyad Caliphate and the Bulgar Khanate. Overlapping these developments, the civic and elite cultures that had gradually changed throughout the Late Antique period underwent a much more rapid transition, ultimately shedding their preoccupations with redistributing food, consuming conspicuously, and ordering the physical environment, perhaps even disappearing entirely.[68]

How this situation came about is the topic of much scholarship and outside the scope of this dissertation. Some historians view these cultural and economic shifts, such as the decline of urban centers and their civic elite class, as gradual and largely preceding the periods of intense warfare first between Byzantium and Persia, and then Byzantium and the Caliphate.[69] Others see warfare as a decisive driving force for these cultural and economic shifts, with violence causing

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[67] For more on this topic, see Curta, *The Edinburgh History of the Greeks, c. 500 to 1050: The Early Middle Ages* (Edinburgh: Edinburgh University Press, 2011).
[68] What happened to the landowning elite is a question that receives further discussion below.
[69] For example, see John Haldon, *Byzantium in the seventh century: the transformation of a culture*, Rev. (Cambridge: Cambridge University Press, 1997), 93-96.

urban decline in many cases.[70] Which of these phenomena preceded the others, or the proportion of their respective importance, is a topic for other scholarly debates. As far as this dissertation is concerned, between the last decade of the sixth century and the middle of the seventh, a combination of warfare, plague, demographic decline, cultural transformation, and perhaps climate change according to some scholars, utterly altered the landscape of Byzantium's Aegean provinces, and the rest of the Empire's landscapes too.

Scholarship posits a major population decline in this period. In his work on Byzantium's demography, Dionysios Stathakopoulos notes that while exact reconstructions of the Byzantine population are simply not possible for any part of the empire's history, he suggests that population decline was occurring in the Eastern Roman Empire, starting in the sixth century. His argument notes that there appears to have been a significant decrease in indications of starvation in Byzantium during the seventh and eighth centuries.[71] While the explanation for a lack of accounts of famine partially lies in the contemporary lack of textual material, it may also indicate that there were adequate resources for the general population, or in other words that the population was small enough for the available resources. The Justinianiac Plague, whatever its cause, reoccurred several times between 541 and 750 and certainly made this population decline more long lasting, obstructing repopulation over the long-term.[72] Warfare, whether with Persians, Slavs, Avars, or Arabs, could have further exacerbated a recovery of the human species within the confines of the eastern Roman Empire.

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[70] For an example, see the treatment of Ephesos in Foss, 474. Another example would be his treatment of Sardis on page 476.

[71] D. Stathakopoulos, *Famine and Pestilence in the Late Roman and Early Byzantine World: A Systematic Survey of Subsitence Crises and Epidemics* (Aldershot, 2004), 23-24. Specifically for population decline in the Chalkidike, see K. Smyrlis and D. Kyritses, "les villages du littoral égéen de l'Asie Mineure au moyen âge," in *Les villages dans l'empire byzantine: IVe-XVe siècle*, ed. Jacques LeFort, Cécile Morrisson, and Jean-Pierre Sodini, Réalités Byzantines (Paris: Lethielleux, 2005), 448.

[72] Dionysios Stathakopoulos, "Population, Demography, and Disease," in *The Oxford Handbook of Byzantine Studies,* eds. Elizabeth Jeffreys, John Haldon, and Robin Cormack (Oxford: Oxford University Press, 2008), 310-311.

Profound economic changes overlapped the demographic decline. Indeed there was a practical collapse of the Mediterranean exchange networks (aside from the Levant and Egypt which were now part of the recently-created Caliphate and outside of Roman hegemony for the first time in several hundred years), and the scenario in the Aegean Basin was no exception. While scholars may disagree as to why this collapse occurred, they do agree that it happened. Luxury trade continued, albeit on a diminished scale, but bulk trade essentially ended and it seems to some archaeologists that Mediterranean trade had dropped to an "almost prehistoric scale."[73] As the medievalist Chris Wickham wrote, the Aegean world by the late 600s had seen a drastic reduction in "complex exchange patterns."[74] For example, the number of shipwrecks plummeted in the seventh and eighth centuries.[75] The very material that much of the Aegean's goods had moved around in, pottery made of Red Slip Ware, ceased to be produced in the seventh century too.[76]

Furthermore, the economy became less monetized as the state minted fewer coins. With one brief exception, Constantinople stood alone as a producer of Roman imperial coinage for the two hundred years after the reign of Herakleios (r. 610-641).[77] The end result as far as the interaction between people and the environment was concerned was that there was less scope for selling and moving surplus production.

The decline of bulk exchange overlapped with the decline of the ancient urban centers that had dotted the Aegean littoral since well before the emergence of Roman hegemony. Scholars, while offering a range of explanations, unanimously agree that the urban centers of the

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[73] Richard Hodges and David Whitehouse, *Mohammed, Charlemagne and the Origins of Europe: Archaeology and the Pirenne Thesis* (Ithaca, NY: Cornell University Press, 1983), 75.
[74] Wickham, 787.
[75] McCormick, 107-108.
[76] Joanita Vroom, *After Antiquity: Ceramics and Society in the Aegean from the 7th to the 20th Century A.C. A Case Study from Boeotia, Central Greece,* Archaeological Studies Leiden University 10 (Leiden, 2003), 76-77.
[77] Michael F. Hendy, *Studies in the Byzantine Monetary Economy, c. 330-1450* (Cambridge: Cambridge University Press, 1985), 424.

Eastern Roman Empire (aside from those in the Caliphate) suffered a catastrophic decline in the seventh century. An oft-cited article by Clive Foss argues that, based on the archaeological evidence, the western Anatolian cities of the ancient period had become largely deserted and replaced by villages and forts.[78] Even after an apparent re-emergence of towns by the tenth century, Foss claims that these sites were still nowhere near as large or visually impressive as they had been in the ancient period. The situation on the western shores of the Aegean was similar. Around the year 600 AD, the urban centers in Greece (with exceptions such as Thessalonike), shrunk and often adopted a more defensive character with people relocating to live and work inside previously ostentatious buildings.[79] Regardless of the explanation for why these developments occurred, it is clear that by 700, the cities ringing the Aegean Sea were home to diminished urban population who recycled material from ancient buildings and huddled around defensive sites.

The contraction of the Aegean littoral's urban centers was echoed by the curious disappearance of their rural site counterparts. A study of the city of Miletos' hinterland, at the mouth of the Maiandros River, found no sites datable between the eighth and tenth centuries.[80] The Boiotia archaeological survey found similar results, including a major decline in the number of sites in this period. In the first four years of the survey, the expedition's archaeologists only found one town within the survey area (Askra) that survived through the seventh to ninth centuries.[81] The site summary for the surveys of 1979-1982, found no definite sites of Byzantine occupation from the seventh to ninth centuries, and only one unclear early Byzantine site.[82] This

[78] Foss, 469-486.
[79] Curta, 58.
[80] Hans Lohmann, "Survey in Der Chora von Milet: Vorbericht über die Kampagnen der Jahre 1996 und 1997, *Archäologischer Anzeiger*, no. 3 (1999): 465.
[81] J. L. Bintliff and A. M. Snodgrass, "The Cambridge/Bradford Boeotian Expedition: The First Four Years," *Journal of Field Archaeology* 12, no. 2 (1985): 149.
[82] Bintliff and Snodgrass, 157.

paucity in rural sites represents a huge drop from the late Roman period in which the survey identified 45 definite, 4 possible, and 5 unclear sites. One of the leading archaeologists from the survey claims that after 650 there is very little in the way of signs of human activity in the area, and that it is only in the eleventh and twelfth centuries that such traces really become noticeable again.[83] Despite the disappearance of rural inhabitation, the survey's archaeologists postulate that the towns of Askra and Thespiae were still occupied in this period.[84] Essentially, it seems that during the medieval period in Boiotia, a few nucleated sites replaced the numerous dispersed ones of the ancient world.[85]

Sites in the Peloponnese are equally hard to find. In the southern Argolid, the busy landscape mentioned earlier in this chapter vanishes at the opening of the seventh century. The settlement of Halieis, with its villa, was covered in ash indicating fire damage, and the last evidence of human material culture is coins from the reign of the Emperor Phokas (r.602-610).[86] There is simply no evidence of permanent human occupation in this locale after the middle of the seventh century.[87] On the other side of the imposing Parnon mountain range, in the hinterland of the ancient city of Sparta, the Lakonia archaeological survey found no rural site remains that can be dated to the seventh and eighth centuries.[88]

What happened to all the rural sites that had blanketed the landscape in Late Antiquity? How do we explain this apparent abandonment of the countryside? Clearly, people were not

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[83] John Bintliff, "The Roman Countryside in Central Greece: Observations and Theories from the Boeotia Survey (1978-1987)" in *Roman Landscapes: Archaeological Survey in the Mediterranean Region*, eds. Graeme Barker and John Lloyd (London: British School at Rome, 1991), 128.
[84] John Bintliff, "The Archaeological Survey of the Valley of the Muses and Its Significance for Boeotian History," in *La Montagne Des Muses*, ed. André Hurst and Albert Schachter, Recherches et Rencontres 7 (Geneva, 1996), 201.
[85] Bintliff, "The Archaeological Survey of the Valley of the Muses and Its Significance for Boeotian History," 199.
[86] van Andel and Runnels, 121-122.
[87] van Andel and Runnels, 122.
[88] Pamela Armstrong, "The Survey Area in the Byzantine and Ottoman Periods," in *Continuity and Change in a Greek Rural Landscape: The Laconia Survey*, ed. William Cavanagh et al., vol. 1, 2 vols., Annual of the British School at Athens, Supplementary Volume 26 (London" British School at Athens, 2002), 353.

fleeing it and packing themselves into urban centers, given that those urban centers were shrinking in lockstep with the disappearance of rural sites. People must have continued to live in some rural sites, but why does evidence of their existence remain so elusive?

The reason for the apparent absence of these rural sites is that their material is currently unidentifiable to archaeologists. This invisibility stems from the absence of mass produced materials, such as the Red Slip Ware discussed above, that is well known to archaeologists and is easily identifiable in archaeological surveys. Joanita Vroom, a foremost authority on Byzantine material remains, writes that for middle Byzantine pottery there is "hardly any good stratigraphical information," and thus the dating for such remains is very poor.[89] Vroom points out that the emergence of "hand-made cooking pots" in the seventh century indicates a shift from production in big "fabricae" to production at "the household or village level."[90] Another possible explanation for the lack of postclassical pottery remains is that wood might have become a preferred material to ceramics.[91] Regardless of whether wood or local ceramics were the preferred material for container and tableware construction, it is evident that material culture looked very different by 700 and reflected a changed economy that lacked mass-produced jars and amphorae.

Thus the surveys' data have left us with two important possible interpretations, and they are not mutually exclusive. First, sites definitely still existed in the later seventh and eighth centuries, but these sites are harder to find because they were using locally produced material and thus are less recognizable to archaeologists. This use of local materials and engagement in local exchange (almost exclusively local exchange as far as the archaeology can tell) indicates that these postclassical sites were fairly autarchic and thus able to survive the apparent

[89] Vroom, 76-77.
[90] Vroom, 76-77.
[91] Vroom, 83.

breakdown of the ancient world's exchange networks. The second possibility for the lack of rural sites from this period is that they were fewer in number overall. There certainly was a decline in land use with marginal land being abandoned and other land left unworked (a development that will receive further discussion below particularly by means of the available pollen evidence), and thus we can still say that there was an overall decline in the human presence in the rural landscape, despite the survival of self-sufficient sites. The team that carried out the Boiotia survey sees both explanations as correct.[92]

Plague, warfare, and social and cultural transformation all probably had a hand in the dramatic changes in the economy and material culture that occurred during the first half of the seventh century in the Aegean Basin. Scholars remain divided with regards to the proportional roles of these respective factors. What is important for this dissertation, and what is also most sure, is that the human society of the Aegean littoral, and its economy and culture, were very different in 700 than they were in 600. Accordingly, their interaction with the environment was very different too.

An Elite-less Landscape?

Despite the dramatic seventh-century developments, the Roman state survived and continued to gather taxes, even in the midst of a shrunken land base, reduced population, and consistent defensive warfare. But the nature of the economy that paid these taxes continues to be mysterious to modern observers on account of the puny evidence; remains so limited that they enable highly varied interpretations. We simply do not know what happened to the old senatorial elite that had owned wide swathes of land in the ancient world. Despite such absence, it is hard

[92] Bintliff, Howard, and Snodgrass, 180.

to believe that neither state nor church officials purchased land, and thus, by extension, landowners still had to have existed, even at the end of the seventh century.[93]

A geographical caveat is in order to explain where such elite figures and their landholdings might be found. The "power differential" that Leonora Neville noted as a defining feature of the Empire's political geography (until the eleventh century) emphasizes the city of Constantinople's position as the sole location in all of Byzantium in which remained significant numbers of elite figures and the ability to extract significant wealth.[94] And thus it is near the city that we can expect to find evidence of such landholding.

Indeed, even Chris Wickham, whose magisterial *Framing of the Early Middle Ages* proposes a rather catastrophic breakdown of the ancient economy in the Byzantine world, suspects that older Late Antique Roman-style landowning most likely endured around the Sea of Marmara on account of proximity to the Imperial capital at Constantinople, but that relatively autonomous and close-knit peasant communities were the norm elsewhere in the Byzantine Empire.[95] The "power differential" coined by Neville, and Wickham's suspicion regarding the location of extractive ancient-style elite landowners, jointly find support in recent synthesis of the environmental and archaeological evidence from Byzantine Asia Minor. It seems that, while much of the Anatolian countryside appears to have experienced land abandonment or a shift to pastoralism in the seventh century, the uplands of Bithynia (basically northwestern Anatolia) continued to be a place with diverse agriculture, actually receiving an *increase* in olive and vine

[93] Haldon, *Byzantium in the Seventh Century*. See page 160 for scholarship not knowing what happened to the landowning elite. Pages 129 and 132 saying that churchmen and state officials must have bought land, although the evidence is hard to find.
[94] Neville, 10.
[95] Wickham, 790. See also, Paul Magdalino, "Court Society and Aristocracy," in *A Social History of Byzantium*, ed. John Haldon (Malden, MA: Wiley-Blackwell, 2009), 228 for the assertion that the only evidence of estates in this period occurs in Thrace and around the Sea of Marmara.

cultivation during the transition from an ancient to a medieval world.[96] Essentially, while the coastlands of the Sea of Marmara and the interior of Anatolia (the first of which was vulnerable to raids by sea and the second of which was vulnerable to those by land) had almost no olive, vine, fruit tree, or intensive cultivation, the safer areas in Bithynia, which were relatively close to Constantinople, had more agriculture in this period. This is not to say that the inhabitants of these valleys were necessarily provisioning the Imperial capital. However, I posit that state and church officials, hoping to buy some land to provide for their household needs, and perhaps limited surplus for Constantinople, would have purchased land in such an accessible locale.[97]

Thus it is safe to say that historians and archaeologists have established that in seventh-century Byzantium rural sites disappeared, urban centers shrunk, there was less scope for exchange of agricultural or finished goods, and the Roman state elite became disproportionally concentrated in one space (Constantinople), and it is around that space that old-style landowning was likely to have continued. We are left with a set of questions: what *replaces* the ancient economy and interaction with the landscape in the provincial lands that ringed the Aegean Basin? How did people work in a world in which state-supported landowners had limited coercive ability? How did the Aegean Basin's inhabitants work in a world in which there was less scope for material exchange even if they had sought it? How did they choose to interact with their environment in a context punctuated by constant foreign raids?

Another useful model is in order. Whereas the ancient Roman economy appears to be one of growth, an economic intensification well addressed by Keith Hopkin's model (explained

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[96] Adam Izdebski, *A Rural Economy in Transition: Asia Minor from Late Antiquity into the Early Middle Ages*, The Journal of Juristic Papyrology, Supplement 18 (Warsaw: University of Warsaw, Faculty of Law and Administration; University of Warsaw, Institute of Archaeology; Fundacja im. Rafała Taubenschlaga, 2013), 220-222.
[97] John Haldon et al., "The Climate and Environment of Byzantine Anatolia: Integrating Science, History, and Archaeology," *Journal of Interdisciplinary History* 45, no. 2 (2014): 139 raises the possibility that these landholdings provisioned Constantinople.

above), the medieval one is intriguingly addressed by Chris Wickham's idea of a "peasant mode of production." By no means does either model need to be entirely accepted wholesale. Rather, they are useful ways to approach the very different types of gradual change that defined the respective economic histories of the ancient and the medieval Roman Empires.

The peasant mode of production is a compelling theoretical model put forth by Chris Wickham in his *Framing the Early Middle Ages* to explain the drastically altered economy of the postclassical period. Inspired by the works of economic anthropologists, Wickham developed this model to figure out how the localized peasant economies would have worked in the absence of the old exchange networks that characterized the ancient Roman world.[98] The "peasant mode of production" hypothesizes that peasants, under less pressure from the state and the elite, adopt labour-saving agricultural strategies and cease focusing on the difficult work of surplus production. Consequently, these peasant economies exhibit a "lack of economic differentiation," "lack of artisanal scale and complexity," and "relatively restricted population levels."[99] Such an underdeveloped economy should not be viewed as a "failure" but as "functional" to the interests of peasants.[100] This mode of production, according to Wickham, discourages the keeping or building up of surplus because if a peasant family is acquiring abundant material or food they are actually expected to give it to relatives and neighbours. Even if such expectations were not as common as Wickham suggests, one must acknowledge that in the absence of the old bulk exchange networks there was limited potential to move such surplus anyhow.

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[98] These economic anthropologists are, according to Wickham, Marshall Sahlins, *Stone age economics* (Chicago: Aldine Publishing Company, 1972); E. Boserup, *The conditions of agricultural growth: the economics of agrarian change under population pressure* (New York: Aldine Publishing Company 1965); Claude Meillassoux, *Maidens, Meal and Money: Capitalism and the domestic community* (Cambridge: Cambridge University Press, 1981).
[99] Wickham, 539.
[100] Wickham, 539.

This model fits well with what scholars have found in much of the postclassical world. Most important for this chapter given the sparse archaeological evidence of Byzantium between the seventh and eleventh centuries, the more autonomous the peasant community, the more invisible it will be for us in the archaeological record.[101] Indeed, the seventh-century's collapse of long-distance trade and the Late Antique Roman state's complicated redistribution goes hand-in-hand with the possible emergence of such a peasant mode of production, given that people would no longer have been able to acquire certain materials or quantities of such products as had previously been the case, unless they were able to obtain them locally.

Wickham claims that this discouragement of surplus production marks a contrast to the economies driven by lords or a state elite, who stockpile and acquire surplus, which they then put back into the economy, thereby encouraging specialization in order to procure more expensive (and specialized) goods.[102] Once again, this hypothesis fits very well with what we know of the Aegean littoral for the eighth and ninth (and to a large extent even the tenth) centuries, a period with relatively little in the way of specialized goods or identifiable archaeological remains.

A New Equilibrium?

The diminishment of urban centers, the shrinking of the state's redistributive mechanisms, and the near disappearance of an acquisitive elite, combined to produce remarkable consequences for the environment. While not a focus for this dissertation, the water table provides an illustrative example of these changes. In the absence of Late Antiquity's demand for surplus agriculture and the ancient attitudes towards evergetism, some important drains ceased to be maintained. Without such upkeep, water worked out a new equilibrium with the surrounding

[101] Wickham, 535.
[102] Wickham, 537.

landscape. For example, a lake in Anatolia neighbouring the very important ancient cities of Nikaia and Nikomedia received a drain in the second century that led much of its water out into the Sea of Marmara. The drain became blocked in the early middle ages and thus the lake got deeper until it was unblocked in the late eleventh century. In other words, the lake's level rose considerably during the postclassical period because the Roman state was no longer maintaining this landscape to the same extent that it had in the past.[103]

Perhaps the most notable effect of environmental changes in the seventh century was the transformation of vegetative cover. This topic is complicated, and in many ways dominates the rest of this dissertation. While scholarship has not provided a synthesis for the changing makeup of the woodland and cultivated species in the landscapes that circled the Aegean Sea, they have done so for the Anatolian part of the Empire. Such a synthesis deserves attention in order to present what kinds of changes could occur.

An important example of environmental change in the seventh century is the image provided by the pollen study from Nar Gölü, a lake on the Anatolian plateau and 20km southeast of Nazianzos, at a high elevation of 1363 meters.[104] The core from Nar Gölü shows significant change in the latter seventh century: around 670 AD according to the excellent dating of the core.[105] It is clear that a late antique landscape of grassland, mixed pine and oak forests, and human-cultivated cereals, olives, and traces of vines and walnut, gave way to a late seventh-century landscape with a greater proportion of woodland species.[106] In this latter landscape, traces of olive and walnut are still found, but they (especially the olive) are no longer anything

[103] LeFort, "The Rural Economy, Seventh-Twelfth Centuries," in *The Economic History of Byzantium from the Seventh through the Fifteenth Century*, ed. Angeliki Laiou (Washington D.C., Dumbarton Oaks, 2002), 274.
[104] Warren J. Eastwood, Osman Gumuscu, Hakan Yigitbasioglu, John F. Haldon, and Ann England, "Integrating Palaeoecological and Archaeo-Historical Records: Land Use and Landscape Change in Cappadocia (central Turkey) Since Late Antiquity," in *Archaeology of the Countryside in Medieval Anatolia*, edited by Tasha Vorderstrasse and Jacob Roodenberg (Leiden: Nederlands Institut voor het nabije oosten, 2009), 47.
[105] Eastwood et al., especially 45, 51 and 67.
[106] Eastwood et al., 45, 52-53, and see page 68 for the pollen sample.

like the dominant presences that they once were. The explanation for this change is almost certainly not climatic, as the evidence for climate changes on the plateau appear to have occurred in the early to mid sixth century (when the region became wetter) and thus not when the vegetative cover changed.[107] The lack of climatic connection and the all-too-precise chronological overlap with the Caliphate's raids in this area made human influences almost positively the reason for the changes in this environment.[108] In other words, as the Caliphate's armies raided this region in the latter half of the seventh century, many people abandoned the area, and thus the footprint of humans' agriculture was considerably lessened.

The example of Nar Gölü is instructive, but certainly not the only possible story in the shifting circumstances of the seventh century. A broad perspective of the increasingly abundant environmental data from the Anatolian portion of the Empire, demonstrates that Asia Minor's landscape became more varied after the sixth century. While between the third and sixth centuries the landscape consisted of a combination of fields of cereal, pastoralism, and groves of fruit- and nut-bearing trees, the seventh century saw Asia Minor's landscape change in various ways. In many of the cases in the western portion of Anatolia a mixture of cereal cultivation and pasturage replaced the Late Antique economy, with viticulture, oleiculture, and walnut cultivation all disappearing or declining markedly. Other examples, primarily from the eastern part of Asia Minor, reflect land abandonment or, at the very least, a drastic minimization of agriculture.[109]

Such changes illustrate both the variability of early medieval landscape change but also the pervasive quality of the Roman hegemony in the ancient Mediterranean environment. Newer

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[107] Eastwood et al., 50.
[108] John Haldon, "'Cappadocia will be given over to Ruin and Become a Desert': Environmental Evidence for Historically-Attested Events in the 7th-10th Centuries," in *Byzantina Mediterranea, Festschrift Johannes Koder*, ed. K. Belke et al. (Vienna, 2007), 230.
[109] Izdebski, 217.

examination shows that, for the most part, the fifth and sixth centuries in Western Europe witnessed agriculture become more regionally driven and in tune with local needs. These more localized patterns of exchange differed considerably from, what archaeologist Tamara Lewitt writes, the "standardized productive practices directed to the Roman market and state," that had characterized the economy and ecology of the ancient Roman period.[110] Consequently, cereal production and cattle ranching, which the Roman elite and state had intensively pursued, declined and in their stead was an increase in "mixed animal husbandry" and "diversified farming."[111] Such a transformation often led to unprecedented and creative methods to obtain sustenance. As Paolo Squatriti has recently demonstrated for early medieval Italy, people made new relationships with trees such as the chestnut, which provided calorie-laden products, and required much less labour to harvest than grain.[112] Broadly-speaking, the early Middle Ages were a time in Western Europe when people adapted to local environments and pursued new relationships with the landscape that were geared toward self-sufficiency.

This chapter has argued, largely by attempting to synthesize the works of other historians with the results of archaeological surveys and excavations, that the ancient world had a critical mass of social, economic, and cultural factors that promoted production, redistribution, and consumption of goods on a grand scale, all of which made the interaction between people and the natural environment intensive and comparatively uniform across a broad region. At the very least, it put pressure on local cultivators to meet the tastes and demands of people in cities completely removed from them, such as Constantinople. Large urban centers, numerous rural sites, and a state apparatus that redistributed material over considerable distances to soldiers, bureaucrats, and the urban population of Constantinople and other large cities all existed as a

[110] Tamara Lewit, "Pigs, Presses, and Pastoralism," *Early Medieval Europe* 17, no. 1 (2001): 79.
[111] Lewit, 79-80.
[112] For this persuasive and fascinating argument, see Squatriti, *Landscape and Change in Early Medieval Italy.*

physical testament to this critical mass of factors, as did large herds of cattle, copious quantities of amphorae, and fields of cereal. This set of economic relations and cultural priorities also required people to work hard to keep a certain type of landscape in existence, re-orienting water and keeping back certain species of plants that typically interfere with this type of agriculture. The "transformation of the seventh century," as John Haldon fittingly termed the social and cultural metamorphosis of this time, also led to substantial changes in the environment, such as a re-working of the water tables and an important reordering in the landscape of seventh-century Anatolia. While details about this process often remain murky, it is safe to say that there were fewer people around in the Byzantine world in 700 than there had been in 600, and that these people had more localized economies that were not geared to significant surplus production. What this transformation's effects were on the terrestrial environment that bounded the wavy Aegean Sea, and how people worked within that altered environment, is a topic for the next two chapters.

Chapter 2
An evergreen Empire

During the seventh and eighth centuries, while Arabs and Avars launched attacks on the Aegean littoral in order to take territory or acquire slaves and loot, oak, along with other woodland species such as pine, made a systematic effort to occupy the land. Indeed, these trees were successful for some time, establishing themselves as a significant, perhaps even dominant, presence in the landscape for several centuries. Oak's success was a consequence of two factors: first, and once again much like its fellow woodland species, several varieties of this tree possess abilities to multiply and ground themselves in much of the soil of the eastern Mediterranean. Second, and unlike the Arabs and Avars, oak offered the local Byzantines something beneficial in return for its stay, namely, pasturage, fuel, building materials, and nutrition. Furthermore, the violent invasions of the period encouraged a sylvo-pastoral economy that, unlike an economy based on orchards, olive groves, and vineyards, could be relocated relatively easily. Peasants now had lots of land with which to work, little in the way of markets to which they could sell produce if they so desired, and were now relatively free of the ancient elite class that had been willing and able to compel or coerce peasants into growing certain crops in the past. Thus, while the initial reasons for oaks' success was driven by its natural abilities, its long-term presence in the landscape had a lot to do with how oak gelled with people's economy and mentality. Thus, Byzantines and oaks and other woodland species worked out a tentative cooperation that remained in place until the tenth- and eleventh-centuries, when a faction of the Byzantine population (namely the elite) proceeded to apply fiscal pressures that upset this cooperative balance and resume the marginalization of woodland that has more frequently than not characterized recent human history. That topic will receive treatment in chapters 4, 5, and 6.

Other scholars of Byzantium have acknowledged that woodland would have regenerated in the Aegean littoral on account of the depopulation of the late sixth and seventh centuries, but with the exception of Archibald Dunn's work, have not used the fossil pollen evidence to examine such changes.[113] Dunn's work also did not make use of some pollen studies from further south in the Aegean Basin because such studies were not available at the time in which he produced his important article.[114] Indeed these various scholars' claims that there was an increase in uncultivated land and in arboreal cover can be taken further, and thus one can posit the existence of a transformed economy that placed greater emphasis on the use of woodland. In many ways, this chapter argues that the woodland species themselves were responsible for much of the environmental changes that occurred in the Aegean Basin in this period, but it also emphasizes that the economy of this context was fundamentally different than the one that preceded it, and that it meshed well with the period's altered ecology. In other words, this chapter advances the claim that Byzantines in this period adapted their behaviour to this new environment.

This chapter uses environmental proxy data to demonstrate that oak became more prominent in various areas of the Aegean littoral in the seventh century and that its increased presence was maintained for a few centuries thereafter. Fossil pollen diagrams show a change in the Aegean basin and Anatolia during this period, with overall growth in forest cover and a retreat of agricultural species' pollen. Indeed, if we want to appreciate properly just how drastic the changes were in the seventh-century Byzantine environment, we need to take a longer-term

[113] For scholars acknowledging that natural vegetation returned to abandoned land in the seventh-century Aegean Basin, see LeFort, "The Rural Economy, Seventh-Twelfth Centuries," 269-271; Alan Harvey, "The middle Byzantine economy: growth or stagnation?" 250-251; Curta, 210-212; Kostis Smyrlis, "Settlement and Environment in Halkidiki, Ninth to Fifteenth Century AD," in *Mines, Olives and Monasteries: Aspects of Halkidiki's Environmental History*, ed. Basil C. Gounaris (Thessaloniki: Epikentro Publishers and Pharos Books, 2015), 120 discusses woodland regeneration as a feature of the Chalkidike landscape after the sixth century thanks to a combination of human population decline and an allegedly more humid climate.

[114] A. Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," especially 242-248.

view of the stage on which our story unfolded than many historians will be used to taking, and will have to work with the testimonies of lakebeds and the pollen that can be found in them. First, this chapter will establish that significant changes occurred in the vegetative cover of the region, specifically that woodland (a term that I use to refer to naturally regenerating woodland) filled the vacuum left by the withdrawing agriculture that carpeted the Late Antique landscape. This argument is based on a combination of the pollen data's evidence and what we know about how woodland retakes land in the region today. After establishing such a change, I will then describe how peasants could and did make use of these trees. Lastly, this chapter will look at the limited textual evidence for the period until the mid tenth century, making use of texts such as the *Farmer's Law*, provincial hagiography, and some key Athonite monastic documents, to argue that Byzantines were living in a more wooded world in the seventh through tenth centuries, and that their material existence was often firmly rooted in it.

Woodland Species Around the Aegean

In environmental history, we must acknowledge woodland's agency because its ability to establish itself in the landscape can occur independent of human encouragement, or even climatic shifts. For this reason, a brief account of woodland species (in this case oak, and to a lesser extent pine) and their behaviour is essential before explaining how their profile increased in the postclassical Aegean littoral. In other words, in order to appreciate or understand this important transition in the landscape's history, it is necessary to know a little about these important non-human historical actors.

As set forth in this dissertation's introduction, oak, *Quercus*, is a genus of trees that can function as useful objects for examining features in historical landscapes of the northern shores

of the Mediterranean, including those of the Aegean littoral. Oak trees have characteristics that are useful to people and that intersect with human economies and cultures in ways that make these species a fruitful entry point for studying past interactions between people and the environment. Oak also lives a long time and can leave evidence of its existence in non-textual sources, lending a hand to those studying its role in past economies and landscapes. Essentially, its ability to leave traces of its existence, its offer of important products to humans and livestock, its relatively protracted life, and humans' long-lasting interest in it (expressed in myths and folklore), all combine to make the oak an important object for studying interactions between people and their physical environment. The Byzantine context is no exception.

By no means does this chapter claim to give a thorough explanation of oak trees as a genus, given that there are hundreds of species and the exact number is hard for botanists to agree on given the various oaks' tendencies to hybridize. Rather, it will briefly present useful information for our purposes regarding the main species that occur around the Aegean Basin.

Oak reproduces through a series of events that dictate its ability to expand its presence. First, it is wind-pollinated, making use of atmospheric movements during the spring to take the pollen from male flowers (catkins) onto female flowers (both are located on a given tree). If female flowers receive the pollen, they ultimately form acorns. Generally, late summer or autumn is when white oaks' acorns fall to the earth, and red oaks' acorns fall in late autumn or winter. It is unlikely that an average acorn will become an oak because of several reasons including; animals will probably eat the acorn, the acorn will not land in soil that is moist or deep enough to support it, or the acorn will be stuck beneath the canopy of its parent and consequently receive too little sunlight to become a sapling. Hence the need for animals that can relocate the acorn (but will forget to retrieve it for a meal). Squirrels can certainly play an important role in

moving acorns into a welcoming environment for a nut's future success, but the most important partner of the oak is the jay. Jays carry several acorns at once in a specialized pouch in their throat,[115] unlike squirrels that can only manage one at a time, and take the nuts far from the parent tree, usually about a mile, taking care to bury the handful of acorns in different places.[116] Some of these acorns will benefit from the jays' and squirrels' poor memories and thus, provided the soil and moisture and exposure are adequate, an acorn will begin its transformation into a tree. However, a young sapling is still vulnerable for an extended period of time because of deer or cattle or goats or any other entity that might devour it.

However, once established, oaks are fashioned to endure and usually live a long time, typically hundreds of years.[117] Importantly, it takes a long time for most oaks to be able to reproduce. Indeed, twenty to thirty years must pass before many oaks can bear acorns, and even longer periods of time are common.[118]

There are both evergreen and deciduous varieties of oak in the Mediterranean. The existence of both types is another feature of oaks that is remarkable: almost every other genus of tree exists in only one of the two forms, being either evergreen or deciduous, but not both.[119] The most common species of evergreen oak in the Aegean world, by far, is *Quercus coccifera*, also referred to as the "kermes oak" or the "prickly oak." Indeed, *Quercus coccifera* is the almost ubiquitous "scrub" of the Greek countryside, typically occurring in large numbers rather than as lone trees.[120] It occupies a wide range of forms, varying between a tiny shrub and a twenty-meter

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[115] William Bryant Logan, *Oak: the Frame of Civilization* (New York and London: W. W. Norton and co., 2005), 271.
[116] Logan, 275.
[117] Susanna Lyle, *Fruits and Nuts* (Portland, OR: Timber Press, 2006), 372.
[118] Lyle, 372.
[119] Logan, 276.
[120] A.T. Grove and Oliver Rackham, *The Nature of Mediterranean Europe: An Ecological History*, 2nd ed. (London: York University Press, 2003), 48.

high tree.[121] As the geographer A.T. Grove and the historical ecologist Oliver Rackham noted in their important work on Mediterranean ecological history, the key determinant in whether a prickly oak graduates from a shrub to a tree is whether or not it has protection for some time from fire or animals' browsing.[122] Provided it has a few safeguarded years, it can reach the "get-away height" from which goats can no longer reach its top growing portion.[123] From this point onward, *Quercus cocciferra* becomes a full tree.

Quercus coccifera is an excellent colonizer of land, given its properties. It produces pollen and acorns once it has attained a mere height of 60cm,[124] and it can be one meter tall within a single year after burning (provided goats have not gotten to it).[125] This species burns very easily, but it also grows right back out of its own ashes, thus filling the vacuum left by its neighbours that do not grow as quickly after a conflagration.[126] Furthermore, *Quercus coccifera*'s tough, leathery, evergreen leaves are perfectly designed to minimize loss of water from the plant, explaining its great success in dominating the drier environs of the Mediterranean. Thus, the Kermes' oak truly is an amazing survivor that defies the attempts of humans, animals, and dramatic climatic conditions, to get rid of it.

However, due to the combination of goats' appetite for prickly oak and the species' own dogged ability to regenerate after being bitten or burnt, *Quercus coccifera* can be invisible in pollen diagrams despite possibly maintaining a significant presence in a given landscape. We must bear in mind that it does not necessarily produce pollen when it is a shrub, and if enough goats are consistently browsing the prickly oak they can keep it at a low level at which it does

[121] Grove and Rackham, 48.
[122] Grove and Rackham, 48.
[123] Grove and Rackham, 48.
[124] Grove and Rackham, 48.
[125] Grove and Rackham, 222.
[126] Grove and Rackham, 48.

not produce pollen. Thus, fossil pollen studies might not reflect its presence, meaning that we must be aware that it can be *underrepresented* in the landscape.

In contrast to their evergreen cousins, the handful of deciduous oak species that occur in the Aegean littoral possess a very different behaviour, often being less aggressive at promoting their presence in the landscape. Indeed, they are certainly more demanding than evergreen oaks, requiring more moist soils in order to live, and a season of cool weather every year.[127] This soil requirement represents a fundamental distinction between the deciduous and evergreen varieties of oak: the former grow in soils in which other crops can grow, the latter on thin soils and even rock.[128] Also, deciduous varieites are less able to survive the binges of animals than evergreen species like *Quercus coccifera* and its cousin that blankets much of the Italian and Spanish countryside, *Quercus ilex*.[129] This lessened survivability is particularly unfortunate for deciduous oaks, because various animals eagerly seek their saplings and leaves. Observation of animals in the Mediterranean indicates that they prefer to eat deciduous oak to evergreen (and to eat evergreen oak before pine).[130] Thus, in mixed woodland, deciduous oak, if it is not tall enough to escape the reach of goats, is the first form of tree to be terminated.

The deciduous oaks in the eastern Mediterranean are less prolific than the evergreen ones. For example, one notable species of deciduous oak, *Quercus macrolepis* (the "Valonia oak"), produces acorns once it reaches a 2.5 meter height.[131] This obviously requires a longer period of protection from animals and luck than *Quercus coccifera* (which as noted above needs only 0.6 meters), and yet the Valonia oak is considered to be a particularly aggressive species of

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[127] Grove and Rackham, 54. For cool weather, see Logan, 279.
[128] Grove and Rackham, 161-162.
[129] See the helpful chart on Grove and Rackham, 52.
[130] Rackham, "Observations on the Historical Ecology of Boeotia," 323-324.
[131] Oliver Rackham, "Observations on the Historical Ecology of Laconia," in *Continuity and Change in a Greek Rural Landscape: The Laconia Survey*, ed. William Cavanagh et al., vol. 1, 2 vols., Annual of the British School at Athens, Supplementary Volume 26 (London" British School at Athens, 2002), 84.

deciduous oak![132] Its close, often indistinguishable relative, *Quercus brachyphylla*, takes a full 15 years to produce acorns, also being considered an assertive form of deciduous oak.[133] A quieter relative, and fellow deciduous oak, *Quercus frainetto* produces smaller acorns and is limited to old woodland where it occurs because it is simply not apt at propagating itself against its competitors in the competitive ecology of the Mediterranean, taking more time to produce acorns than its relatives.[134]

This comparative pickiness and frailty can make deciduous oak a fascinating object for historians because, in a sense like the olive and unlike the evergreen oak, these trees often rely on human cooperation in order to flourish or even survive. While numerous pollen diagrams and archaeobotanical studies have revealed that deciduous oak were very common in the Mediterranean several millennia ago, these trees have since declined substantially. The reasons for this diminishment are debated, but probably include the warming and drying of the climate since the last ice age (indeed it was during that cooler period when many deciduous oaks worked their way south from central Europe where they remain common today[135]) and the effects of clearance by humans and browsing by animals.[136] Consequently, when deciduous oak occurs in the Mediterranean's lowland areas, those who study plant communities consider them to be "relicts of earlier Holocene forests and savannas;" in other words, holdovers from a bygone period and deliberately maintained by people.[137] In fact, deciduous oak often grows on moist soil that makes good land for agriculture and thus their disappearance in pollen records is often interpreted as reflective of clearance for agrarian purposes.[138] Some species, such as *Quercus*

[132] Rackham, "Observations on the Historical Ecology of Laconia," 84.
[133] Rackham, "Observations on the Historical Ecology of Laconia," 82.
[134] Rackham, "Observations on the Historical Ecology of Laconia," 85.
[135] Logan, 268.
[136] Grove and Rackham, 159.
[137] Grove and Rackham, 55.
[138] A. Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244.

brachyphylla are believed to *only* survive when people decide to support them at the expense of agricultural crops or when the tree is in ravines that are difficult to access. Other deciduous oak species, such as the Valonia oak, are often the product of deliberate cultivation by people.[139] Such dynamics work in reverse too. Species of deciduous oak, including the Valonia oak and *Quercus brachyphylla* frequently invade abandoned agricultural fields in Greece today, often establishing themselves in former olive and chestnut groves.[140] Thus, deciduous oak and agricultural species often work against each other, and their respective abilities to succeed are highly dependent on people's willingness to support one at the expense of its competitor.

The choice to keep and support oak is a perfectly reasonable one in the Mediterranean. After all, preindustrial inhabitants of the Mediterranean derived building materials and sustenance from woodland, activities that were central to their lives. Even in times of great clearances in which surplus agriculture was the principal goal of cultivators, such terrain continues to be valued, even contested, in the Mediterranean. By understanding how people can work in such landscapes, one can obtain a better sense of what choices or possibilities would have been available to Byzantine actors in this dissertation's chosen time and place for historical study.

Woodland proffers a great amount of nutrition for humans. Typically such sustenance is provided indirectly via various animals such as pigs, goats, sheep, and game. Essentially, animals eat from the branches of trees or from the floor beneath them, and accordingly convert litter and nuts into fat and protein that is appealing to humans as meat or dairy products. How humans extract such nutrients is a complex topic and reflects another set of important choices that are of relevance for this discussion.

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[139] Rackham, "Observations on the Historical Ecology of Laconia," 83-84.
[140] Rackham, "Observations on the Historical Ecology of Laconia," 82 for *Quercus brachyphylla*; for the Valonia oak, see page 84.

Pigs are one notable example of an animal that thrives in woodland, living off of the fallen acorns of oak trees, other fallen nuts, grasses, and any tubers they can dig up from the ground. They reproduce quickly and add edible meat to their frame at a rapid rate. Such traits make them an excellent intercessor between people and woodland. However, pigs need canopied woodland and dislike open country, meaning that they are not well suited to the scrubland that often blankets the Greek and Turkish landscape.[141] However, deciduous oak woodland and fully developed evergreen oak woodland is excellent for pigs. In some cases, a single oak can yield 900 kilograms of acorns in a year, although different species of oaks have "on" years every two to four years meaning that they are not entirely reliable for this activity.[142] Even with more modest yields, such environments enable people to make use of pigs and thus indirectly obtain nutrients from oak woodland.

Ovicaprids (sheep and goats) are more common than pigs in the Mediterranean, and can do very well in its drier woodland environments, even in scrubland or maquis (the evergreen vegetation such as *Quercus coccifera* that has not yet developed out of the reach of goats) as opposed to woodland consisting of fully developed trees. Indeed, although it is an exaggeration to say that they will eat anything, they can eat much that people do not.[143] Sheep and goats also compete less with people than cattle because they do not requiring such similar feed, and they can provide a lot in return. For example, goats produce plenty of milk relative to their weight (4 times as much as sheep and 3 times as much as cows). In addition, goat hair, like sheep wool, is used for clothes and textiles.[144] Obviously sheep provide wool and dairy products and mutton as well. One distinction between the two is that goats' milk is consumed as such, whereas sheep

[141] For pigs' choice of canopied woodland, see Richard C. Hoffmann, *An Environmental History of Medieval Europe* (Cambridge: Cambridge University Press, 2014), 180-181.
[142] Lyle, 372.
[143] Grove and Rackham, 45, for goats not eating absolutely everything.
[144] De Cupere, 144-145.

milk is typically turned into cheese. Regardless of such differences between these two archaeologically indistinguishable species, a wealth of protein, fat, calories, and other nutrients are made available to people via dairy products.

Sometimes oak *can* directly provide nutrition for humans. Humans can eat acorns, provided one grinds and rinses them to get rid of the tannins.[145] Acorns have further merits for humans who seek to gather and eat them: they are easy to store and can last two years.[146] However, in the Roman world they were typically represented as the dietary choice of people with little available food: Pliny the Elder mentioned acorns as an option for people who were starving, and the ancient Greek geographer Pausanias described acorns as a dietary staple of the allegedly bestial inhabitants of Arkadia who also lived off of goat's milk and goat meat.[147] Essentially, one could eat acorns, but to do so was considered rustic, even barbaric, by elite figures. Ancient writings aside, it is clear that, in a couple of cases, Byzantine peasants took advantage of acorns when available, and indeed they might not have shared the same sentiments towards the oak's nut as the elite writers of antiquity.[148]

Woodland can obviously provide building materials (pine and oak make very good timber) and various trees can supply good fuel for making fires. The differentiation between these two activities is important: timber refers to wood for building whereas "wood" or fuel refers to wood for burning.[149] Timber requires bigger trees, and can include a variety of types,

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[145] For people harvesting, preparing, and eating acorns, see J.G. Lewthwaite, "Acorns for the Ancestors: the Prehistoric Exploitation of Woodland in the West Mediterranean," in *Archaeological Aspects of Woodland Ecology*, ed. Martin Bell and Susan Limbrey, BAR International Series 146 (Oxford, 1982), 217-230; J. McCorriston, "Acorn Eating and Agricultural Origins: California Ethnographies as Analogies for the Ancient Near East," *Antiquity* 68 (1994): 97-107; Logan 55-56.
[146] Logan, 55-56.
[147] Pliny the Elder, *Natural History*, 16.15. For Pausanias on Arcadia, see especially 8.1.15 and 8.4.1. Also see Richard Buxton, *Imaginary Greece: the Contexts of Mythology* (Cambridge: Cambridge University Press, 1994), 94.
[148] For this assertion, see the story about Pantoléôn in the dissertation's introduction, and about the villagers of Siderokausia gathering them in *Actes d'Iviron I*, pp. 160-163, no. 9, lines 48-50.
[149] For the longstanding Mediterranean wide distinction between "timber" and "wood," see Grove and Rackham, 55.

although in the Mediterranean pine, oak, chestnut, cedar, and even other trees can all be utilized for this purpose. Oak's hardness makes it an excellent choice for timber, and it is often valued for that reason.[150] Which species of tree one puts to use is determined by availability, the type of building material required, and the preferences of those doing the felling.

Oak provides excellent firewood too.[151] In the Mediterranean, its fuel has often been obtained via sustainable practices including coppicing, in which the tree is cut down and shoots grow from the stump; pollarding, which is similar to coppicing although the trunk is chopped down at a point several meters above the ground; and shredding, in which the limbs are cut off of the tree consistently. All three of these methods function to keep the tree alive while producing usefully sized wood. Certainly this is another feature that makes oak, along with its relatives the chestnut and the beech, useful: many other species of trees, such as pine and fir, cannot be coppiced, pollarded, or shredded. To alter the trees in one of these fashions represents an important choice for cultivators because, once one has lopped off a part of the tree, one will delay the production of nuts for several years. For example, *Quercus frainetto*, a species of deciduous oak, needs at least 50 years to produce acorns once it has been coppiced.[152] Also, coppicing is not a good idea if cattle or ovicaprids are around, because they will eat the young shoots from the coppice stool (stump) thus preventing the wood from becoming substantial enough to fashion useful logs for a fire or for construction purposes.[153] To overcome this challenge, people can pollard or shred the tree, or find a way to make a barrier around the coppiced trees. Essentially, the act of coppicing, pollarding, or shredding is a long-term choice to use the tree for firewood at the expense of its ability to feed animals and humans. Coppicing was

[150] Lyle, 374.
[151] Logan, 94.
[152] Rackham, "Observations on the Historical Ecology of Laconia," 85.
[153] Grove and Rackham, 55.

probably known in ancient Greece, and pollarded trees are certainly a sight in the current landscapes of Lakonia, Arkadia, and the Chalkidike.[154] Many people in the Mediterranean have also historically gathered (and still do) fuel in the form of deadwood that has fallen to the ground, and even from the cuttings and prunings of vines and fruit trees.

Pine (*Pinus*), though it is not a focus of this dissertation, is worthy of brief mention because it plays an important role in the environmental data described in this chapter and a supporting role in the sylvo-pastoral economy outlined below. It is an excellent colonizer of abandoned land in the eastern Mediterranean, typically accompanying evergreen oak as the most forceful invaders of much of that region's terrain.[155] While pine does not survive fire quite as well as evergreen oak, it can thrive even in very eroded soils, and thus it plays a role in the landscape that emerged after the demographic decline and economic contraction of the seventh-century Byzantine world.[156] Its pollen travels very far, and there are instances in modern pollen studies in which pine pollen is detected from forests that are over 150 kilometers away.[157] As a result it can easily over represent itself in pollen studies, an outcome that is discussed below. Animals do not like it as much as oak, and some experts on the Mediterranean's plant dynamics have noted that in a mixed deciduous oak and pine forest, people often cut down the oak for firewood and animals graze it, leaving the pine to proportionally takeover the woodland and thus dominate the pollen studies.[158] While oak provides acorns and excellent fodder for ovicaprids and pigs, pine-dominated woodland is not without some benefits for people's diets. It is an

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[154] For the probability of coppicing in ancient Greece, see Grove and Rackham, 169. The author of this work has observed many pollarded trees in Greece.
[155] Rackham, "Observations on the Historical Ecology of Boeotia," 307.
[156] Neil Roberts, *The Holocene: An Environmental History*, 2nd edn., (Malden, MA: Blackwell Publishing, 1998), 189.
[157] Neil Roberts, "Human-induced Landscape Change in South and Southwest Turkey during the Later Holocene," in *Man's Role in the Shaping of the Eastern Mediterranean Landscape*, eds. S. Bottema, G. Entjes-Nieborg, and W. van Zeist (Rotterdam: A. A. Balkema, 1990), 54.
[158] Roberts, "Human-induced landscape change in South and Southwest Turkey during the later Holocene," 62.

excellent tree for producing honey,[159] on account of the pine's secretions which are especially beneficial to honeybees who in turn make honey from them.[160] This bounty of the pine must be kept in mind along with that of oak if one hopes to obtain a better understanding of how Byzantines made use of their changed environment in the later seventh century and on.

Between fuel, timber, dairy products, honey, meat from pigs, sheep, and goats, and the harvesting of acorns if necessary, Byzantines had always had an important economic connection with woodland. But in the context of the less populated and more wooded seventh through tenth centuries, this connection was even more prominent than it had been in the ancient world.

The choice to pursue an economy that places more emphasis on pastoralism and silviculture relative to agriculture (although how far in either direction Byzantines went cannot be precisely discerned) should not be seen as a "step backward" from surplus agriculture. One of the constraints for any society attempting to keep many animals is the availability of land to feed and pasture them, which competes with the land set aside for feeding humans.[161] But with the demographic decline of the sixth and seventh centuries, and the shrunken market for olive oil and wine, there certainly was more room with which to feed livestock in late seventh-century Byzantium. So a prevalence of animals would not represent a "regression" from export-oriented agriculture so much as a choice given the changed environment. Indeed, animal products are much more efficient way for people to obtain their amino acids (protein) and calories than by means of vegetables. And while cereals are excellent providers of calories, harvesting cereal is tiring, back-breaking work that typically takes place in appallingly hot conditions in the Mediterranean, whereas shepherding, while still constituting work, can occur at a much less

[159] Susan Limbrey, "The Honeybee and Woodland Resources," in *Archaeological Aspects of Woodland Ecology*, ed. Martin Bell and Susan Limbrey, BAR International Series 146 (Oxford, 1982), 279-286.
[160] Grove and Rackham, 51-52.
[161] See Marvin Harris, *Cannibals and Kings: The Origins of Cultures* (New York: Random House, 1977) for a fascinating introduction to this problem and how societies address it, especially pages 129-130.

exhausting pace because less energy needs to be expended.[162] Herding animals beneath the shade of trees is comparatively pleasant (versus cereal cultivation), and provides tasty, fat-laden food. Furthermore, there is a logic to subsistence farmers keeping more livestock when possible: in good years they can eat the extra surplus cereals that the animals don't eat, and in bad years they can slaughter animals for meat or continue to use them in order to provide some dairy product.[163] Of course, landscapes that have more space devoted to trees do not necessarily preclude the cultivation of cereals. But the shift in emphasis from cereals and tree crops to animal protein would have been desirable in any context and this chapter argues that it was plausible in the post-Late Antique one given the greater amount of woodland in the countryside.

The Expansion of Woodland in the Aegean Littoral

While Byzantine authors did not record any increase in woodland in the seventh century, it appears, based on the studies of fossilized pollen, that such an environmental change occurred. Pollen studies are a principal body of sources for analyzing woodland's composition in past environments, and they deserve a quick explanation here on account of their presence in this chapter. Many forms of vegetation disperse pollen through the wind, and thus the pollen ends up in streams, lakes, and bogs. Palynologists (the scientists who study this pollen) then "core" these streams, lakes, and bogs, by drilling an instrument into the site in order to find and analyze the pollen that has collected in the soil or lakebed. Layers of these cores are studied centimeter by centimeter under microscopes and the various species, and quantities, of the preserved pollen are counted. Dating the various layers is accomplished through a variety of means, carbon-dating

[162] For a description of the exhausting, dangerous, and painful work of reaping cereals, see Brent D. Shaw, *Bringing in the Sheaves: Economy and Metaphor in the Roman World* (Toronto: University of Toronto Press, 2013), chapter 1.
[163] Paul Halstead, *Two Oxen Ahead: Pre-Mechanized Farming in the Mediterranean* (Malden, MA: Wiley-Blackwell, 2014), 291 and 294.

being the most accurate and common, provided that there are bits of charcoal or datable organic material in the sample. Such dates remain approximate, often with a hundred year's worth of leeway, but the range in which the date can fall is well understood.[164] This technique is well established, and widely utilized for studying and reconstructing past environments.

However, like all techniques and methods for studying the past, there are some drawbacks to the use of pollen analysis. First, this method finds wind-pollinated species, but often not insect pollinated ones. Consequently, species with pollen that are easily dispersed in wind and over great distances, such as conifers (especially pine), will usually be over-represented in a sample, while species that are primarily insect-pollinated, such as the fig, might not be represented at all.[165] Also, the extraction of a core from wetlands often leaves the palynologist with an image of the terrain that is skewed in favor of the wetland or riverine species that typically grow immediately around bogs or lakes.[166] Palynologists are now very aware of these drawbacks, and often calibrate their interpretations of the preserved pollen accordingly. Nevertheless, it is a situation that must be kept in mind when working with the images conveyed in pollen studies.

In addition to the aforementioned general challenges, there are further and specific challenges for the study of fossil pollen in the Mediterranean, most notably, the relative lack of wetlands and bogs from which to take cores on account of the region's aridity.[167] This situation explains why there are so few cores available for studying much of the Aegean world, particularly the southern half of Greece, a dry region that has yielded almost no useable cores. Consequently, fossil pollen provides useful evidence for vegetation in some formerly Byzantine

[164] For the gray area with carbon dating, see Izdebski, 114.
[165] Roberts, *The Holocene: An Environmental History*, 29-36.
[166] Grove and Rackham, 151.
[167] Grove and Rackham, 151.

regions, such as southwestern Anatolia and the Chalkidike, but for Boiotia and the Peloponnese, the material is generally non-existent. Thus, while it is possible now to make very localized and accurate images of what landscapes looked like in places such as Northern Europe thanks to that region's abundant wetlands, the evidence remains much patchier for the Mediterranean.[168]

Despite these drawbacks, pollen studies remain an excellent way to investigate what the environment looked like in past times. Indeed, according to Neil Roberts' comprehensive environmental history of the Holocene, palynology (the study of fossilized pollen) is "the most important branch of palaeoecology" for the study of historical environments.[169] If one wants to observe the prevalence of specific wind-pollinated species, fossil pollen diagrams are still an excellent resource.

When analyzing pollen data, one can attempt to identify certain important themes in the interaction between humans and the environment. A notable question is whether or not people were clearing land. In order to determine if such a development took place, one looks for a decline in arboreal pollen. Indeed, a precipitous decline in arboreal pollen generally means some deforestation was taking place near the site from which the core was extracted.[170] However, not all cases of a decline in arboreal pollen can be correlated to people chopping down trees, given that climatic factors can also be at play, with colder weather or warmer weather inhibiting certain species.[171] In order to determine whether or not people were involved in changing the amount of tree cover, it is necessary to examine whether or not the "anthropogenic pollen indicators" increased after the arboreal decline. These indicators are cultivated plants and various weeds that

[168] Izdebski, 116.
[169] Roberts, *The Holocene: An Environmental History*, 29.
[170] Vermoere, 35.
[171] Vermoere, 35.

are known to accompany farming activities.[172] One of these "secondary anthropogenic indicators" is *Plantago lanceolata*, which is the most consistent indicator of "human disturbance" in the Mediterranean.[173] Other "secondary anthropogenic indicators" include *vicia* (vetch) and *sanguisorba minor*, and, of course, *cerealia* types of pollen.[174] In light of these types of plants' behaviour, palynologists can confidently notice when people were clearing woodland in order to pursue agriculture.

One can also identify landscapes in which people had created an agro-ecosystem through the presence of other key species combine the ability to disperse plenty of pollen in the wind and to produce food for people. In the Mediterranean, such species include walnut, chestnut, and the olive.[175] In contrast to those species, other human-cultivated species, such as the vine and fig, produce very little pollen and are thus less likely to be found on diagrams.[176] In fact, given the plant's poor pollination, even a single grain of vine (*Vitis vinifera*) in a core's layer is indicative of some viticulture within two kilometers of the coring site.[177] Another very useful indicator of human economies is juniper, a species that reflects grazing in woodland because animals dislike its flavor (in some cases it is poisonous), leaving it alone while seeking other woody species to munch on. In other words, when juniper is well represented in a pollen diagram but typical targets of grazing are not, one can be sure that livestock was a significant feature of the local economy.

Finally, another trend that one looks for when examining a pollen study is whether or not arboreal pollen increases, given that people who study past environments may wonder if trees

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[172] Vermoere, 35.
[173] Vermoere, 40.
[174] Vermoere, 40.
[175] Vermoere, 35.
[176] Vermoere, 40.
[177] Izdebski, 130.

"came back" in the absence of human cultivation. This particular trend is harder to analyze than those of deforestation or the presence of human cultivation. In fact, an increase in the amount or proportion of arboreal pollen is not a guarantee that reforestation was taking place. Instead, an increase in arboreal pollen might only mean the cessation of cultivation, in which case, the surviving pollen would appear to be dominated by proliferate wind-pollinators (such as pine) simply because agricultural species (such as olive or walnut) were not around to pollinate and thus occupy space in the pollen core. For example, quite often in Mediterranean contexts, high pine values can be interpreted as indicating erosion or overgrazing, which leaves the sample exposed to pine coming in from great distances in the absence of other pollen.[178] However, it can reflect land abandonment too as pine is a good colonizer of abandoned agricultural land, and it thrives in drier soils that will not support more moisture-demanding species such as deciduous varieties of oak.[179] Nevertheless, an increase in arboreal pollen *can* indicate a return of trees, since land abandonment often leaves gaps that capable colonizers such as pine and evergreen oak can fill. Importantly, and unlike pine, species of oak have a harder time making themselves noticeable in pollen studies. In particular, deciduous oak that is coppiced will be under-represented in pollen diagrams because it will pollinate much less than if the tree were left intact.[180]

A brief survey of the pollen cores from around the Aegean littoral reveals various local landscapes' transformation during the shift from Late Antiquity (or the "early Byzantine") to the "Middle Byzantine" period. By no means is the following survey inclusive of every available

[178] Vermoere, 35.
[179] Izdebski, 130-131.
[180] Sampson Panajiotidis, "Palynological Investigation of the Tristinika Marsh in Halkidiki (North-Central Greece): A Vegetation History of the Last Three and One-Half Millennia," in *Mines, Olives and Monasteries: Aspects of Halkidiki's Environmental History*, ed. Basil C. Gounaris (Thessaloniki: Epikentro Publishers and Pharos Books, 2015), 311.

pollen diagram from the areas that constituted the Byzantine world. Rather, it includes those studies that fall within the geographical interests of this dissertation, but does not include those studies that have significant problems with their dating and interpretation.[181] Shifts in the makeup of the landscape were certainly not uniform across these diverse environs, although two main types of transitions predominate. The first pattern is land abandonment: many pollen cores reflect people simply ceasing to engage in agriculture. In such cases, the notable wind pollinators that had done well with the Roman hegemony and the Late Antique economy, namely *Olea* (olive), *Julgans* (walnut), and *Vitis* (vine), declined or became absent entirely, while the less clamorous *Cerealia*-types became harder to find. The other type of transition was a shift from the export-oriented agriculture that had characterized Late Antiquity in the eastern Mediterranean (discussed in chapter 1) to a more autarchic economy that appears to have often placed a greater emphasis on pastoralism. In these cases an increase in woodland species, particularly *Pinus* (pine), deciduous varieties of *Quercus*, and *Quercus coccifera* often occurred alongside increases in other indicators of grazing such as juniper. These two shifts are based on data from pollen cores, which is obviously somewhat blurry when it comes to chronology, giving dates that are approximate and thus may appear frustrating to historians with their desire for more precise timelines. However, the broad themes of land abandonment or a shift to more pastoral and localized economies appear to be consistent and reliable, and, when carbon dates are available, land squarely around the seventh century.

We will start our analysis of pollen evidence on the western shores of Anatolia, and then will work our way in a counter-clockwise pattern around the shores of the Aegean Sea, ending in Southeastern Greece in the Argolid. The first pollen diagram, gleaned from beneath the slopes of

[181] I do not include the oft-cited Lake Kopais study because the more recent layers are notoriously hard to date thanks to the intentional drainage of the lake in the modern era. See Rackham, "Observations on the Historical Ecology of Boeotia," 339-343.

Mount Latros and close to the ancient city of Miletos, tells us something about the landscape and economy of the lower Maiandros River valley. Thanks to the sediments of the Maiandros River, between Late Antiquity and the Middle Byzantine Period a body of water went from being a part of the Aegean Sea to a landlocked lake now known as Bafa Gölü, and this young body of freshwater has trapped enough pollen to provide a picture of environmental change.[182] Atypical for local landscapes of the Late Antique eastern Mediterranean, the core shows that the decline of agriculture began as early as the third century, ostensibly due to a brief period of Gothic attacks in the area that left many charred particles,[183] with pine, and evergreen oaks (along with some other evergreen shrubs) all increasing their signature as they occupied formerly cultivated fields.[184] The snapshot of the local vegetation that accompanies the year 654 (determined by carbon dating) shows that the area had not returned to its former status, and it was a world of pine, evergreen oak, and plenty of *rumex*, *plantago lanceolata*, and *pistacia*, all of which indicate pasturage, on account of the fact that animals do not like to eat these varieties of herbs, thus leaving them a prominent position in the pollen record.[185] In contrast to the indicators of pasturage, agriculture's signature is very small throughout this period given that cereals in this layer are rare, as are all other indicators of agriculture, including chestnut and walnut, as the authors of the study point out,[186] although olive makes an odd increase at this latter point in time, perhaps because of newly planted groves closer to the eighth century.[187] This situation of olive groves alongside pasturage prevails for quite a while in the record, changing gradually to privilege olive later on. Thus, Byzantines living in the lower Maiandros valley around the year

[182] M. Knipping, M. Mullenhof, and H. Bruckner, "Human induced landscape changes around Bafa Gölü (Western Turkey)," *Vegetation History and Archaeobotany* 17 (2007): 365-366.
[183] Bands of Goths raided throughout Asia Minor between 258 and 275.
[184] Knipping, Mullenhof, and Bruckner, 375-376.
[185] Knipping, Mullenhof, and Bruckner, 376-377. For the evergreen oak, see the chart on page 375.
[186] Knipping, Mullenhof, and Bruckner, 377.
[187] Knipping, Mullenhof, and Bruckner, 377.

700 were most likely engaged in pastoralism alongside some modest olive cultivation, living amidst a landscape with significant pine and evergreen oak.

At Gravouna, located on the northern coast of the Aegean Sea, nestled between the Lekani Mountains and the River Nestos, it appears that deciduous oak increased. Indeed there is a major resurgence of tree pollen in this location, particularly alder and oak. The Gravouna core is not dated, but Archibald Dunn sees this pollen as most likely from the Byzantine "dark age," with trees making a comeback as land was abandoned in the latter sixth and seventh centuries.[188] The growth of alder and oak in this core work against the pollen for cereal, which declined as the arboreal cover increased.[189] Whoever lived in the area was working amidst oak forests but continuing to plant cereal, albeit devoting less land to it than had previously been the case.

Further to the west, at Lake Volvi, a body of fresh water bounding the north side of the Chalkidike peninsula and situated between the Thessalonike (which was the second biggest city in Byzantium) and Mount Athos, a core reveals notable transitions in the postclassical landscape. The layers of the core that are suspected to be a testament to the activities of the ancient Roman-era inhabitants with their preference for cereals and vines in addition to a notable willingness to support walnuts and olives, shift into a new layer with a miniscule cereal presence, no walnut and no olive, and a corresponding surge of woodland species including pine, deciduous oak, and evergreen oak.[190] Similar to the case of Gravouna, archaeologists suspect that this layer

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[188] Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 246. Also note that Turner and Greig think zone 2 is from the late 1400s with the Turkish takeover.

[189] Judith Turner and James R.A. Greig, "Some Holocene pollen diagrams from Greece," *Review of Palaeobotany and Palynology* 20, no. 3 (1975): 202. Page 203 explains that the considerable spike in alder pollen probably indicates the presence of a cluster of alder trees very close to where the core was taken (at least in the past). See the figure for Gravouna, page 202, zones G1/2 for the relatively quick increase in oak and arboreal cover and the relatively gradual decline in this cover afterwards.

[190] For this core, see S. Bottema, "Palynological investigations in Greece with special reference to pollen as an indicator of human activity," *Palaeohistoria* 24 (1985): 275. For the interpretation of this diagram, see Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244-245. For the absence of walnut and olive, see the European pollen database's information at the layer of 420cm.

represents the Byzantine "Dark Age" of the seventh and eighth centuries.[191] Abandonment of various tree crops was an issue in the surrounding area, although the increase in *Vitis* indicates a significant presence of some local winemakers. Thus, the area's postclassical inhabitants were probably few in number, living amongst more woodland, possibly engaging in some sylvo-pastoral strategies, and certainly pursuing viticulture, perhaps to satisfy demands from nearby Thessalonike.

A second pollen study from the Chalkidike peninsula reinforces the story from Lake Volvi's core. This pollen core came from the tip of the Sithonia peninsula (the second finger of the Chalkidike), and was extracted from the Tristinika marsh, a wetland located at sea level and very close to the beaches of the Aegean.[192] While the location is from lowland, it is very close to the mountainous spine of the Sithonia peninsula, and thus the core captured both coastal and montane pollen, in addition to pollen from the nearby Athonite peninsula.[193] The layer of the core that was attributed to covering the sixth through eleventh centuries tells a story of the abandonment of agricultural land with a takeover of the area by woodland species.[194] While pine dominates the earlier section of the layer, it is clear that both deciduous and evergreen oak became more prevalent over time. While Byzantines were not cultivating the Sithonia peninsula, they were making use of its land in order to pasture their animals, as the indicators of heath testify. Furthermore, Byzantines were turning some of the local oak into charcoal, an activity made apparent because of its remains in the core.[195]

Turning south to follow the eastern coast of Greece, we arrive in Attika, where a pollen study from the Vravron marsh, a wetland positioned next to the eastern shores of Attika (and just

[191] Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244-245.
[192] Panajiotidis, 305.
[193] Panajiotidis, 311.
[194] Panajiotidis, 314.
[195] Panajiotidis, 314.

38 kilometers east of Athens), tells a similar story to that of Volvi.[196] The palynologist who analyzed this core demonstrated that between the ancient and medieval Roman periods the area transitioned from one with a decent amount of cereal, olive, and walnut trees and came to resemble a wetland with at first more pine and evergreen oak and then, gradually, a considerable deciduous oak presence.[197] By the carbon dates of 692-934AD, the locals were clearly following more pastoral strategies, given the combined roles of juniper and oak in the local landscape, while cereal cultivation continued, but to a much more modest degree than before.

In the Southern Argolid, beneath the hills that dominate that locale, pollen taken from the Thermisia lagoon reflect an increase in pine and maquis-type vegetation (including evergreen oak and *pistacia*) around 700AD as olive declined.[198] Yet the site experienced no erosion, probably because maquis and scrub colonized the untended fields and held the soil down.[199] As the archaeologists who surveyed the region noted, there was simply no evidence of substantial human activity after the early seventh century, certainly not until the ninth century at the earliest.[200] In this case, there is no significant signal of herding, and thus land abandonment was almost certainly what occurred rather than a shift to pastoralism.

Finishing our tour of pollen sites, we arrive at Lake Lerna on the Argolid Plain, just beneath of the ancient city of Argos and looking south into the Aegean Sea. The layer attributed to the "Classical" and "early Roman" periods has ample signatures for *Olea* and eventually

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[196] Katerina Kouli, "Vegetation Development and Human Activities in Attiki (SE Greece) during the Last 5,000 Years," *Vegetation History and Archaeobotany* 21, no. 4-5 (2012): 267-278.
[197] Kouli, 276.
[198] Michael H. Jameson, Curtis N. Runnels, and Tjeerd H. van Andel, *A Greek Countryside: The Southern Argolid from Prehistory to the Present Day* (Stanford: Stanford University Press, 1994), 168-169. For their simplified diagram of the data, see page 167.
[199] Tjeerd H. van Andel and Eberhard Zangger, "Landscape Stability and Destabilisation in the Prehistory of Greece," in *Man's Role in the Shaping of the Eastern Mediterranean Landscape*, ed. S. Bottema, G. Entjes-Nieborg, and W. van Zeist (Rotterdam: A.A. Balkema, 1990), 144.
[200] van Andel and Runnels, 122-123.

Juglans, as well as some evidence of clearance.[201] Such features mesh well with the typical "Roman" layers already discussed.[202] Immediately following this olive- and walnut-rich layer is a rapid drop in those species along with an increase in pine and evergreen oak, which the study's author dates to around 800AD.[203] Such a drop is in line with what we have already seen in other cases where intensive agriculture declined around the seventh century. However, in the case of Lake Lerna's sample, juniper does not become noticeable for a while yet, indicating that even pastoralism was not particularly robust immediately after the decline of agriculture in the area.[204] In this case, and very much in line with the nearby southern Argolid sample, the data suggests that there was neither cultivation nor animal husbandry in the Argolid Plain between the eighth and tenth centuries.[205]

This survey of the pollen data for the post-Late Antique Aegean littoral shows that the economic and cultural changes of the seventh century had material consequences for the physical environment. Generally speaking, the principal species of the ancient world fared poorly, with cereal, olives, and walnut all dwindling. Despite the decline, cereal often remained in many locales, but certainly not all, indicating that people continued to maintain some fields. Land abandonment was clearly at play in other cases, such as the Argolid, while demographic decline and a retraction of arable land appears more likely in others such as at Gravouna. In yet other examples, such as the Vravron marsh and Lake Volvi, the local human populations simply reworked their means of obtaining sustenance from the land, abandoning tree crops and reducing

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[201] Susanne Jahns, "On the Holocene Vegetation History of the Argive Plain (Peloponnese, Southern Greece)," *Vegetation History and Archaeobotany* 2, no. 4 (1993): 197.
[202] For a good introduction to which species flourished in connection with Roman travel and transport networks, see Paolo Squatriti, "The Vegetative Mediterranean," in *A Companion to Mediterranean History*, ed. Peregrine Horden and Sharon Kinoshita (Malden, MA: Wiley-Blackwell, 2014), 33-35.
[203] Jahns, "On the Holocene Vegetation History of the Argive Plain." For the drop in olive pollen, see page 197. For the increase in evergreen oak and pine, see pages 197-198.
[204] Jahns, "On the Holocene Vegetation History of the Argive Plain," notes that juniper occurs a bit later. See page 198.
[205] Jahns, "On the Holocene Vegetation History of the Argive Plain," 202.

cereal-growing while ceasing their effort to hold back the tenacious onslaught of woodland species such as oak, species that retake land in this part of the world once humans cease to be antagonistic towards them. Thus, generally, woodland pollen asserts itself in the samples. One must still be cautious with the data. As already noted, pine is extremely well-represented in many examples and that representation can be a consequence of the species' pollen behaviour and its ability to dominate pollen samples when other species cease to exist to compete with it. It does not guarantee that there were many more pine trees, simply that there was less agricultural pollen being deposited in the lakebeds from which the samples were taken. Conversely, evergreen oak, and in some cases deciduous, often becomes more noticeable, indicating a genuine expansion of their presence in the environment.

The textual and linguistic data, while particularly sparse for the seventh and eighth centuries, provides notable allusions to a more tree-covered landscape. For example, place names based on "Lóngos (λόγγος)" indicate forested places in Greece because it can be translated as "woodland" or "thicket," but the word itself is no older than the sixth century because it is borrowed from a Slavic root. Consequently, the various place-names called Lóngos, or derivatives thereof, which are located in regions known to have been settled in Antiquity reflect environs that became re-forested during or before the arrival of the Slavs into Greece, which explains why such locales received their new arboreal names.[206] There are other Slavic place names that refer to clearance, including "Terpitsa or Strevina" which come from the Slavic word "Trěbiti," "to clear the woods."[207] Such sites must have been wooded by the time that Slavic

[206] Johannes Koder, "Historical Aspects of a Recession of Cultivated Land at the End of the Late Antiquity in the Eastern Mediterranean," *Paläoklimaforschung, Palaeoclimate Research* 10, no. Special Issue: ESF Project Eur (1994): 160-161.
[207] Curta, 210.

people had worked their way down into central and southern Greece in order to settle. Clearly, after the sixth century, there were formerly agricultural spaces now occupied by trees.

While pollen data can be vague and textual data is limited, it is evident that by the year 700 less cultivation was taking place, arboreal pollen increased, and some place names indicate that reforestation had occurred. Perhaps most importantly, bearing in mind the modern observation of pine's and evergreen oak's (and to a lesser extent deciduous oak's) ability to retake abandoned land, it seems reasonable that the Mediterranean's tenacious woodland species would have been successful in establishing themselves effectively in formerly cultivated fields.

Contexts for Woodland Species' Success

Woodland species' botanical characteristics, specifically their ability to reproduce, were crucial to their success in covering new ground by the end of the seventh century. Of course, such traits of these species long predated the transition between Late Antiquity and Middle Byzantium, and thus cannot entirely explain the expansion of oak and pine. What had changed was people's willingness to do the work necessary to keep these species outside of their fields, a change that occurred in the context of less demand or pressure to devote space to grow agricultural surplus. In addition, the smaller human population of the period, given what we suspect about demographics at that time, possessed a diminished collective capacity to keep these species at bay. But such changes were not short term, and the indications of clearance of this resultant woodland emerge gradually, usually only beginning in the tenth and eleventh centuries, a topic that will be discussed in later chapters. Thus, it appears that oak and pine remained prominent in the landscape around the Aegean shores for several centuries.

The long-term reasons for oak's success in the Middle Byzantine period go well beyond botany or reduced human populations, and include economic and social factors. Essentially, Byzantine peasants pursued strategies that meshed well with the expanded arboreal cover. Textual, archaeological, and some scientific studies indicate that a sylvo-pastoral economy existed and that people were working with, rather than against, this more wooded environment.

A reading of the available texts offers glimpses of this sylvo-pastoral economy in practice. As far as the seventh- and eighth-centuries are concerned, a document called the *Farmer's Law* is a key source for approaching the agrarian history of Byzantium, essentially constituting the only available text of an agrarian nature for the Empire's "dark ages."[208] The *Farmer's Law* is a legal text consisting of 83 entries (85 in some manuscripts), all of which pertain to everyday problems or disputes that could arise in agrarian contexts.[209] The issues detailed vary from farmers trespassing on one another's fields to oxen destroying peasant gardens to watermills flooding fields. The document addresses these varied possible scenarios and provides the recommended penalties and punishments for them.

Scholars generally see the *Farmer's Law* as a product of the years on either side of 700, which would put the text squarely in the midst of the period that is least visible to historians and archaeologists, but also the one in which the increase in woodland species and decrease in indicators of agriculture are most notable. Such a time of composition seems fitting: the *Farmer's Law* shows an economy with little evidence of surplus- or export-seeking agriculture and only one entry in the entire text addresses money, although two others briefly address the

[208] For the edited Greek text, see W. Ashburner, "The Farmer's Law," *Journal of Hellenic Studies* 30 (1910): 85-108. For further analysis and an English translation of the text, see W. Ashburner, "The Farmer's Law II," *Journal of Hellenic Studies* 32 (1912): 69-95.
[209] Ashburner, "The Farmer's Law," 96-97.

payment of taxes.[210] Some scholarly observations suggest that the *Farmer's Law* perhaps has a more ancient foundation than the Isaurian dynasty (which began its rule of Byzantium in 717), and raise the possibility that it might originally reflect slightly older ideas, and, by extension, a slightly older human-environment interaction.[211] Indeed, one could take the text's treatment of cattle and vineyards to perhaps be indicative of pre-Isaurian concerns. Furthermore, the text solely addresses free peasant communities and not farmers working for big landowners, which might also help account for the relatively modest agrarian holdings addressed in the text. However, this latter observation is not a problem for approaching the rural history of the Aegean littoral in this period, because there is such limited evidence of big landowners in the Aegean littoral by the end of the seventh century, a topic addressed in chapter 1.

The text's applicability seems to have remained useful long after the end of the Isaurian dynasty given that its use amongst the Empire's judges continued to be common well into the ninth century. Indeed, while scholarship of Byzantium has demonstrated that it is unclear whether the "omnipresence" of law can be said to have existed in seventh and eighth-century Byzantium (despite the existence of the legal compilations of Justinian), or even in the following centuries when the state had regained strength in relation to its neighbours, it seems that the *Farmer's Law* was still an important and widely-employed tool.[212] Thus the text appears to have

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[210] Ashburner, "The Farmer's Law," 99; Ashburner, "The Farmer's Law II," 88 (no. 16). Numbers 18 and 19 discuss taxes.

[211] Michel Kaplan, "L'activité pastorale dans le village byzantin du VIIe au XIIe Siècle," in *Animals and Environment in Byzantium (7th-12th C.)*, ed. Ilias Anagnostakis, Taxiarchis G. Kolias, and Eftychia Papadopoulou (Athens: The National Hellenic Research Foundation/Institute for Byzantine Research, 2011), 409.

[212] For the lack of evidence for regular application of Roman legal codes in Middle Byzantium, see Bernard Stolte, "The Social Function of the Law," in *A Social History of Byzantium*, ed. John Haldon (Malden, MA: Blackwell Publishers, 2009), 83-84. For an extended treatment of the lack of application of Justinianic law in Middle Byzantium, see Peter Sarris, "Law and Custom in the Byzantine Countryside from Justinian I to Basil II (c.500-1000)," in *Law, Custom, and Justice in Late Antiquity and the Early Middle Ages: Proceedings of the 2008 Byzantine Colloquium*, ed. A. Rio (London: Center for Hellenic Studies, 2011), 49-62. Sarris points out the Byzantine judges, although they were probably acquainted with Roman law, habitually made compromises with local populations and did not utilize older legal codes. On pages 50-51 he notes that the *Basilika* of Leo VI (r. 886-912), a document based on Justinian's code, was an antiquarian text that was impractical for the circumstances of

remained suitable for the Byzantines' interaction with their landscape for some time, a period in which this chapter argues that woodland was more common, perhaps even predominant in the landscape.[213] So while the source is problematic in some ways, it is very useful for this topic.

One can provide a reading of this document pointing to a very different mode of production and human-environment interaction than has typically been proposed for this period of Byzantine history. It is possible to accomplish this reading by combining an understanding of the changed ecology of the Aegean Basin (during the period in which the text was written of course), an awareness of how people in the Mediterranean have often utilized such wooded environments, and an appreciation for the settlement patterns of the Byzantine world in this period as revealed by the Boiotia, Southern Argolid, and Lakonia surveys. Indeed, the text's portrayal of a mixture of livestock and woodland, combined with some cereal and vines, reinforces the idea that Byzantine peasants in the dark age were pursuing an existence that was based to a large extent around utilizing and consuming animal protein and cereal amidst a much more wooded environment than their predecessors had lived in. The document also points to a highly fluid and flexible relationship between people and their environment, a relationship that placed less emphasis on property rights and more on the use of an area.

Given the *Farmer's Law*'s content, it appears that the Byzantine economy during the years on either side of 700 was based around livestock.[214] Animals are prevalent in the text, appearing in numerous references, and consequently are much more noticeable to the reader than

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ninth- and tenth-century Byzantium. It even discussed appointing officials to provinces that had ceased to be part of Byzantium in the sixth century.

[213] For the text's dating, see Haldon, *Byzantium in the Seventh Century*, 132. Haldon sees this document as a product of the period between 680 and 720. Paul Lemerle, *The Agrarian History of Byzantium from the Origins until the Twelfth Century: The Sources and Problems*, trans. Gearoid Mac Nincaill (Galway: Galway University Press, 1979), 35; N. Svoronos "Notes sur l'origine et la date du Code Rural," *Travaux et Mémoires* 8 (1981): 487-500 For its use in the ninth century and its many copies, see Kaplan, "L'activité pastorale," 409.

[214] For a discussion of the prevalence of oxen in the text, see Kaplan, "L'activité pastorale," 409.

cereals, vines, and gardens as a focus for peasants' labour.[215] Some of this livestock definitely operated in an agro-pastoral context, with the oxen fulfilling the role of beasts of burden that worked fields of cereal. As a matter of fact, the text gives cattle extensive treatment, mentioning them more than any other animal and devoting a series of entries that specifically discuss oxen and oxherds.[216] This bovine-centered portion of the law portrays Byzantine farmers turning over their oxen to be herded during the day by specialist herdsmen.[217] For example, the text mentions "if a herder of oxen, early in the morning, receives a farmer's ox and mingles it with the herd and it happens that the ox is torn apart by wolves, may he show the corpse to his master and he [the herder] will go unpunished."[218] Thus, despite the numerous references to oxen, the *Farmer's Law* does not give the impression of an economy in which cattle were numerous and beef was a common occurrence on the table. Rather, it shows village societies in which individual households pooled their few draught animals together under the care of a herder when those animals were not dragging the plough. In other words, these oxen functioned as draught animals and not primarily as a food source. As Michel Kaplan argued in his work on Byzantine agrarian history, their role as draught animals is probably what made oxen so valuable (oxen were far more expensive than any other form of livestock in the fragmentary Byzantine material that we have).[219] Oxens' requirement for food partly derived from human labour, namely cereals (although oxen will eat grasses), is probably what discouraged peasants from maintaining many of them and accordingly made this form of livestock comparatively expensive. As is discussed

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[215] Ashburner, "The Farmer's Law II," 69 for the prevalence of entries addressing livestock and sheepdogs.
[216] Ashburner, "The Farmer's Law," 101-102; Ashburner, "The Farmer's Law II," 89-90 (nos. 23-30).
[217] Kaplan, "L'activité pastorale," 412.
[218] Ashburner, "The Farmer's Law," 101; Ashburner, "The Farmer's Law II," 89 (no. 23). ἐὰν ἀγελάριος βοῶν ἕωθεν παραλαβὼν παρά γεωργοῦ βοῦν συγκαταμίξῃ αὐτὸν μετὰ τῆς ἀγελῆς καὶ συμβῇ τὸν βοῦν λυκωθῆναι, δειξάτω τὸ πτῶμα τῷ κυρίῳ αὐτοῦ καὶ ἀζήμιος αὐτὸς ἔσται.
[219] Kaplan, "L'activité pastorale," 411. In the Athonite texts from the eleventh and twelfth centuries, it is apparent that many peasant families possessed only one ox or none at all. See Harvey's analysis in Harvey, *Economic Expansion in the Byzantine Empire*, 50-52.

below, recent archaeological work on faunal remains indicates that oxen were not common as a food source for Middle Byzantines and that the remains of such animals point to their role as beasts of burden.[220] Of course, rarity of oxen does not mean rarity of livestock. As this chapter argues, sheep and goats were probably more common in this period, a reflection of their utility for humans and that fact that they do not compete with people for pasture.

The *Farmer's Law* gives the impression that livestock and trees were often in very close proximity. One entry describes people killing livestock by mistake, ostensibly due to dropping an axe on the animal (an ox or sheep, κτῆνος) while attempting to cut wood from a tree above.[221] Another entry addresses someone chopping down a branch from a tree and accidentally killing an animal (either an ox or another animal) by means of the lethal combination of dead wood and gravity. The entry reads: "If someone is cutting a piece of wood in a coppice but is not attentive, and it [the piece of wood] falls and kills an ox or a donkey or anything else, he shall pay a soul in place of a soul."[222] Further references addressing the killing of oxen, rams, and donkeys in woodland (ἐν ὕλῃ) occur in the text.[223] Thus it appears that early Byzantines, domesticated animals, and trees often were positioned closely together in the more wooded countryside of the postclassical period.

The *Farmers Law* is generally vague in its description of this woodland, presenting a very limited vocabulary for the trees contained in the text. It is hard to tell what types of trees these are because the author(s) of the *Farmer's Law* chose the very general words "dendron

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[220] For further argument about cattle's main role as draught animals as opposed to a food source in Byzantium, see Johannes Koder, "Παρατηρήσεις για τη χρήση βοοειδών στο Βυζάντιο," in *Animals and Environment in Byzantium (7th-12th C.)*, ed. Ilias Anagnostakis, Taxiarchis G. Kolias, and Eftychia Papadopoulou (Athens: The National Hellenic Research Foundation/Institute for Byzantine Research, 2011), especially 29-30.
[221] Ashburner, "The Farmer's Law," 103; Ashburner, "The Farmer's Law II," 91 (no. 40).
[222] Ashburner, "The Farmer's Law," 103; Ashburner, "The Farmer's Law II," 91 (no. 39). ἐάν τις κόπτων ἐν δρυμῷ ξύλον οὐ προσέχῃ ἀλλὰ πέσῃ καὶ ἀποκτείνῃ βοῦν ἢ ὄνον ἢ ἄλλο τι οἷον οὖν, δώσει ψυχὴν ἀντὶ ψυχῆς.
[223] Ashburner, "The Farmer's Law," 103; Ashburner, "The Farmer's Law II," 91 (nos. 44 and 45). For example, entry 45 states: "If a slave slaughters one ox or donkey or ram in a wood, his master will render what is due." ἐάν τις δοῦλος σφάξῃ ἕνα βοῦν ἢ ὄνον ἢ κρίον ἐν ὕλῃ, ὁ κύριος αὐτοῦ ἀποδώσει αὐτό.

(δένδρον)" and "hule (ὕλη)" to describe them. The former typically is translated as simply trees, but can refer to nut- or fruit-bearing species. On the other hand, "hule" usually means timber, forest, woodland, or firewood. One can be sure that the majority of arboreal entries in the code were not fruit-bearing trees. Specific types of trees that produce tree crops for people are typically labeled as such and are *not* located in woodland environments. There is one entry in the text that specifies "fig trees," and another entry, which might possibly describe a type of fruit tree that cannot survive being "cut," and that is mentioned along with vines.[224] Thus, it appears that the *Farmer's Law* at least made that much distinction between trees that provided a crop and those that did not, labeling the latter types as "dendron (δένδρον)." Given the context provided in the pollen samples discussed above, it is reasonable and likely that these non-fruit bearing trees were woodland species such as oak.

In some cases, we can be fairly sure that oak was the tree being described. Specifically, the thirty-ninth entry of the text (the one in which the woodcutter accidentally killed livestock when the cut wood landed on the animal) mentions cutting down wood in a "drymos (δρυμός)," which can be translated as an oak coppice (Ashburner translated "drymos" as a "thicket").[225] I prefer the translation of "coppice" or "woodlot," because the entry specifically mentions cutting "xylon (ξύλον)" which can be translated as "firewood," or "plank," or "beam." In this case, the idea that the woodcutter was cutting down a tree is unlikely, given that the act is carried out in a woodlot or coppice ("drymos") and the term "hule (more common for timber)" is not used. However, the idea that the cutter is taking off a branch or shoot that can serve as a small beam or a log of firewood seems reasonable. There is no Greek differentiation between "coppice" and

[224] For fig trees, see Ashburner, "The Farmer's Law," 105; Ashburner, "The Farmer's Law II," 92 (no. 61). For the other tree (Dendron) see Ashburner, "The Farmer's Law," 107; Ashburner, "The Farmer's Law II," 94 (no. 80). In the latter case, the verb **κ**όψῃ is translated as "cut."
[225] Ashburner, "The Farmer's Law," 103; Ashburner, "The Farmer's Law II," 91 (no. 39).

"pollard," and so I believe that this case discusses a pollarded woodlot. After all, if the woodcutter was on a ladder, cutting off a large shoot or branch from the pollarded tree, then it is entirely feasible that this branch could fall several feet and kill an unsuspecting bovine. The peasant could hardly be blamed because they, as anyone in such a case, would probably not be looking down, but would be focusing on maintaining balance while atop a ladder and swinging an axe against a thick piece of potential firewood.

The following entry in the *Farmer's Law* reinforces this interpretation. The fortieth entry of the text reads: "if a man is cutting a tree and, in ignorance, tosses his axe from above and slays another's beast, he will give a beast."[226] Dropping an axe onto livestock and killing it requires being several feet above the animal, thus precluding a coppice, but once again strongly suggests pollarding or shredding.

There is another entry in the *Farmer's Law* that strongly hints at the possession and management of oakwoods. In this case, the entry addresses the problem of people setting a fire in their own "private forest" (ἐν ὕλῃ ἰδιᾷ), only for the fire to grow out of control and burn down their neighbours' fields and houses that lie adjacent to the woodlot. The entry reads: "If someone lights a fire in a private woodlot or field and it results that the fire runs amok and burns houses or cultivated fields, he is not to be condemned if he did not do this in a strong wind."[227] Such an entry is revealing for several reasons. First, the use of fire in woodlots is a known phenomenon in the Mediterranean that indicates human maintenance of woodland that is used to pasture ovicaprids (fire is actually beneficial to woodland used for pasturage because it burns the

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[226] Ashburner, "The Farmer's Law," 103; Ashburner, "The Farmer's Law II," 91 (no. 40). ἐάν τις κόπτων δένδρον ἄνωθεν ἀγνωσίᾳ ῥίψῃ τὸν πέλεκυν καὶ φονεύσει ἀλλότριον κτῆνος, δώσει αὐτό. I have translated αὐτό as "beast" rather than "it" for clarity's sake.

[227] Ashburner, "The Farmer's Law," 105; Ashburner, "The Farmer's Law II," 92 (no. 56). ἐάν τις πῦρ ἐμβάλῃ ἐν ὕλῃ ἰδιᾷ ἢ ἐν ἀγρῷ καὶ συμβῇ διαιδραμεῖν τό πῦρ καὶ καύσῃ οἴκους ἢ ἐγκάρπους ἀγρούς, οὐ καταδικάζεται ἐὰν οὐκ ἐν πολλῷ ἀνέμῳ τοῦτο πεποίηκεν.

undergrowth that sheep and goats dislike, but encourages the growth of grasses that they do like).[228] Second, these trees were not burning, and that makes it very likely that they were deciduous oak, as such trees are not very flammable in the Mediterranean (whereas the other great colonizer of abandoned land, pine, is very flammable, sometimes dying as a result of the fire).[229] Finally, such references indicate that setting fires in fields and forests was common in Byzantine society at the time and that the risks of the fire getting out of control were accepted as rare, reasonable, and beyond the control of humans. After all, the text orders that the culprit be forgiven, provided the wind was not especially strong. Such banality once again hints at a significant sylvo-pastoral element to the Middle Byzantine economy.

Beyond these examples of pollarded and humanized oakwood lots, supplied via the circuitous route of freak accidents involving livestock or fire, it is hard to tell what types of woodland the *Farmer's Law* addresses. Although ancient and medieval Greek has specific terms for different types of oaks, as well as other varieties of woodland species, the *Farmer's Law* neglects to employ them and thus the text remains frustratingly vague, with no explicit references to any other species of woodland trees, be they evergreen oak (*prinos*, πρίνος), pine (*peuki*, πεύκη), fir (*elati*, ἐλάτη), or anything else.[230] Yet such vagueness can actually indicate an even greater prevalence of woodland in the context in which the document was intended to operate. With so much available woodland and fewer people to compete over it, the issue of who owned what might have been relatively unimportant. Indeed, nowhere in the *Farmer's Law* does it even mention marking the trees that one owns, or finding any other means with which to

[228] Grove and Rackham, 227-228.
[229] For deciduous oak not being flammable, see Rackham, "Observations on the Historical Ecology of Laconia," 88. For pine's ability to burn, see Grove and Rackham, 51 and chapter 13 for an extended treatment concerning the topic of fire in Mediterranean landscapes. Grove and Rackham discuss burnings in chestnut pastures. It is possible that that is the case here, but given the absence of kastanea in these sources and of chestnut pollen in many of the studies, I suspect deciduous oak is far more likely.
[230] For these and more examples of Greek terminology for specific trees, see Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 279-296.

delineate private woodland, whereas such issues do occur in the available texts from the eleventh century, a phenomenon discussed in chapters 4 and 6 of this dissertation.

Despite the lack of delineations, privately owned woodland was certainly around. Another entry addresses the problem that occurred when someone "cut down another's trees (κὸπτων ἀλλοτρίαν ὕλην)" in order to make room to sow crops, ordering the cutter and planter to simply forfeit their produce derived from the newly cleared land.[231] Once again, this example reinforces the notion that non-fruit bearing woodland was privately owned, but it also points to widespread availability of woodland given that the punishment was simply forfeiture of the produce and nothing more, despite having cut down someone else's trees.

In another entry, the text addresses the possibility of people setting fire to another person's "forest ("*oros*," ὄρος, translated as "hillside" by Ashburner)" or cutting (κὸπτων) its trees (*dendra*), and consequently orders the culprit to pay twice what the property was worth.[232] Such an entry once again conveys the image of areas of woodland that were poorly marked, but privately owned (although we cannot know exactly how big an individual "forest" might be).

The image of a sylvo-pastoral economy, or at the very least a world with significant woodland and livestock, is reinforced by the tenth-century hagiography of the region. The tenth-century *vita* of Paul of Latros contains numerous references to oaks, acorns, shepherds, and livestock (especially pigs), even presenting its protagonist as a youthful swineherd early in the text.[233] The *vita*'s ninth chapter is notable in this regard because it discusses pigs, acorn-bearing oaks, and an interesting story in which the young Paul and his friend get sick on account of eating these acorns. In the latter story, the young monk Paul and his companion, upon leaving a monastery in order to pursue a hermetic existence, attempt to obtain sustenance from an acorn-

[231] Ashburner, "The Farmer's Law," 100; Ashburner, "The Farmer's Law II," 89 (no. 20).
[232] Ashburner, "The Farmer's Law," 105; Ashburner, "The Farmer's Law II," 92 (no. 57).
[233] *Life of Paul of Latros*, chapter 3.

bearing oak tree.[234] Unlike the pigs who feed off of such trees, the two aspiring hermits became very ill, making it appear that the precocious Pauls' saintly charisma was not accompanied by an awareness of the processes by which such nuts would have been rendered edible for humans. This example could reflect ignorance on the part of Paul but is more likely to reflect that the hagiographer's agenda in writing the story did not place a high priority on the finer details of his subject's diet. After all Paul had allegedly been a swineherd whereas there is nothing to indicate that the hagiographer worked closely with pigs. Such stories go beyond portraying a pastoral economy to emphasizing the importance of the wooded areas in this mode of production. There are other references to the importance of animal protein throughout the work too, including an incident where a goatherd moves their animals up and down the mountain, and there are references to dairy products.[235]

The *vita* of Paul of Latros also includes an intriguing linguistic example of a local sylvo-pastoral economy. When discussing Saint Paul of Latros' experience with ingesting acorns, the hagiographer chose to use the word "prinos (πρίνος)" to designate the tree from which these acorns were gathered.[236] In ancient and medieval Greek, "prinos" is used to specifically describe evergreen oak trees such as the Kermes' oak (*Quercus coccifera*) and the Holm oak (*Quercus ilex*).[237] Deciduous oak trees, on the other hand, are typically called "drus (δρῦς)," although the Greek term "drus" originally could refer to any tree, and only gradually came to specifically mean oaks, and typically deciduous ones.[238] Indeed, Paul's hagiographer also used the word "drus" twice in the text, but the choice to use "prinos" is unusual and highly specific.[239] Indeed, I

[234] *Life of Paul of Latros*, chapter 9, lines 15-16. βαλάνους τὰς ἀπό τῶν πρίνων.
[235] *Life of Paul of Latros*, chapters 3 and 21 of the *vita* respectively.
[236] For πρίνος, see the *Life of Paul of Latros*, chapter 9, lines 9 and 15.
[237] Dunn, 285-286.
[238] Dunn, 288-289. For ancient usage of the word "drus (δρῦς)," refer to the entry in Liddell and Scott's Lexicon.
[239] For δρῦς, see the *Life of Paul of Latros*, chapter 7, line 6, and chapter 9, line 4.

have hardly come across "prinos" in the Athonite archives, nor encountered it in any other Byzantine text for that matter (with the exception of the *Geoponika* with its encyclopedic approach to trees and agriculture). As the pollen sample from Lake Bafa already demonstrated, evergreen oak was fairly common in the area in which Paul of Latros founded his monastery in the centuries in which these events transpired. Thus, the *vita* of Paul of Latros, with its emphasis on herding, pigs, sheep, acorns, and its specific vocabulary about evergreen oak trees, is a snapshot into a rural world in which a sylvo-pastoral economy was central to the rhythm of life. Historians need to take seriously such portrayals of a local landscape and economy and be cautious about overestimating how formulaic such *vitae* are. As Rosemary Morris noted in her work on Byzantine monasticism, Saints' Lives in the middle Byzantine period were often written by disciples of the subject monk and were written for local populations that interacted with the protagonist of the *vita*.[240] Consequently, it made sense for the text to be conversant with local ecology and rhythms of life.

Overlapping chronologically with the *vita* of Paul of Latros, the account of the life of Saint Luke of Steiris in Boiotia shows a world in which animal products were an important element of the local economy, albeit without any direct reference to woodland. Luke's family allegedly derived their wealth from their cattle and flocks of sheep, despite having been refugees from Arab attacks on their previous home, the island of Aigina, which was also a part of the Byzantine Empire. According to the hagiographer, Luke's family incurred the resentment of their neighbours because, supposedly, they owned more animals than them.[241] The young Luke himself tried his hand at tending the family's flocks too.[242] Besides the emphasis on livestock,

[240] Rosemary Morris, *Monks and Laymen in Byzantium, 843-1118* (Cambridge: Cambridge University Press, 1995), 60, 69-70.
[241] *Life of Luke*, 4-5 (chapter 2).
[242] *Life of Luke*, 10-11 and 14-15 (chapters 4 and 7).

Luke's *vita* also places a recurrent emphasis on fishing and grain, along with the already discussed animal products, in essence portraying an agro-pastoral economy.

While explicit reference to woodland is not to be found in the *Life of Luke*, an important implicit reference exists within the text. There is one occurrence in Luke's biography in which the Saint strikes down and then brings back to its senses, to the initial disappointment of an on-looking group of hunters, a deer.[243] Deer generally live on the borders of fields and woodland because they prefer forest edges for their habitat, which indicates a presence of woodland amongst the fields in which Luke and his peers are often located in the text.[244]

Luke's *vita* provides references to the landscape and economy that are different from those of Paul's with its emphasis on oak, sheep, and pigs. However, it is important to note that neither text shows a rural world with export-oriented agriculture such as olive oil, wine, or great fields of cereal cultivated by gangs of reapers. Indeed, they nicely fit the scenario raised in the previous chapter, and in the scholarly works on the postclassical western European and Anatolian landscapes, in which the ancient Roman world's standardized economic triad of cereals, pastoralism, and tree crops (olives, vines, walnuts) gave way to more localized economies that emphasized cereal or animal products.[245] The variation within our tenth-century portraits of local economies indicates that the experience in the Aegean littoral was similar. Indeed, the tenth century, a time when economic growth, along with some clearance of woodland, was allegedly beginning in the Byzantine world, would ostensibly reflect a less wooded world than that which the *Farmer's Law* addressed through the eighth and ninth centuries. Such a shift might help explain the Boiotian landscape in the *Life of Luke* as one with more cereal production and no direct mention of woodland. However, the opposite case may be

[243] *Life of Luke*, 31 (chapter 19).
[244] Tamara L. Whited et al. *Northern Europe: An Environmental History* (Santa Barbara, CA: ABC Clio, 2005), 31.
[245] For western Europe, see Lewitt, 79-80; for Anatolia, see Izdebski, 217.

true as well, with ubiquitous woodland simply being uninteresting and obvious to those who lived in it.

Physical evidence further supports the centrality of sylvo-pastoral local economies in the postclassical Aegean Basin. Remains of ceramic beehives have been found in Corinth, Isthmia, Aigina, and Crete.[246] As mentioned earlier, bees would have worked well in this more pine-laden landscape, and, as Byzantine agrarian historians have already noted, honey is commonly noted in Byzantine texts, such as the *Life of Philaretos*.[247]

The importance of animal products is further reinforced by studies on Byzantine bone remains. Indeed, medieval Romans appear to have made more use of animal protein than their predecessors did, an assertion well supported with newer archaeological evidence concerning the Byzantine diet. Based on bone collagen data collected from five Byzantine sites, three of which were coastal sites and two of which were located inland, it appears that there was a general "Byzantine diet" despite regional variation.[248] Chryssi Bourbou noted that bone collagen data collected from these five sites closely overlap with respect to their isotope values for carbon and nitrogen. These isotope values, according to scientists, indicate that most of the protein in these Byzantines' diets came from animal sources (not fish or vegetables), namely, dairy.[249]

What is particularly interesting about Bourbou's study is that the chronology predominantly falls in the twelfth and thirteenth centuries, a period when *more* land was cultivated in Byzantium and, according to the archaeological surveys, more of the available

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[246] Curta, 212.
[247] Michel Kaplan, *Les Hommes et la Terre a Byzance du Vie au XIe siècle: propriete et exploitation du sol* (Paris: Sorbonne, 1992), 38.
[248] Chryssi Bourbou, "Fasting or Feasting? Consumption of Meat, Dairy Products and Fish in Byzantine Greece. Evidence from Chemical Analysis," in *Animals and Environment in Byzantium (7th-12th C.)*, ed. Ilias Anagnostakis, Taxiarchis G. Kolias, and Eftychia Papadopoulou (Athens: The National Hellenic Research Foundation/Institute for Byzantine Research, 2011), 97-114. These sites were: twelfth to thirteenth-century Nemea, twelfth to thirteenth-century Petras, eleventh to fifteenth-century Servia, eleventh-century Kastella, and sixth to ninth-century Abdera.
[249] Bourbou, 106-107, 112-113.

surface area was devoted to emergent urban settlements and dispersed rural sites that indicate more intensive agriculture. Such a context would have left *less* space for animal grazing, and thus less scope for humans to get their animal protein, than in the period that this chapter discusses. In contrast, the context of the more forested seventh through ninth (and even into the tenth) centuries must have been supportive of a heavy use of animal protein indeed.

A more chronologically suitable body of evidence can be found in the uplands to the east of the Aegean littoral at Sagalassos. Analysis of the lipids within middle Byzantine cooking pots from Alexander's Hill (a fort in the territory of Sagalassos), show a diet that privileged beef, then followed by pork and deer! This diet goes against what many people have considered the typical middle Byzantine diet that supposedly emphasized fish and vegetables, which is the diet that religious texts and artwork typically depict or describe.[250] Studies elsewhere support the findings of Bourbou's and those of the Sagalassos project. For example, the early Byzantine layer at Ephesos indicates that cattle remains comprised a very high proportion relative to other bones, but after the mid seventh century, cattle bones declined and came to represent a mere 7% of finds.[251] Further north, the inhabitants of medieval Pergamon appear to have been very healthy and well built with no arthritis and no problems with their spines or joints, once again indicating a diet rich in micronutrients and protein.[252]

Departing from diet, but continuing to examine the remains of the medieval era, the faunal remains from Agios Stephanos, a settlement located in the southern part of the Evrotas valley and close to the southern shores of Lakonia, reveal interesting changes from Antiquity. The organic remains from this site show a significant increase in the number of horse (and deer)

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[250] Athanasios K. Vionis, Jeroen Poblome, and Marc Waelkens, "Ceramic Continuity and Daily Life in Medieval Sagalassos, Sw Anatolia (ca. 650-1250 AD)," in *Archaeology of the Countryside in Medieval Anatolia*, ed. Tasha Vorderstrasse and Jacob Roodenberg (Leiden: Nederlands Institut voor het nabije oosten, 2009), 191–209.
[251] Koder, "Παρατηρήσεις για τη χρήση βοοειδών στο Βυζάντιο," 29.
[252] Oluş Arik et al., "Recent Archaeological research in Turkey," *Anatolian Studies* 37 (1987): 213-214.

bones in the medieval era, indicating a more pastoral landscape.[253] Across the Aegean Sea, as Bea De Cupere's analysis of the faunal remains at Sagalassos has shown, near the end of late antiquity the proportion of cattle around Sagalassos declined as sheep and goats returned to their pre-Roman levels, with the pig maintaining a steady proportion of the remains.[254] While these studies are few and geographically disparate, they do suggest a pattern in which the Aegean Basin's surrounding local landscapes witnessed increases in animals that inhabit woodland and scrubland during the Middle Byzantine period.

The numerous entries in the *Farmer's Law*, tenth-century hagiography, and studies on diet and faunal remains all support the argument that Byzantines in this period emphasized livestock in their economic routines. With such an emphasis on animal protein, they would have utilized property that was spread out across woodland, interspersed with occasional fields or making use of maintained spaces between trees. The archaeological evidence discussed in the previous chapter that shows middle Byzantine people living in nucleated settlements correlates well with this picture, and thus Byzantines were probably travelling significant distances from their settlements to the environs in which they obtained sustenance and resources. Furthermore, impermanent structures, which often characterize a sylvo-pastoral economy, could also help explain the lack of archaeological sites from this period in the Byzantine Aegean littoral (the lack of sites discussed in the previous chapter).

Evidence of pastoral economies is, like that of localized peasant economies, hard for archaeologists to find. After all, shepherds' summer residences were probably not made with permanent material, giving pastoral economies an invisible presence as far as archaeological

[253] W. D. Taylour and R. Janko, *Agios Stephanos: Excavations at a Bronze Age and Medieval Settlement in Southern Laconia* (London: the British School at Athens, 2008), 507.
[254] De Cupere, 141.

surveys are concerned.[255] In addition, pastoral economies often make use of the physical environment for shelter and for work, thus continuing to frustrate archaeologists in their efforts to locate them. For example, in Lakonia, shepherds often made cheese in caves in the springtime and thus left little trace of their work in comparison to that of agriculturalists who worked in fields next to storehouses and other structures.[256] In the Lakonia survey, only one of the four sites from the ninth and tenth centuries (site P284), was situated in such a way that it could not be for "self-sufficient agriculture," meaning that the other three sites were probably autarchic.[257] Armstrong suggests that perhaps site P284 was used for apiculture, charcoal making, or as a lot for coppiced or pollarded trees, whose fuel could then be brought to Sparta, which was located not far away.[258]

Archaeologists believe that in Boiotia, during the period between 650 and 850, the local inhabitants lived in nucleated settlements.[259] The two notable settlements from this timespan were Erimokastro and THS 14. Interestingly, while Erimokastro was more "populous" than THS 14, its soils and location were inferior for agricultural purposes.[260] In other words, as Bintliff and the survey team suggest, the better location for export-oriented agriculture had a smaller settlement, which can possibly indicate that surplus production for market exchange was now of little importance.[261] Interestingly, while no ceramics from beyond central Greece (with one possible exception) were identified in the remains in Boiotia from this period, fragments of four beehives were found in the medieval site of THS 14.[262] Thus, the landscape of Boiotia in the

[255] Armstrong, "The Survey Area in the Byzantine and Ottoman Periods," 389.
[256] Armstrong, "The Survey Area in the Byzantine and Ottoman Periods," 389.
[257] Armstrong, "The Survey Area in the Byzantine and Ottoman Periods," 356-357.
[258] Armstrong, "The Survey Area in the Byzantine and Ottoman Periods," 356-357.
[259] John Bintliff, "The Archaeological Survey of the Valley of the Muses and Its Significance for Boeotian History," 199.
[260] Bintliff, Howard, and Snodgrass, 166-167.
[261] Bintliff, Howard, and Snodgrass, 167.
[262] Bintliff, Howard, and Snodgrass, 292.

seventh through ninth centuries had large spaces between nucleated settlements, and while archaeology has found little identifiable remains, notable examples do indicate that the local inhabitants may have been working with the local landscape's bees and pines, in addition to not making use of products from outside the region.

The texts and the faunal evidence indicate that the postclassical economy of the Aegean littoral had a significant pastoral component. Such data does not necessarily "prove" that the environment was more wooded than before. After all, animals can and often do obtain their nutrition from fields and meadows. However, given what is known about the pollen that was in the air and the pertinent references in the texts, it is reasonable to propose that these animals were often in woodland too. The wide spaces between settlements promote this idea even further. Some woodland species were managed in the form of pollarded oakwoods (as the *Farmer's Law* indicates), but the majority was probably left to grow without much calculated human interference. Indeed, given what we know about the colonizing abilities of various woodland species in the Aegean littoral, and given the decline in human presence in the landscape after the mid seventh century, we can be sure that this environment was increasingly wooded and that a more pastoral economy operated alongside it.

Using Woodland

The way in which people interacted with the environment in the Aegean littoral between the seventh and tenth centuries indicates an informal, or relaxed, attitude towards the land. Two themes are apparent. First, there was lots of land to go around and people often only sporadically tended or used it. Second, there was a culture of usufruct towards woodland with the Byzantine state supporting such an interaction. While public access to waste and woodland and rights of

usufruct to wood, water, and grazing was not unusual in pre-modern Mediterranean contexts, the prevalence of these phenomena in Byzantium is striking in the sources. Such interaction with the environment needs to be understood if one wishes to obtain a better grasp of Byzantine daily life and the Byzantine economy.

The *Farmer's Law* contains several examples of laws that indicate a high degree of land availability, or, at the very least, little contact between many cultivators and their land. One of the cluster of entries that involves the clearance of someone else's woodland (ὕλην) in order to establish a field for sowing crops, is very telling.[263] Modern parallels from the Greek countryside demonstrate that clearance was laborious and time-consuming. Several days, even months, are required in order to cut the trees down, remove the roots, and then till the ground more than once (typically) in order to be able to plant a crop. Even after all of this work, the first wheat crop was often a poor one.[264] Further harvests on recently cleared land would most likely be excellent, but it requires well over a year for that further harvest to take place. Thus, the scenario in which someone could cut down another person's woodland and turn it into farmland without the owner being aware of this clearance until after the crops were planted, indicates that there was no shortage of woodland around and that people were away from it for long periods of time, certainly long enough to be unaware of its clearance and subsequent planting. Also, it seems unlikely that someone would undertake the difficult work of chopping down trees and removing the wood and then sowing a field if there was a decent likelihood of an owner returning to the felled trees in a relatively short period of time. In that case, we have to be sympathetic to whoever was guilty of this infraction, as they would almost certainly have cleared this woodland

[263] Ashburner, "The Farmer's Law," 100; Ashburner, "The Farmer's Law II," 89 (no. 20).
[264] Halstead, 261-262.

out of ignorance, not realizing that someone owned it. Given these implications, it appears that land was often left alone for lengthy periods and it was not easily identified as privately owned.

Several other examples from within the *Farmer's Law* illustrate a world in which peasants did not monitor their properties closely and were not aware of other people building on or harvesting from their land. One entry mentions cultivators being away from their farm for so long that they do not know if someone else has built a house or vineyard on it.[265] In this case, the example pertains to fields, but the fact that absences were so lengthy is remarkable. Other entries address people sowing and harvesting on land that they do not own (this is qualitatively very different than sneaking onto other people's land to steal fruit from trees or livestock), once again requiring a significant amount of time to reap the benefits of their trespass.[266]

The landscape appears to have been little delineated or marked. Indeed, as W. Ashburner and Paul Lemerle already observed in their respective analyses of the *Farmer's Law*, the fields are open in the text, with no discussion of fences or hedges (the notable exception being mentions of fences that bounded vineyards or household vegetable gardens).[267]

Finally, the *Farmer's Law* portrays a fairly simple material culture, one that was easily recycled and appropriated. An intriguing entry addresses people pulling down another person's houses and hedges and re-using the parts for their own fences or housing.[268] But the ability to do such an act might go beyond highlighting a simple material culture that facilitated less than permanent structures; of course such a possibility meshes well with our relative lack of material culture from the period in the archaeological surveys as discussed in chapter 1. This situation could also point to temporary structures that were inhabited during specific periods when people

[265] Ashburner, "The Farmer's Law," 100; Ashburner, "The Farmer's Law II," 89 (no. 21).
[266] Ashburner, "The Farmer's Law," 97-98; Ashburner, "The Farmer's Law II," 87 (nos. 1, 2, 6).
[267] Paul Lemerle, *The Agrarian History of Byzantium: From the Origins to the Twelfth Century* (Galway: Galway University Press, 1979), 36; Kaplan, *Les Hommes et la Terre,* 58 for the Byzantine fields generally being open.
[268] Ashburner, "The Farmer's Law," 105; Ashburner, "The Farmer's Law II," 93 (no. 66).

were working in the area, such as when collecting nuts or timber from a wood that was a considerable distance from the cultivator's nucleated settlement, or when pasturing their livestock far from their village in certain months of the year. Such temporary structures, located far from the homes of cultivators makes sense given the wide spaces between the nucleated settlements of the period discussed above. This interpretation is speculative, but it is a way to match the text with the lack of physical evidence from the period under discussion.

Given what we know about how prevalent land abandonment was in the seventh- through tenth-century contexts, the above examples may at first appear to indicate that lands that were unexpectedly cleared and worked were perhaps abandoned lands. Indeed, as Byzantine people fled Avar, then Arab, and then Bulgar attacks between the seventh and tenth centuries, they often abandoned their homes and moved elsewhere within the Empire. Land abandonment was distressing to the Byzantine state because such land could not effectively produce taxes, and thus Byzantium's fiscal apparatus often forgave people who had unpaid taxes on account of abandoning land during flight from foreign intrusions. However, if the original owners had not returned after 30 years, the Byzantine state listed these untended lands as *klasmata* and they were made available for sale.[269] The Byzantine state's approach to this situation made sense in an era of "low population" and "labour scarcity" and there was no point in being this generous if there were other people around to cultivate the land.[270] Essentially, the practices of tenth-century Byzantine taxation indicate that there was still a considerable quantity of available land at the time.

However, the land discussed in these examples from the *Farmer's Law* would not have been *klasmatic* land because villagers were actually allowed and expected to grow food on

[269] For *klasmatic* lands, see Neville, *Authority in Byzantine Provincial Society*, 40-41 and 50-51.
[270] Neville, *Authority in Byzantine Provincial Society*, 50.

abandoned properties in order to make up for the lost taxes that the Byzantine government demanded from villages as collective fiscal units. Thus farmers who worked other people's deserted fields would not be penalized for such acts.

This evidence contained within the *Farmer's Law* is obviously fragmentary, but it suggests a rhythm of life that is cyclical beyond the annual timespan, with peasants letting land revert for long periods. Indeed, such a rhythm has at many times characterized relationships between people and the environment in the Mediterranean, who often cleared an area to sow crops but did not transform it into a permanently cultivated plot. Rather, as Richard Hoffmann notes in his recent environmental history of medieval Latin Europe, in times with more land to go around the Mediterranean's inhabitants were more likely to periodically clear trees and use the land for agriculture only to let it become overgrown again.[271] This particular strategy is excellent for subsistence farming because it gives the soil a chance to restore itself. However, it requires land availability, and consequently has not often been feasible in the Mediterranean since the arrival of agriculture.

But in the context of the Aegean littoral during the Byzantine "dark ages" it was feasible. The Byzantine peasants who inhabited the world of the *Farmer's Law* lived in a landscape that was not clearly marked or delineated, and included vast swathes of territory that was either abandoned or rarely visited by its owners. This world of old fields left untended and quickly overgrown, was supposedly available for other people to work. The inability to distinguish between an abandoned lot and a parcel of land left to provide vegetative cover for grazing animals could easily have led to many of the misunderstandings and scenarios presented in the *Farmer's Law* and described above.

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[271] Hoffman, 133.

Of course, working on common land or even another person's land was not necessarily a problem because the right of usufruct was a recurring prerogative in the Byzantine countryside. One entry from the *Farmer's Law* sheds light on people going out of the village's bounds into land that no one clearly owned or claimed in order to tend to a tree (δένδρον).[272] This entry of the *Farmer's Law* specifically addresses people nurturing trees on lands that have not yet been partitioned and allotted by villagers, thus being held in common or simply existing out of the bounds of the village. Eventually such land might be partitioned in order to expand fields or to provide property for a growing population to clear and work. The law emphasizes that this cultivated tree, even if the property on which it sat was ultimately allotted to another cultivator, is to remain the property of the person who originally tended to it.[273] Hence, a peasant could plant and nurture a tree in the woodland that surrounded the village, and maintain the right to gather nuts and firewood from it after the ground in which it was rooted was assigned to a neighbouring peasant's ownership. As in many of the *Farmer's Law*'s entries that discuss arboreal matters, the term for tree in this entry is "dendron (δένδρον)," so it could be any type of tree, although in this case, one would suspect it was a nut-bearing variety such as an oak or perhaps a chestnut given that its presence was in woodland (apples and walnuts do not succeed in woodland and olives are simply not called δένδρον).

Indeed, flexible ideas concerning the use of property were probably the norm among this poorly documented segment of the medieval Roman population. As Angeliki Laiou observed in the tenth-century legal novels of the Emperor Romanos I Lekapenos (r. 920-944), partible inheritance led to situations in which cousins mutually used property originally owned by their

[272] Ashburner, "The Farmer's Law," 102; Ashburner, "The Farmer's Law II," 90 (no. 32).
[273] Ashburner, "The Farmer's Law," 102; Ashburner, "The Farmer's Law II," 90 (no. 32). ἐὰν δένδρον νατράφῃ ὑπό τινος ἐν τόπῳ ἀμερίστῳ, καὶ μετὰ ταῦτα μερισμοῦ γενομένου ἔλαχεν ἐκ μερίδος ἄλλῳ, μὴ ἐχέτω τῆν ἐξουσίαν τοῦ δένδρου εἰ μὴ ὁ ἀναθρέψας αὐτὸ μόνος. εἰ δὲ καταβοᾷ ὁ τοῦ τόπου κύριος ὅτι ἀδικοῦμαι ὑπό τοῦ δένδρου, δότωσαν ἀντὶ τοῦ δένδρου δένδρον ἕτερον τῷ ἀναθρέψαντι αὐτὸ καὶ ἐχέτωσαν αὐτὸ.

grandparents, with no concern about any one person owning or having exclusive rights to it.[274] What makes this particular example even more intriguing is that it pertained to fields. Woodland would have been even harder to partition or delineate in order to reflect private ownership. Hence, it should not be surprising that casual ideas of land use as opposed to clear notions of ownership would be even more likely in the context of the seventh and eighth centuries and amongst a largely illiterate peasantry.

Some of the earliest Athonite monastic archival material provides information regarding the public use of land, including woodland, in the mid-tenth century. For example, the second oldest surviving document in the Athonite monastery of Lavra's collection, written in 941, addresses an episode in which an imperial official named Thomas (a tax collector, and a holder of the imperial titles of *protospatharios* and *asekretes*) carried out a sale of *klasmatic* land to a monastic official named Euthymios.[275] In this instance, of the 1800 modioi of *klasmatic* land that was purchased, 600 were classified as "chersos (χέρσος)," which can be translated as "dry," "barren," "waste," or "without a crop on it."[276] The document states that no one who possessed land on Pallene (the text's label for the peninsula of Kassandra, which is the first finger on the Chalkidike peninsula) could deny Euthymios' rights to gather water (hudor or υδορ), firewood (dadion or δαδιον), wood (xylon or ξυλον), or grazing (boskin or βοσκην).[277] At the same time, Euthymios could not deny anyone the right to gather the same on his property, including his "fields" that were not planted.[278] Such a situation is remarkable for several reasons. First, Kassandra is roughly 70 kilometers lengthwise from its northern to its southern end. The

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[274] Angeliki E. Laiou, "Family Structure and the Transmission of Property," in *A Social History of Byzantium*, ed. John Haldon (Malden, MA: Wiley-Blackwell, 2009), 71.
[275] *Actes de Lavra*, p. 92-94, no. 2.
[276] *Actes de Lavra*, p. 92-94, no. 2, line 13.
[277] Note that the words are not accented in the Lavra archive's copy of the text.
[278] *Actes de Lavra*, p. 92-94, no. 2, line 19.

arrangement for people who live within that distance to have the right to use one another's land to obtain such materials is truly remarkable and indicates a lot of movement. Second, the "fields" containing firewood and wood indicate that these properties were heavily wooded, even if cereals were planted on much of them. Today, much of the peninsula is covered in trees, it is hilly, and large sections of the terrain are difficult to till and farm. The Byzantine document's discussion of fields needs to be considered carefully, and one must not assume that these were flat and uniformly sown with cereal.

That same year (941), Thomas Basilikos, once again acting under imperial order, sold *klasmatic* lands to a figure called Nikolaos, and once again stipulated that wood, firewood, and fodder were to be common to everyone who held land on the Kassandra peninsula.[279] In another early tenth-century monastic archival document, the Emperor Leo VI (r. 886-912), through his officials, demanded that the monastery of Kolobou and the neighbouring villages and monks all had to share *klasmatic* lands near a property called Kamena.[280] This order was supplementary to the imperial effort to address a grievance between Kolobou and its neighbours, but the inclusion is important and further emphasizes the imperial expectation that *klasmatic* lands were open to all for usufruct.

The *Farmer's Law* and a handful of early tenth-century monastic archival sources indicate the existence of a mentality that embraced usufruct rights, with the imperial government emphasizing such privileges in its proclamations to the monastic communities of the early tenth century.

The various local landscapes that surrounded the Aegean Sea underwent major changes around the seventh century. As Byzantine people were fewer in number, lost their connections to

[279] *Actes de Lavra*, pp. 96-97, no. 3, lines 11-13.
[280] *Actes du Prôtaton*, pp. 181-185, no. 2. For the relevant text, see page 185, especially lines 52-54.

interregional exchange networks, and withdrew to nucleated rural settlements, woodland, especially pine and oak, took over abandoned fields. But Byzantine people appear to have worked with this new ecological arrangement, placing greater emphasis on obtaining animal protein from it. Such a reality accompanied more fluid relationships with the land and probably a less laborious existence as far as cultivation was concerned (although it was still laborious, probably with frequent long-distance walks to far flung cereal fields or grazing areas). I do not wish to propose that Byzantine peasants in the first postclassical centuries lived in a tranquil canopied wooded world with no fields and no exertion. Rather, I wish to emphasize that their environment possessed more woodland species than before, probably appearing in many cases as scrubland with clusters of shrubby evergreen oak as opposed to tall deciduous trees. In addition, animal protein played a bigger role vis-à-vis cereals and market-oriented agriculture than it had before the seventh century. As far as textual and archaeological data are concerned, much of this chapter's chronological interest (the latter seventh, eighth, and ninth centuries) remains in darkness. The notable exception to the above statement is the *Farmers Law*, which, when read against the environmental data and the nucleated settlement patterns detected in the Lakonia and Boiotia surveys, largely agrees with this chapter's image of an environment in which Byzantines lived among more woodland and placed great emphasis on livestock and dairy. The "darkness" slowly subsides once we reach the tenth century, when hagiography and the first Athonite texts do little to challenge the model proposed here, even though they were the product of a tenth-century context in which *some* clearance and re-working of the vegetative cover was taking place, and thus, if anything, their collective image shows a less woodland-covered version of the landscape that I have proposed here. The studies on Byzantine diet only reinforce the point, indicating that even in the twelfth century when the economy had taken off, Byzantines

consumed plenty of animal protein derived from animals that would almost certainly have made use of wood- and scrubland.

The dynamics between people and trees are a dialectic, although in this case the arboreal actors had more influence than they have often had when living alongside humans. Trees, especially oak and pine had more opportunity to advance in this period than before. Indeed, Byzantines' decreased attempts to control their landscape in this era were partly a consequence of the relations within their society, which witnessed a relative lack of a surplus-demanding elite. As John Haldon suspected in his work on the mode of production in postclassical Byzantium, it was not until the late eighth century that a new social group that could extract and redistribute resources emerged in the Byzantine Empire, and it took even longer for this group to truly become involved in altering the landscape and economic relations in a substantial way beyond the Anatolian Plateau.[281] Essentially, it took at least two hundred years for a group of Byzantines to begin economic intensification and to re-organize elements of the landscape around the Aegean Sea. In the seventh-century Aegean littoral, woodland species such as evergreen oak worked much more quickly.

[281] John Haldon, *The State and the Tributary Mode of Production* (London and New York: Verso, 1993), 195-196.

Chapter 3
The decline of the olive in Middle Byzantium

Olea (the olive) is not a timeless feature of the Mediterranean, but an object whose fortunes changed in various transitions throughout the ancient, medieval, and modern periods. At times it has been a key feature of trade and culture, and required massive numbers of people to mobilize themselves in order to harvest its fruit, process the gathered drupes, and move and consume the resultant oil. It fared especially well in ancient Athens, in the Roman-dominated Mediterranean, during the economic growth of the High Middle Ages, and in the current context that connects the Mediterranean via a globalized economy to several postindustrial countries in which a "Mediterranean diet" is fashionable. However, it has also been much less important in various Mediterranean economies at different times, a situation that may surprise some readers. For example, recent scholarship has shown that *Olea*'s current fortunes in the Mediterranean are very much a product of the climatic and global economic conditions that arose in the early modern period.[282] A conceit of this chapter is that the *Olea*'s comings and goings reflect broader changes in economies and landscapes. Such changes in pre-modern contexts, such as that of Byzantium, are often hard to access via the limited textual record. However, as discussed in this dissertation's introduction, olive trees, with their prolific and noticeable pollen (it survives very well in fossil pollen studies), exceptionally long lives, and the prominent archaeological remains of the associated infrastructure (olive crushers, presses, and amphorae), enable another level of analysis of such shifts in the *longue durée*.

This chapter uses the olive as an object via which we can examine transitions in Byzantine land use, material culture, and economy in the Aegean littoral's environment between

[282] Faruk Tabak, *The Waning of the Mediterranean, 1550-1870: A Geohistorical Approach* (Baltimore: The Johns Hopkins University Press, 2008), 299.

the seventh and tenth centuries. It will argue that the olive's importance was minimized in the Aegean littoral between the seventh and tenth centuries, contrasting markedly with its prominent status in that region during Late Antiquity. This chapter will establish *Olea*'s reduced role by using data from fossil pollen, and by examining how Byzantines wrote about the fruit and its oil during this particular period. After demonstrating this decline, the chapter will then propose various explanations for why the olive appeared so absent in the fossil pollen record, reasons that include its less useful role vis-à-vis the subsistence economy of the Middle Byzantine context, arguing that the tree's botanical features and product did not deserve as much attention from peasants who had little in the way of outlets with which they could distribute the oil. In essence, people cultivate the olive, ingesting little of its calories, but exchanging the oil for money or other products. This arrangement ceases to work when the scope for moving the oil and the demand for it have declined, and thus people redirect their labour to obtain calories for direct consumption. Finally, the chapter will examine some ways in which Byzantines in this particular period, with their changed priorities and possibilities for economic pursuits, altered the ways in which they worked with *Olea*, sometimes utilizing the tree, but in a very different fashion than that of their ancestors. Before pursuing the argument outlined above, this chapter will briefly explain the basic characteristics of the olive tree and how people work with it in a preindustrial context in order to familiarize the reader with such work and how this work can reflect cultivators' choices.

While several scholars of the ancient world have demonstrated the profound importance of the olive in the Classical Greek and ancient Roman context's economic, social, and cultural history,[283] little has been written about the olive in Byzantium, at least not in a systematic way.[284]

[283] For the importance of the olive and its oil in the Eastern Mediterranean during Late Antiquity, see Michael Decker, *Tilling the Hateful Earth: Agricultural Production and Trade in the Late Antique East* (Oxford: Oxford

Notable scholars of Byzantine economic and agrarian history have presented much of the available textual references to the olive in Byzantine sources, and a handful have observed its rarity in those texts, even implying a diminished presence of the species between the ancient and late medieval Aegean littoral. Michel Kaplan's work, which pointed out the alleged presence of olives in Anatolia's interior in the ancient world and subsequent nonexistence around the year 1000, suggests that such a change might indicate historical climatic shifts.[285] Kaplan also noted that artistic depictions of the olive are relatively few in Byzantium, certainly falling behind the fig, but he did not expand on this important observation.[286] If one looks at the entry for the olive in the *Oxford Dictionary of Byzantium*, they will read that the olive was common around Smyrna (a city on the western coast of Anatolia) and the Southern Peloponnese, but the examples are derived from the twelfth and thirteenth centuries, leaving the period that this chapter treats completely blank.[287] The same entry also notes that the olive was rarely mentioned in Athonite monastic archives, that it was absent in the *Farmer's Law*, and that the few fiscal documents, known as *praktika*, that tell us about peasant landholdings portray such families as typically

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University Press, 2009); Jairus Banaji, *Agrarian Change in Late Antiquity: Gold, Labour, and Aristocratic Dominance* (Oxford: Oxford University Press, 2001). For the centrality of olive oil in the ancient Roman economy, particularly from Spain and North Africa, see David Mattingly, "First fruit? The olive in the Roman world," in *Human Landscapes in Classical Antiquity*, eds. Graham Shipley and John Salmon (London and New York: Routledge, 1996), 215-253; Robert Bruce Hitchner, "Olive Production and the Roman Economy: the Case for Intensive Growth in the Roman Empire," in *The Ancient Economy*, ed. Walter Scheidel and Sitta Von Reden (New York: Routledge, 2002), 71-83. David Mattingly has published extensively on the topic, and readers who want to know more about ancient olive oil presses should refer to David Mattingly, "Maximum Figures and Maximizing Strategies of Oil Production? Further Thoughts on the Processing Capacity of Roman Olive Presses," in *La Production du vin et de l'huile en Mediterranée*, eds. M.-C. Amouretti and J.-P. Brun (Athens: École française d'Athènes, 1993), 483-498. For oleiculture in ancient Athens (and an excellent extended treatment of oleiculture in general) see Lin Foxhall, *Olive Cultivation in Ancient Greece: Seeking the Ancient Economy* (Oxford: Oxford University Press, 2007).

[284] For example, one scholarly work in an edited volume discussed the use of Byzantine olive oil in medieval Russia, but the work does not examine the olive in depth within Byzantium itself (nor does it claim to). See Thomas S. Noonan and Roman K. Kovalev, "Prayer, Illumination, and Good Times: The Export of Byzantine Wine and Oil to the North of Russia in Pre-Mongol Times," in *The Expansion of Orthodox Europe: Byzantium, the Balkans and Russia*, ed. Jonathan Shepard (Aldershot: Ashgate, 2007), 161-184.

[285] Kaplan, *Les Hommes et la Terre*, 15-16.

[286] Kaplan, *Les Hommes et la Terre*, 35.

[287] See the entry for "olive" in Alexander P. Kazhdan et al., eds., *The Oxford Dictionary of Byzantium*, 3 vols. (Oxford: Oxford University Press, 1991) 3: 1522-1523.

owning between a mere 2 and 6 trees and that these texts are almost exclusively products of the twelfth and thirteenth centuries.[288] Indeed, the absence of olive groves in Athonite documents has been a recurring theme when Byzantine historians refer to the tree and its fruit,[289] while another scholar similarly noted that references to oleiculture were diminished in the Peloponnese during the same period.[290]

Additionally, Byzantine economic historians have noted that there are a mere three references to the price of olive oil in Byzantium between the "dark ages" and the end of the Middle Byzantine period: specifically from 743 AD; an unspecified date in the late ninth century; and 1201. This paucity is remarkable given the many surviving Byzantine references to the prices of cereals and wine.[291] While these three prices are all high relative to those for wine and cereal across the same period, they hardly provide a consistent vision of what olive oil's availability or uses were.[292]

Thus, scholars of Byzantine economic history have acknowledged that the olive was both a profitable crop for landowners in the eleventh and twelfth centuries,[293] and that it was not terribly common in the sources, some even implying (but not arguing) that *Olea*'s role might have been smaller in the Middle Byzantine period than it had been beforehand. Such suggestions are important, but scholars have not expanded on them with further analysis. This chapter intends to fill this historiographical gap by pursuing the olive's history in greater depth. Indeed, I

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[288] "Olive" in Kazhdan et al., 1522-1523.
[289] Joachim Ath. Papaggelos, "Ελαία και έλαιον στη μεσαιωνική Χαλκιδική," in *Ελιά και λάδι: τριήμερο εργασίας Καλαμάτα, 7-9 Μαΐου 1993* (Athens: Politistiko Technologiko Hidryma ETVA, 1996), 178.
[290] Ilias Anagnostakis, "Η ελαιοφόρος Πελοπόννησος στους μέσους βυζαντινούς χρόνους," in *Ο δε τόπος... ελαιοφόρος: Η ραρουσία της ελιάς στην Πελοπόννησο*, ed. Eleni Beneki (Athens: P.I.O.P, 2007), 61.
[291] Cécile Morrisson and J.-Cl. Cheynet, "Prices and Wages in the Byzantine World," in *The Economic History of Byzantium from the Seventh Through the Fifteenth Century*, ed. Angeliki E. Laiou (Washington D.C.: Dumbarton Oaks Research Library and Collection, 2002), 838.
[292] For the price of olive oil being high relative to wine, see Morrisson and Cheynet, 838.
[293] Harvey, *Economic Expansion in the Byzantine Empire,* 144-145. Harvey acknowledged that the olive is an "ideal" crop for a "large landowner," and that it requires significant amounts of labour and money to establish an olive grove. Harvey's work, concentrating on the period between 900 and 1200, did not hint at a diminished presence of *Olea* in the centuries preceding the period that his work discusses.

propose that one can partially explain Kaplan's observation that the olive was less common than the fig in Byzantine artwork by demonstrating that the olive was nearly absent in much of the Empire between the seventh and tenth centuries.[294] The rest of the chapter will elaborate on this assertion, arguing that the olive was indeed harder to find in the Middle Byzantine Aegean Basin, and that this scarcity was reflective of the changed economic priorities of the region's inhabitants in the altered circumstances of the period.

What the Olive Tree Does and How People Work with it

After an initial analysis of the tree's botanical characteristics and its product, one wonders why anyone would not cultivate the olive. After all, it is an incredibly productive tree in that its fruit provides so much for those who tend to it. Those who ingest olives or their oil receive significant calories, healthy fats, vitamins A and E, and even Calcium.[295] And in the pre-modern Mediterranean, olive oil's uses extended beyond food preparation, and comprised a vital role in the production of perfume, soap, fuel for lamps, moisturizer, and as a component in numerous medicinal practices.[296]

The olive tree is also a hardy and tenacious species, and its resilient characteristics make it an excellent choice of crop for cultivators in a variety of scenarios. It is drought-resistant, and thus the olive is able to grow in many places in which farmers can grow little else. Indeed, it only needs 150 mm of rain a year, which is a smaller requirement than the thirstier vine (which is itself fairly low maintenance in its water requirements) or the majority of cereals, thus making

[294] Other scholars, such as John Haldon and Adam Izdebski, have noted that oleiculture was (generally) not as common in Byzantium's Anatolian possessions during this same period. See chapter 1.
[295] Mattingly, "First fruit? The olive in the Roman world," 223.
[296] Mattingly, "First fruit? The olive in the Roman world," 224.

Olea especially suitable for farming in the arid Mediterranean.[297] Ancient cultivators were aware of this tree's ability to survive and bear fruit in soils that left little potential for other crops, an awareness evident in the *Geoponika*, a tenth-century compilation of ancient agrarian treatises.[298] Finally, the tree is durable, being able to live for several centuries, and it possesses a remarkable ability to regenerate itself when damaged.

Despite the hardiness of *Olea*, its ability to thrive in soils that most other crops will not survive in, and its wonderful product, the olive tree possesses certain characteristics that do not make it a perfect fit for all cultivators, particularly small-scale ones. Interestingly for any historian concerned with social and economic history, these very same botanical characteristics that limit the olive's appeal to smallholders do little to reduce the its role as an excellent crop for large-scale landowners. First, it can take as long as twenty years for the olive tree to "bear significant fruit," although five to eight years is the timespan in which many trees produced from cuttings can start to bear some olives.[299] Even if the tree matures quickly for its species, it takes a while for *Olea* to become productive as far as humans are concerned, and five years (at best) is still a long time in the eyes of a Byzantine peasant who could not expect to remain in the same locale for long given the insecure defences of the postclassical period, and could not afford two bad years of harvests in a row, and thus would be discouraged to wait a minimum of five years for a relatively meager first harvest. There were quicker and surer ways of obtaining calories or profits.

A further problematic feature of this tree, as far as the peasant cultivator is concerned, is that it usually bears fruit every other year and is rather unpredictable in its yields.[300] Such a

[297] Mattingly, "First fruit? The olive in the Roman world," 214.
[298] Decker, 152. See *Geoponika* 2.8.3
[299] Mattingly, "First fruit? The olive in the Roman world," 219.
[300] Foxhall, 78; Mattingly, "First fruit? The olive in the Roman world," 220.

characteristic is not a problem for a large-scale cultivator who seeks surplus for the market or autarky for their large household and embraces "opportunism," but it is a problem for the small-scale cultivator that seeks subsistence and "security."[301]

Like most crops, the olive requires a lot of labour during the harvest, which can occur at any point between November and January, depending on the cultivator's inclinations.[302] The longer one waits to pick the olives, the more oil will be present in the fruit for extraction although there is a penalty insofar as the oil will be more acidic and possibly less desirable with respect to taste.[303] The gathering of olives can be accomplished by beating the fruit from the tree with the use of sticks, or by picking the fruit off the branches by hand, or simply gathering the fruit that has fallen on its own accord.[304] The pace at which people can pick olives varies of course, although estimates put the range between five and fifteen trees a day.[305]

If the olive harvest (to a significant degree) occurred in November and December, then it was competing for people's attention at the same time that cereal and legumes, both of which were very common in the Byzantine diet,[306] were typically plow and sown.[307] It was also the time of year that vines were tended (both manured and pruned) and vines remained notable in Byzantium throughout this period.[308] This timing is not a problem for the landowner of a significant estate who can assign a portion of a big workforce of seasonal wage labourers, or tenants, or slaves, to gather the olives, while another group is assigned to plow or sow the grain and legumes. But such timing is inopportune for a peasant family that has very limited labour

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[301] Foxhall, 37-38.
[302] Foxhall, 78 and 127.
[303] I thank Professor Paolo Squatriti for pointing out this important distinction to me. See also, Lyle, 299.
[304] Foxhall, 126-128.
[305] Decker, 157.
[306] Kaplan, *Les Hommes et la Terre*, especially pages 25-28. Kaplan sees cereals as very important in the Byzantine diet, with legumes playing a smaller, but still important, role.
[307] Foxhall, 78 and 127.
[308] Kaplan, *Les Hommes et la Terre*. Viticulture is discussed throughout the work and the Byzantine documents that refer to vineyards are too numerous to be discussed here.

resources and, as a consequence, would have to choose which crop to possess as it would be very difficult to harvest both in any substantial quantity. In January however, agriculture was not pressing and the olive would have had a much easier time maintaining peoples' attention.

Like many other fruit and nut trees, the olive typically needs relatively little attention throughout the rest of the year, with the harvest time being the only period that consistently requires intensive labour. But there are some notable exceptions to the above rule. The first is for a young tree, which requires plenty of care over the course of its first few years (which as previously stated are unproductive). This includes lots of watering during the summer, which can be laborious in the dry Mediterranean, especially in the absence of nearby cisterns, wells, or irrigation, thereby necessitating filling a receptacle with water and carrying it to the young trees, sometimes a notable distance.[309] Additionally, significant expertise regarding how to graft and transplant the young tree is required to set up a new grove. Thus the cultivator is putting in a noteworthy time investment, and needs some practical knowledge, in order to propagate a tree that will hopefully be productive in the long term. Once again, large-scale landowners have less reason to worry about such a situation, as they can devote a portion of a large labour pool to care for the young trees, knowing that in the long term their investment will be rewarded with a tree that produces lots of fruit for oil and that will need relatively little labour aside from harvest time. But for the peasant family, such a demand on their time would be a risk and a burden, and it would also require someone to be knowledgeable regarding the tree's care. The second exception to the general rule that the tree needs little labour outside of the harvest is that old trees

[309] Signe Isager and Jens Erik Skydsgaard, *Ancient Greek Agriculture: An Introduction* (London and New York: Routledge, 1992), 162 provides a good illustration of the seasonal schedule of these activities; see also Foxhall 112 for these timelines.

require a noteworthy amount of pruning.[310] However, the latter example is not necessarily a problem for a peasant family, as the possession of venerable fruit-bearing trees means that significant calories were provided (and, provided the market was there, a significant monetary profit) and would make the labour more worthwhile.

The process by which *Olea*'s fruit is extracted is, generally speaking, fairly consistent. Essentially, people must crush the gathered olives in order to turn them into a paste. Once a paste is available, people press this paste in order to squeeze out the oil. However, while the sequence of actions is similar across contexts, the specifics of crushing and pressing have varied widely historically. These various and diverse methods for crushing and pressing shed light on people's priorities and the scope of their economies. First are the crushers: they can exist in various types, ranging from the highly sophisticated "*trapetum*" type, which consisted of a stone basin with two millstones that were snugly fitted into it, to a very simple mortar and pestle type of crusher. It is possible to crush olives without any specialized equipment at all: some scholars have claimed that one could even use heavy sandals to stomp on the gathered fruit.[311] The differing types of crushers reflect different levels of output and investment. Thus, the *trapetum* type crusher, while very efficient, requires volcanic rock, metal components, and technical know-how in order to make it; essentially, stonemasons and ironworkers would be required for its production.[312] In fact, the *trapetum* was only used for olive crushing (they had no other function), and definitely indicates the presence of oleiculture in the archaeological record.[313] In contrast, the simple "roller and bed" crusher consisted of a large stone cylinder that would roll over the olives atop a

[310] Foxhall, 125. Decker, 156 notes that pruning was done several times a year and cites the *Geoponika* (9.12 and 3.5.3) for evidence of pruning three times in the year, namely, in the autumn, spring, and after the harvest.
[311] Isager and Skydsgaard, 60-61 proposed this possibility. However, Foxhall, 180, disagrees.
[312] Isager and Skydsgaard, 60-61. For requiring stonemasons and ironworkers to fashion a *trapetum*, see Foxhall, 178.
[313] Foxhall, 166.

relatively flat and smooth surfaced rock. This type of crusher is less efficient than the *trapetum*, but cheap and easy to make. It also can be used for other purposes, such as packing down grain-threshing floors, thus adding to its utility for smallholders who pursued a variety of types of cultivation.[314] An even less sophisticated type of crusher was the mortar-and-pestle, whose use was a very time-consuming and inefficient method of crushing olives.[315] However, it was a simple tool and it could be serviceable for peasants who were simply trying to meet their own alimentary desires or a want for oil that could light a lamp at night. Essentially, crushers vary from small-scale types that provide very little paste but that are simple to fashion and can serve more than one purpose to more elaborate and productive crushers that yield considerable quantities of paste but can only fulfill the role of crushing olives. The former can be archaeologically invisible while the latter are conspicuous in excavations and surveys.

After crushing, the olive pulp is placed into cloths or bags or baskets, and these receptacles are stacked in a press bed. Just like crushers, presses varied in their sophistication and efficiency. Essentially, the olive paste was placed beneath a beam, and this beam would be pressed onto the paste by means of pressure applied to the end of the beam. In order of increasing technological sophistication, this force was driven by weight, then by pulleys and windlasses, and the most advanced version of all lacked the beam, and simply relied on a screw to press the stacked olive mush.[316] Regardless of the specific press, a mixture of oil, water, and toxic juice flowed out of the press bed. In turn, these liquid ingredients are left in a vat to separate from one another, the oil eventually removed off the top by means of a ladle or more

[314] Foxhall, 179-180.
[315] Foxhall, 179.
[316] For a succinct treatment of olive pressing in the ancient world, see Decker, 158-159. For more detailed treatments of this complicated topic, see Foxhall, 134-139.

complicated mechanisms. Presses are harder to find and date in the archaeological record than crushers are, and sometimes these presses could be used to press grapes too.[317]

Thus, olive cultivation is a form of agriculture that can range considerably in size. It would be a slight exaggeration to say that oleiculture can be considered as an antithesis of the peasant mode of production (a theoretical "mode of production" outlined by Chris Wickham and discussed in the first chapter of this dissertation), however, it is an excellent crop for powerful landowners seeking autarky for their extended households or profit from export. Olive oil is very preservable, taking at least two years to go rancid[318] (In fact, it can act as a preservative).[319] Such preservability allows one, to a certain degree, to speculate with oil, waiting for opportune times to sell any surplus.[320] At the same time, a wealthy household could make use of lots of oil via conspicuous consumption, and thus they did not need to be as concerned with a failure to move a surplus in the face of a good harvest and glutted market.[321]

Peasant families certainly can pursue modest olive oil production for their own dietary desires, provided that they are willing to do the very tedious work of crushing the olives with a large mortar and pestle and squeezing out the oil by themselves, or if there is a press nearby that they can make use of, often by means of barter or monetary payment. But it does not make sense for a peasant family to devote too much of their land to olive trees if there is not a readily available market for the resultant olive oil. As a tree that fruits biennially, a bad harvest can mean that one will wait quite a while for another round of olives. One cannot live off of olive oil alone (it does not provide any protein or sugars or vitamins B or C), and so it has to be cultivated

[317] See Foxhall, 138-139 and 183-184.
[318] Mattingly, 225.
[319] Tabak, 111.
[320] For examples from the ancient world, see Peregrine Horden and Nicholas Purcell, *The Corrupting Sea: A Study of Mediterranean History* (Malden, MA: Blackwell Publishing, 2000), 211-213.
[321] Foxhall, 79-80.

alongside other sources of food, which requires a peasant family to delineate the focus of their labour carefully. Thus, olive cultivation works best in a context in which bulk exchange is facilitated and there is available labour, supporting infrastructure, and technological expertise for more advanced presses and crushers.

The Olive in the Ancient and Modern Contexts

In order to fully appreciate the mutation of the relationship between people and the olive in the middle Byzantine Aegean, one must briefly observe what the relationship looked like beforehand in the ancient Greek and Roman period and also later on in the early modern and contemporary landscapes.

The demand for olive oil in the ancient Mediterranean was truly colossal. Lin Foxhall, who made a comprehensive study of the olive in the context of ancient Athenian economy and culture, argues that a wealthy household from that city would have used 25-35Kg (or 55-77lbs) of oil per person per year for food.[322] As far as oil for bathing was concerned, it was estimated that within a wealthy Athenian household, the average woman would have used 1.5 liters of oil per year for bathing. This amount apparently pales in comparison to the average man in the same household, who, thanks to ancient Greek cultural and social practices, would have used 5-10 liters of oil per year for bathing.[323] Lighting required a considerable amount of oil too; a rough estimate of consumption for lighting in a wealthy household from the city of Athens was 90 to 110 kilograms of oil a year. Such estimates obviously predate the period that this chapter discusses by several centuries, but they do address olive oil demand within the culture of the Greek *polis*, an entity that witnessed remarkable continuity through the Roman era. Beyond

[322] Foxhall, 86.
[323] Foxhall, 86.

private households, one must consider the role of public demands. Any self-respecting Hellenic polis (which most cities in the Aegean Basin were, even in the Roman era) needed a gymnasium, which required a considerable and consistent outlay of olive oil.[324]

While *Olea* was popular in ancient Athens and probably elsewhere in the ancient Greek world, Roman hegemony provided an even greater economic, social, and political framework for promoting oleiculture. As Robert Hitchner noted in his treatment of oleiculture in the western provinces of the Roman Empire during the Principate, the Roman Empire's security and improved roads "facilitated" olive oil transport and distribution.[325] After all, the Roman world (as discussed in this dissertation's first chapter) consisted of cities with substantial urban markets that facilitated the distribution of olive oil, and big urban populaces that used the slippery substance for numerous purposes. The Roman government even reinforced this level of consumption well into Late Antiquity: in an edict from 397, the *Theodosian Code* mentions olive oil, along with grain, as a regular tribute for the city of Rome.[326] Not surprisingly, the estimates of consumption for the Roman era, a period in which olive oil, along with wine, were seen as markers of Roman culture, are considerable.[327] The archaeologist David Mattingly suspects that the average person in the ancient Roman world (not just elite people from Athens) consumed or utilized 20-50 liters (5.28 to 13.2 gallons) of olive oil a year.[328] The greatest testament to this demand is the city of Rome's Monte Testaccio, a mound of broken pottery from amphorae that is thought to represent a 6,000,000,000 Liter consumption of oil over 2 centuries.[329] Given that this

[324] Peter Thonemann, *The Maeander Valley: A Historical Geography from Antiquity to Byzantium* (Cambridge: Cambridge University Press, 2011), 55.
[325] Hitchner, 74.
[326] *Theodosian Code*, 14.15.3 (page 416 of the edition by Pharr).
[327] Decker, 149. Decker aptly labels olive oil and wine "cultural staples" of the Roman world.
[328] Mattingly, "First fruit? The olive in the Roman world," 223.
[329] Horden and Purcell, 212.

consumption was for one city (although Rome was without doubt a special case), the Mediterranean basin as a whole must have had a truly prodigious appetite for oil.

Gargantuan production met this demand. Mattingly persuasively demonstrates that the ancient Roman elite actively embraced the olive as an investment on a grand scale and that they made the crop a focus of their large estates in provincial contexts such as those of north Africa and Spain, regions from which industrial-scale presses have been found.[330] Surveys from Roman Africa showed that the export of olive oil was a massive business between the third and fifth centuries, with intensive cultivation of the olive and numerous presses in close proximity to one another. Some of these presses in Roman Africa could squeeze out 10,000 liters of olive oil in a year.[331] Mattingly argues that such presses, which were very expensive, numerous, and large, were not for meeting the needs of domestic consumption but were for bulk exchange. He noted that such exchange could be sale, but it could also consist of gift exchange between Roman elite households, or redistribution.[332] Such findings led him to argue that the Roman elite in the region had a clear objective of surplus production.[333]

This impressive scale of olive cultivation and olive oil distribution had massive implications for ancient Roman society, with people being involved in cultivating the olive tree, assembling and working the crushers and presses, producing amphorae, loading, shipping, and unloading the amphorae, and manufacturing lamps, perfume, and textiles.[334] Mattingly even notes that the immense profits from such a trade would have made the provincial families in southern Spain and North Africa wealthy, and indeed the second and third centuries were the period in which figures from those regions became prominent in the Roman government and the

[330] Mattingly, "First fruit? The olive in the Roman world."
[331] Mattingly, "First fruit? The olive in the Roman world," 234.
[332] Mattingly, "First fruit? The olive in the Roman world," 238-239.
[333] Mattingly, "First fruit? The olive in the Roman world," 235.
[334] Mattingly, "First fruit? The olive in the Roman world," 244.

highest elite segment of their society. Examples include the Emperors Trajan and Hadrian from Spain, and the Severans from Northern Africa.[335] Thus there is a suggested connection between productive power (via oleiculture) and the ability to obtain the highest levels of political power in the ancient Roman world. Such social mobility included more modest examples, which are of course hard to obtain in this pre-modern context on account of the relative lack of textual sources treating non-elite members of ancient Roman society. One cultivator by the name of Bion allegedly planted 4000 olive trees during his lifetime in Late Antique North Africa, an amount of trees that would have produced a significant surplus of oil that was definitely meant for exchange and wealth creation.[336] In other words, olives might have enabled some enterprising peasants to vastly increase their material wealth and, eventually, status.

Similar statements can be made for ancient Asia Minor, a region much closer to that which is the focus of this dissertation, concerning the existence of large-scale oleiculture under the umbrella of the ancient Roman economic and cultural order. The extensive Sagalassos excavations and surveys have produced a particularly notable body of archaeological evidence for oleiculture in the ancient Roman period, having located the remains of many olive presses from around Sagalassos, located at a high altitude some distance from the coast.[337] In addition to the archaeological evidence, fossil pollen from around the site indicates that olive trees were a major crop in the area during the Roman period, but not in the Hellenistic era, further indicating that an upsurge of olive cultivation accompanied the area's integration into the Roman state and economy.[338] The presence of many presses and the remains of fossilized olive pollen in this

[335] Mattingly, "First fruit? The olive in the Roman world," 246.
[336] Shaw, 67 for this example.
[337] Vermoere, 242.
[338] Vermoere, 162.

locale, which was not an ideal one for oleiculture, indicate that wealthy landowners, who could seek opportunism as opposed to security or subsistence, were driving the cultivation of this crop.

Regions throughout the Aegean Basin appear to have been similar to Sagalassos with respect to significant olive cultivation in the Roman period. Foxhall's analysis of oleiculture in the ancient Greek world noted that Roman-era installations were typically larger, more sophisticated, and more permanent than classical Greek ones.[339] Thus, understandably, the notable archaeological surveys of Greece have yielded more pressing equipment that appears to be of Roman or Late Roman provenance than of classical Greek origin.[340] The data from the Southern Argolid is a good example, with the Late Roman remains appearing to have primarily focused on oleiculture given that that particular period's sites are often located on "alluvium suited mainly for olives," and accompanied by the remains of 14 *trapetum*-style olive crushers, a variety of crusher that were mainly from the Roman era.[341] Considerable oleiculture in these locales that ring the Aegean littoral should not be surprising. After all, it is easier for humans to tend to the olive in these areas, as opposed to the uplands of southwestern Anatolia, on account of their proximity to the coast, lower elevation, and more consistently warm climate.

As Chapter 2 briefly discussed and as will be elaborated below, pollen samples taken from around the Aegean Basin reflect a widespread and powerful signature from the olive's pollen in the ancient world, especially in Late Antiquity when the economy and population were increasing, a trend that the archaeological surveys attested to. The pollen evidence for a significant olive presence in Roman- and late Roman-era Greece syncs well with the period's archaeological findings. This is not to say that oleiculture was significantly less important in

[339] Foxhall, 131-132.
[340] Foxhall, 139. Also, peruse Foxhall's very helpful tables on pages 173-176.
[341] van Andel and Runnels, 115.

Greece before the Romans achieved hegemony in the Mediterranean, rather, that the economic intensification of Late Antiquity overlapped with more intensive and export-oriented oleiculture.

Thus, in light of the properties of the olive tree outlined above, and the archaeological findings that have been discussed, it would appear that oleiculture was prevalent in the ancient Roman world. Its qualities made *Olea* an excellent fit for the ambitions of the ancient Roman elite who operated in an internally peaceful world (at least by their standards) with slave labour and urban markets that facilitated the production and exchange of their oil, and amidst a culture that valued this particular product, often consuming it prominently. Essentially, the Aegean littoral was home to many olives groves and pressing installations in the era between the Roman conquest and the rise of Islam.

Similar to its position in the ancient landscape, in the early twenty-first century the olive is very common in much of the Aegean Basin, including the areas that this dissertation treats. Currently, the domestic olive is a major crop in the Chalkidike.[342] The tree, in its wild form, readily occurs there too, particularly in the dry scrub on the peninsula's western side.[343] *Olea* is also very common in contemporary Boiotia, as the Boiotian archaeological survey has mentioned, where it is often cultivated on the slopes of hills up to an elevation of 600 meters.[344] Further south, in the Southern Argolid, the olive was very common by the middle of the twentieth century, with a documented 482,100 olive trees under cultivation at that point in time.[345] The olive is even more common in Lakonia than it is in contemporary Boiotia and the Chalkidike, in this case coexisting with citrus as the dominant presence in the landscape. If one

[342] This is a personal observation of the author. On the journey from Thessalonike to Mount Athos, there are many fields planted with olive trees.
[343] A. G. Ogilvie, "A Contribution to the Geography of Macedonia," *Geographical Journal* 55 (1920): 13.
[344] Rackham, "Observations on the Historical Ecology of Boeotia," 295-296. For the olive being common in the current Boiotian landscape, see Bintliff, Howard, and Snodgrass, 99.
[345] Jameson, Runnels, and van Andel, 42-44.

drives from Monemvasia to Sparti they are treated to almost endless views of olive groves, for the local economy is, to a considerable extent, based around this tree. In fact, by the 1980s, the western slopes of Mount Parnon were almost exclusively covered in olive and orange trees.[346]

The current presence of *Olea* in the Chalkidike, Boiotia, the Argolid, and Lakonia, is inescapable, but also youthful, in many cases probably adolescent, and thus it should not be assumed that the olive is a timeless fixture of these regions. The Chalkidike is fortunate in its unique status as a part of Greece with significant archival sources from the middle Byzantine era, and yet the olive is relatively rare in these texts, which give far more treatment to vineyards and fields. Olives eventually do appear in the Athonite monastic archives, but those references are mostly from the later eleventh century and even then the olive never comes close to the ubiquitous vineyards and fields that appear to have blanketed the topography between Mount Athos and the city of Thessalonike in the tenth through twelfth centuries. In fact, when the olive is mentioned in these monastic texts, it often appears to have been recently planted.[347] Similarly, in Boiotia there is hardly any textual evidence of oleiculture in the middle Byzantine centuries. Indeed, it is possible that significant cultivation of olives has only come to Boiotia in the last 150 years, with a mere handful of Boiotian olive trees estimated to have passed their five hundredth birthday.[348] Olive trees in Lakonia appear, for the most part, to be even younger than their Boiotian counterparts. In his investigation of the region's present ecology, Oliver Rackham noted that ancient olive trees are actually rather rare in Lakonia, with the vast majority being only 100 years old, and the remainder being about 200 years old. Rackham does not know why they are so

[346] Rackham, "Observations on the Historical Ecology of Laconia," 75.
[347] For an example of Athonite monks planting olive trees in the late eleventh century, see *Actes de Xénophon,* 16. This information will receive more treatment in a later chapter.
[348] Rackham, "Observations on the Historical Ecology of Boeotia," 313.

young, but says it is possible that a bad frost killed off older trees a couple of centuries ago.[349] Quantifiable data confirms the minority of the olive trees in the Southern Argolid, where, despite the fact that an estimated 482,100 olive trees covered the local countryside as recently as 1961, detailed census information gathered by the Venetian state in 1705, in a document called the Catastico Particolare, counted only 8,441 olive trees.[350] Census information is not always precise, especially in pre-information age contexts such as the eighteenth-century Argolid. However, olive trees, unlike livestock or even stored grain, were not easily concealed and the Venetian officials' recordings should accordingly be treated as illustrative. Thus, as far as olive trees are concerned, the demographic in much of Greece (at least the regions that this study examines) are young to middle-aged.

Other scholarship regarding the olive's position in the Mediterranean has demonstrated its entrance and exit from the landscape on more than one occasion, typically in response to wider global demands and economic trends. In Apulia and Andalusia, it appears that oleiculture re-emerged as a major form of agriculture around the turn of the millennium, having been in the doldrums through the early Middle Ages.[351] This return did not last too long (at least not in comparison to the lifespan of the olive tree), with another marked decline in the fourteenth century, and then another return in the sixteenth.[352] Meanwhile, in the Aegean, the combined demand of French, Venetian, and Ottoman merchants drove *Olea* to become prevalent again in the Aegean during the seventeenth century.[353] Perhaps the dating of this demand might explain the origins of the current olive trees that are prevalent in the various landscapes along the Aegean Sea's western shores. In light of experiences from elsewhere in the Mediterranean, and the ages

[349] Rackham, "Observations on the Historical Ecology of Laconia," 96.
[350] Jameson, Runnels, and van Andel, 20-21.
[351] Tabak, 111.
[352] Tabak, 111 and 162.
[353] Tabak, 165.

of the current olive trees in the Greek landscape, a cluster of questions emerge that are of interest to historians of Byzantium, the Mediterranean, and the European environment. When did the olive decline from the prominent position it had held in Antiquity? Did it reappear at all between the early medieval era and the eighteenth century? How dramatic was its earlier decline (or declines)? What could explain the comings and goings of this species in the various locales that surround the Aegean Sea? The remainder of this chapter and a later one will approach these questions with a specific focus on *Olea*'s disappearance and return in the Middle Byzantine context.

The Olive in Retreat

It is hard to find the olive in the Aegean littoral during the middle Byzantine period, at least from the seventh to later tenth centuries. Texts are almost silent regarding this tree, and archaeological work has yielded almost no evidence of its cultivation in this period. The relative silence of the texts, excavations, and surveys, is accompanied by *Olea*'s muted presence in studies of fossil pollen. Across the Aegean Basin, the seventh century appears (with one notable exception) to be a time when less olive pollen was in the air. The story of *Olea*'s diminished pollen profile in the postclassical context coincides with other species achieving hegemony in the seventh-century landscape, especially woodland species such as pine and evergreen oak. As noted in chapter 2, palynology can be vague with respect to dating, with the exception of the cores that have carbon dates within their layers, but the general story when all of these samples are put together is one of olive relinquishing its role as a dominant feature of the environment, an abdication that closely followed the demise of Late Antiquity's exchange networks.

The low profile of the olive in these samples is striking given that *Olea* is typically well represented in contemporary pollen diagrams because, as a species, it is prolific in its dispersal of pollen.[354] In addition to its profuse pollination, olive pollen travels very far in the wind and thus its absence in a pollen core can indicate trends over considerable distances, not solely within the immediate environs from which the core is extracted.[355] In other words, if olive trees are pollinating within a given region, a local core ought to reflect it.

Examining pollen studies for the presence of *Olea* between the seventh and tenth centuries, we shall start in the hinterland of the ancient city of Sagalassos and will work our way in a counterclockwise direction around the Aegean littoral until we reach the Argolid, much like in chapter 2 with its analysis of the changing profiles of woodland species. Recent pollen analysis from the hinterland of Sagalassos shows a precipitous decline in the olive's presence in the region over the course of the seventh century. Cores taken from a lakebed called Çanaklı, and from a marsh called Gravgaz, both located near the ancient city of Sagalassos, show very high pollen values for the olive in the ancient and late Roman periods.[356] At Gravgaz, olive disappears entirely from the record after the seventh century.[357] In the case of nearby Çanaklı the olive did not quite disappear, but *Olea*'s presence in the sample after the seventh century was very small compared to its presence during its heyday in the ancient Roman period and late Roman periods.[358]

The story of the olive's decline around Sagalassos is repeated throughout southwestern Anatolia. The numerous cores from the highlands of southwestern Turkey have revealed that an

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[354] Vermoere, 35.
[355] Roberts, "Human-induced Landscape Change in South and Southwest Turkey during the Later Holocene," 61.
[356] Vermoere, 162.
[357] Vermoere, 164. Core G99 shows olive disappearing between 560 and 620 AD, while core 96 shows a decline between 650 and 670 AD. Thonemann noted this quick (in botanical terms) disappearance of the olive in the area between the sixth and seventh centuries, see Thonemann, 54.
[358] Vemoere, 141-143, and 165.

earlier period of arboriculture characterized by the widespread cultivation of olive, walnut, and chestnut, ended dramatically about 1300 years ago, in the latter part of the seventh century.[359] In this cluster of pollen cores, the disappearance of the olive (along with other fruit tree crops) was often complete.

All of these Anatolian examples, with the exception of Lake Bafa (which will be discussed below), are obtained from areas that one might consider marginal for olive cultivation because they are located inland and at higher altitudes, thus riskily placing the olive in the path of damaging frost. However, moving to examples from the European side of the Aegean Basin, it is evident that these changes in the fortune of the olive extended to the coastal areas in which *Olea* is expected to do well.

In fact, as we progress further along the western shores of the Aegean Basin, the general image of *Olea*'s postclassical decline is reinforced. Looking at the sample from Lake Volvi, the body of freshwater that bounds the Chalkidike peninsula's northern side, it is apparent that *Olea* retreated and then became entirely absent for a while before it made a gradual comeback that culminated in its significant signature at the very top layer of the sample (which is the most recent layer of the core and corresponds to the present day). Olive pollen is missing entirely at the 460 cm and 440 cm depths in the core, which falls right within the layers that archaeologist Archibald Dunn suspects were from the Byzantine "Dark Age."[360] However, as the previous chapter elaborated, land abandonment was not necessarily occurring at Volvi, but rather that

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[359] W. J. Eastwood, N. Roberts, H. F. Lamb, J. C. Tibby, "Holocene environmental change in southwest Turkey: a palaeoecological record of lake and catchment-related changes." *Quaternary Science Reviews* 18 (1999): 692-693; Roberts, "Human-induced landscape change in South and Southwest Turkey during the later Holocene," 58-62.

[360] For this diagram, see S. Bottema, "Palynological investigations in Greece with special reference to pollen as an indicator of human activity," *Palaeohistoria* 24 (1985): 275. For the interpretation of this diagram and the attribution of the mentioned layer to the early to mid Byzantine period, see Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244-245. For the olive pollen counts, see the European pollen database, as neither Dunn nor Bottema discussed the olive pollen counts explicitly in their articles. The European pollen database can be accessed at www.europeanpollendatabase.net/

there may simply have been a change in cultivation strategies with peasants shifting their economy to a sylvo-pastoral one, along with some local viticulture.[361] The olive had disappeared, but other forms of agriculture had not. Complete disappearance did not occur further south in the Chalkidike peninsula where the Aegean Sea meets land. At the sea level marsh of Tristinika, *Olea* declined from what had been a modest level in the Late Antique period to a particularly low one, but it did not become entirely absent.[362]

Further to the south in Boiotia, the pollen core from Lake Kopais shows a significant gap in olive pollen.[363] One must be cautious with this particular sample because the Lake Kopais core is notoriously hard to date or interpret thanks to the complicated history of that lake's hydrology and sediments. However, this gap in *Olea* fits the general pattern of the other pollen studies from the Aegean Basin and might very well belong to this period.

The pollen sample taken from the Vravron marsh, located near sea level on the eastern coast of Attika, reflects a less dramatic view of oleiculture's decline during the shift from the ancient to the medieval economy.[364] The author of the Vravron study posits that the zone for the Hellenistic and ancient Roman era already had a reduced signature of the olive, which constitutes a marked change from the classical Greek era in which the local olive signature was very strong (perhaps a product of classical Athens' immense olive cultivation and appetite for olives, a truly exceptional case). In this case it appears that between the "Roman" and "Byzantine" periods there was a progressive abandonment of olive cultivation in the area as Vravron's surroundings

[361] See the European pollen database.
[362] Panajiotidis, 313-314.
[363] Rackham, "Observations on the Historical Ecology of Boeotia," 343.
[364] Kouli, 267–78.

became a wetland and also reflected a greater presence of woodland species.[365] Similarly to the Lake Volvi sample, cultivation continued, but with a severely curtailed position for olives.

Abandonment of olive groves appears to be a most likely story in the case of the core extracted from Psatha, on the eastern shore of the Gulf of Corinth. This study reflects low olive counts, even in the ancient period, followed by an absence of *Olea* as *Pinus* (pine) came to dominate the core, a little while after the sample's carbon date of 76~234 AD.[366] The absence of other indications of cultivation in this core strongly indicates land abandonment as the explanation for changes in the area's vegetation.

Further south, pollen extracted from the Thermisia Lagoon indicates that there was very little olive pollen blowing in the wind over the southern Argolid during the middle Byzantine period. The lagoon is located on a south-facing peninsula that juts out into the Aegean and that has a very small catchment basin, so it might only reflect very local conditions, and this principal core (it is one of several from the area, the others of which have little datable material) has yielded little material for carbon dating.[367] Nevertheless, it is clear that the olive declined considerably in two distinct periods after a carbon date of 1985 years before the present, with pine becoming the most deposited pollen in the bed of the lagoon in both instances.[368] The pollen study's team suggested that one of these significant drops in olive pollen and the accompanying rise in pine pollen could be dated to the Slavic migrations with a minor balancing of the carbon

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[365] Kouli, 276.
[366] Susanne Jahns, "A Late Holocene Pollen Diagram from the Megaris, Greece, Giving Possible Evidence for Cultivation of Ceratonia Siliqua L. during the Last 2000 Years," *Vegetation History and Archaeobotany* 12, no. 2 (2003): 127–30. See the diagram on page 128.
[367] M.C. Sheehan and D.R. Whitehead, "The Late-Postglacial Vegetational History of the Argolid Peninsula, Greece," *National Geographic Society Research Reports* 13 (1981): 699-700. These pages specifically refer to the Thermisia Lagoon core.
[368] Jameson, Runnels, and van Andel. The pollen diagram is on page 167 and the discussion of the pollen history in this period is on pages 168-169.

date.[369] More recent archaeological work postulates that the first of these drops happened in the late Hellenistic period, with the olive regaining prominence in late antiquity (as it did elsewhere) before declining rapidly in the second drop, which they estimate occurred around 700AD.[370] The later date makes perfect sense given the central role of olive crushers in the archaeological finds from this area's Late Antique layers.[371]

Finally, the sample from Lake Lerna, located in the Argolid and sandwiched between foothills and the Aegean Sea, provides a picture of the olive declining considerably around the year 800, according to the study's author's calibration.[372] In this case, the olive's marked decline is coterminous with an increase in *pistacia* pollen spread by the mastic tree, probably reflecting *pistacia* maquis moving into abandoned olive groves.

Pollen studies from the Aegean Basin provide a general portrait of the region's countryside in the seventh and eight centuries as one with a diminished presence of *Olea*. Essentially, two general trends concerning the olive's place in the landscape are discerned. One trend is simply that olive groves were often abandoned and overtaken by *Pinus* or *Pistacia* or evergreen oak, as the cases of Lake Lerna, Psatha, and Gravgaz indicate. The other trend, discussed in chapter 2, was that cultivated land from Late Antiquity was re-worked, sometimes with a shift to pastoralism with people encouraging the promotion of species such as oak. Overall, the olive's profile was greatly diminished in this period, with Byzantine peasants in the Aegean Basin either abandoning land or making economic choices that were not conducive to oleiculture.

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[369] Sheehan and Whitehead, 704.
[370] Jameson, Runnels, and van Andel. The pollen diagram is on page 167 and the discussion of the pollen history in this period is on pages 168-169.
[371] The many Roman-era olive crushers found in the southern Argolid are referenced in chapter 1.
[372] Jahns, "On the Holocene Vegetation History of the Argive Plain," 202. Page 194 provides the carbon date, and pages 197-198 have the author's estimation of 800AD.

The Byzantine textual record, like the palynological one, conveys little proof of the olive's existence between the seventh and eleventh centuries. One could attribute this absence to the general paucity of textual sources from between the seventh and ninth centuries, a period in which the Empire's military fortunes (and those of its literate lay elite) were in the doldrums. But such an explanation would be too simplistic as available sources do provide evidence of other aspects of Byzantine engagement with trees and agriculture. Nor would such an explanation address *Olea*'s minute status in the more abundant tenth- and even eleventh-century texts, a product of a more secure Byzantine elite who were more prolific in their literary output than during the previous few centuries.

After all, the most laconic period in Byzantium's history, the seventh and eighth centuries, produced the *Farmer's Law*. In this document the olive is conspicuous to modern scholarly investigations by virtue of its absence, a contrast that is marked given the document's numerous references to situations arising from keeping livestock and growing grain.[373] John Fine Jr. addressed the absence of any reference to oleiculture by suggesting that the text came from outside of Greece, possibly being intended to address agrarian issues in the colder continental climate of Macedonia or the interior of Thrace.[374] I posit that such an attribution, despite its merits, can be challenged with the alternative possibility that many Byzantine rural communities simply did not cultivate the olive during the period in which the *Farmer's Law* was written, copied in numerous manuscripts, and used in judicial activities throughout the Empire's villages.

Similar to the *Farmer's Law*, various Byzantine Emperors' less pedestrian legal novels do not mention olives in the ninth or tenth centuries. These imperial sources are fairly laconic regarding the substance of Byzantine agrarian holdings and practices, although they do mention

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[373] Lemerle, 37.
[374] John V.A. Fine Jr., *The Early Medieval Balkans: A Critical Survey from the Sixth to the Late Twelfth Century* (Ann Arbor: The University of Michigan Press, 1983), 85.

vineyards and watermills as examples of "profit-producing expenditures," and even mention fields, and land for grazing and woods.[375] It is true that scholars generally see these legal documents as reflective of the situation on the Anatolian Plateau and not in the Aegean Basin, but one would expect Byzantine imperial legislative practices to adopt as universal an agenda as possible given their Emperors' claims to possess hegemony over the entire Roman world. The idea that the Byzantine Emperors produced two sets of laws addressing agrarian practices, but constructed them to treat respective regions, seems difficult to accept. I propose that the absence of olives in the legal documents of this period occur because oleiculture was not common in the Byzantine countryside at this time, whereas conflicts involving vineyards, copses, and livestock were, and thus the laws addressed them.

Olive oil does not appear to have been included among the rations of Byzantine soldiers during this period. A miscellaneous collection of tenth-century Byzantine texts, labeled in the modern era as *De Ceremoniis*, includes a lengthy description of the Byzantine military's preparations to retake the island of Crete from the Arabs in the tenth century, specifically during the reign of the Emperor Leo VI (r. 886-912). This fascinating excerpt catalogues in considerable detail the different supplies, ships, weapons, and foodstuffs that were required for the expedition and which parts of the Byzantine Empire were contributing them. While biscuits, wheat, barley, wine, and livestock are all mentioned as rations, there is no reference to oil.[376]

Despite the reduced profile of the olive in the pollen samples and its absence in legislative documents, it would be an exaggeration to say that the olive was completely nonexistent in Byzantium during this period. In the tenth century, references to the olive (both

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[375] Eric McGeer, *The Land Legislation of the Macedonian Emperors* (Toronto: Pontifical Institute of Mediaeval Studies, 2000). For vineyards, see the novels of Romanos I Lekapenos (page 40) and Konstantinos VII (page 65). Konstantinos VII's novel also mentions watermills, pasturage for grazing, and woodlands (pages 65-66).
[376] Konstantinos Porphyrogennitos, *The Book of Ceremonies* (Canberra: Australian Association for Byzantine Studies, 2012), 658.

directly and indirectly) occur in several Byzantine texts, but it appears almost as a rarity, a remarkable object. For example, in a tenth-century *vita* from Boiotia, the *Life of Luke*, there is no explicit mention of the olive at all. However, there are several references to the lamp that illuminated Luke's resting place and it was the substance of the lamp itself that played a key role in several miracles after the Saint's death.[377] The contents of the lamp were labeled as "myrrh (μύρον)" in one passage,[378] and "oil (ἀπὸ τοῦ ἐλαίου)" in several others.[379] The recurring theme in the posthumous portion of Luke's life was for people afflicted with physical maladies to enter his tomb and take some oil from the lamp, mix the oil with "moisture" from the tomb, apply this mixture of oil and tomb moisture to their ailment, and thus be cured. The miraculous use of oil from a lamp in a Saint's tomb was not restricted to the case of Luke, but was a phenomenon that occurred in several Byzantine *vitae*.[380] However, in these cases, the oil is treated as remarkable because of its alleged spiritual powers. Furthermore, its quantity was probably very small because a solitary lamp's oil requirements were limited.

While oil was clearly used for illumination purposes in middle Byzantine monastic tombs, it was not always necessarily oil from olives. The term "elaion" could refer to oils derived minerals, fish, nuts, and seeds (such as flax seed)" as well as olives.[381] In one case, in the monastic document (called *typika*) of the church of Kosmosoteira in Thrace, there was a

[377] *Life of Luke*, ch. 69 (page 115).
[378] *Life of Luke*, ch. 69 (pages 116-117).
[379] *Life of Luke*, 118-119 (chapter 71), 120-121 (chapter 72), 122-123 (chapter 73), 124-125 (chapter 75), 132-133 (chapter 80), 140-141 (chapter 84).
[380] See Carolyn and Robert Connors' comments on page 175 of their edition and translation of the *Life and Miracles of Saint Luke*. Apparently both the Life of Daniel the Stylite and the seventh-century Miracles of Saint Dimitrios contain references to the miracles associated with the oil that fueled lanterns in Saints' tombs. Of course, these works addressed urban contexts and were written before the focus of this dissertation.
[381] See the entry for "oil" in Alexander P. Kazhdan et al., 1519.

stipulation that the lamp in front of the icon of the Virgin Mary was to burn with mastic (not olive) oil.[382]

There are some other remarks concerning the monastic consumption of oil, as it appears that the tenth-century diet of Byzantine monks regularly included it. The *typika* of Athonite monasteries, written around the year 1000, provide examples of olive oil's presence in this context. There are many examples of differing allowances for olive oil in the monastic diet depending on factors such as whether or not it was a particular holy day, which meal of the day it was, what day of the week it was, and if a given recipient monk was sick or old.[383] For example, in the Rule of Athanasios of Athos, the regulations stipulated that between Eastertide and All Saints, the monks were to have three *litrai* of olive oil added to each of their two daily dishes of legumes and cooked vegetables, with permission to add one more *litra* of olive oil to the dish if there was no relish and it was a feast of the Lord.[384]

The olive oil mentioned in this case must have been a condiment. If one *litra* of olive oil was 322 grams (a *litra* varied between 319 and 324 grams)[385] then three *litrai* would have been approximately 966 grams. An amount of olive oil that weighs 966 grams is around 69 tablespoons with about 8,280 calories (given that a table spoon of olive oil weighs around 14 grams). It would be physically impossible for one monk to consume that quantity of olive oil in one sitting without vomiting. However, in 978, which was near the time that Athanasios wrote his rule for the monks of Lavra, the Emperors Basil II and Konstantinos VIII had given funding to maintain 500 monks at the monastery.[386] If we divide 69 tablespoons by 500 monks then we

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[382] Claire Nesbitt, "Shaping the Sacred: Light and the Experience of Worship in Middle Byzantine Churches," *Byzantine and Modern Greek Studies* 36, no. 2 (2012): 157.
[383] For a dizzying explanation of these variables, see Thomas and Hero, 226. Many further examples can be found in the edited volumes.
[384] Thomas and Hero, 226.
[385] Thomas and Hero, 1684.
[386] Thomas and Hero, 209. See *Actes de Lavra*, pp. 115-117, no. 8.

arrive at the very modest amount, slightly less than a quarter of a tablespoon, per monk per meal (given that they were having two meals a day in this particular context). These calculations are obviously very general, but they provide a sense of what the amount of olive oil consumption was in these monastic settings.

Hagiography and monastic *typika* give the impression of a modest, but important, role for olive oil in lighting tombs and adding flavor to meals. However, the conventions of monks cannot be taken as indicative for the average Byzantine. *Typika* provide images of diets that emphasize legumes, vegetables, fish, oil and wine. However, as the previous chapter argued, the average Byzantine took no issue with consuming meat, and one has to be aware that animal fats could take the place of olive oil in the laity's food preparation.

There are a handful of examples of Byzantine laymen mentioning *Olea* and olive oil in the tenth century, but these are classicizing elite men who lived in (or, in one case, had formerly lived in) Byzantium's core region around Constantinople. The first example was composed at some point during the years between 944 and 959 (in the reign of Konstantinos VII but after the removal of Romanos I Lekapenos from power) by the disgraced former courtier Niketas Magistros. In a letter to the metropolitan bishop of Kyzikos, Niketas requested the high-ranking churchman to send him some olive oil because the location in which Niketas lived in exile (we do not know where this was) apparently had no olives.[387] A few years after this understandable request, the emperor Konstantinos VII's courtier Ioannes Geometres (writing in the mid tenth century) wrote a poem in which he claimed that the lands around the city of Nikaia had olives

[387] For the letter, see L.G. Westerink, *Nicétas Magistros: Lettres d'un exilé (928-946)* (Paris: Centre National de la Recherche Scientifique, 1973), 71-73. See Nicetas Magister's eighth letter, lines 28-30 in the TLG for the specific mention of olive oil. For further discussion of this letter, see Ilias Anagnostakis and Anthony Kaldellis, "The Textual Sources for the Peloponnese, A.D. 582-959: Their Creative Engagement with Ancient Literature," *Greek, Roman, and Byzantine Studies* 54, no. 1 (2014): 134.

and that the inhabitants of Athens should not think too highly of theirs.[388] Geometres' poem was a crafted insult leveled at a group of courtiers who had provincial origins from Attika and Lakonia and was not a portrayal of those regions' economies or landscapes. However, the mention of olives as something that his literary targets had bragged about suggests that olives were special in the mid tenth century in Byzantium.

Chronologically-overlapping Niketas' letter and Geometres' poem is an encyclopedic composition commissioned by the Emperor Konstantinos VII himself, a document of interest here because it specifically mentions olives in one instance. This tenth-century compilation of miscellaneous imperial documents, labeled by early modern western Europeans as the *De Administrando Imperio*, mentions the region of the Mani, located in the Southern Peloponnese directly to the west of Lakonia, as a locale bearing the olive.[389] However, Haris Kalligas' scholarship on Byzantine Monemvasia persuasively argues that the writers of the text had mistakenly written about the Mani when they really meant to refer to the environs around Monemvasia, which is also located in the Southern Peloponnese, albeit further east in on the shores of Lakonia.[390] Regardless of whether or not the Byzantine author was confused with respect to the southeastern Peloponnese's geography, the text emphasizes that the locale was "waterless (ἄνυδρος)" but that the inhabitants at least had this particular fruit-bearing tree to make their lives more bearable in such a challenging and, by the elite standards in Constantinople, aesthetically unappealing environment.[391] Indeed, the region around Monemvasia is very dry (as is the Mani), and it does bear the olive today (the Mani does too).

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[388] Anagnostakis and Kaldellis, 134-135. Geometres wrote an epitaph for Konstantinos VII, placing his work in the middle of the tenth century.
[389] Konstantinos Porphyrogennitos, *De Administrando Imperio*, ed. Guyula Moravcsik, trans. Romilly J. H. Jenkins (Washington, D.C.: Dumbarton Oaks, 1967), 236-237.
[390] Haris Kalligas, *Byzantine Monemvasia: the Sources* (Monemvasia: Akroneon, 1990), 46-47.
[391] Porphyrogennitos, *De Administrando Imperio*, 236-237. ἐστὶν ἄνυδρος καὶ ἀπρόσοδος, ἐλαιοφόρος δέ.

The *De Administrando Imperio*'s reference to the olive is intriguing as it indicates that among the tenth-century Constantinopolitan elite the olive was considered in a positive light but also, perhaps, that the olive was rare and maybe worth noting. In addition, these very arid and southernmost points of mainland Greece, the Mani and the land on which Monemvasia is located, are places where the olive thrives and could reasonably have continued to this period, given that not much else grows in these two locations.

Reading Geometres' insult, Niketas' request to a high-ranked church official for olive oil for personal use, and the *De Administrando Imperio*'s brief reference to the southern shores of Lakonia (whether the text's compilers meant the Mani or Monemvasia is not clear, but both are located in Lakonia) together, one gets the impression that olive oil was a product of which some elite, classicizing writers took note. However, their references also give the impression that the product was considered luxurious and worth remarking on because of a certain degree of rarity.

There is one exception to these studies that reflect a reduced role of *Olea* in the postclassical landscape of the Aegean littoral. Lake Bafa, located close to sea level at the marshy mouth of the Maiandros River in Anatolia, provided a pollen core that actually demonstrated a very gradual, but sustained, increase in the presence of olives starting around the year 700. Over the next few centuries, this tree managed to obtain a greater role in the landscape at the expense of several species that indicated a prior pastoral economy (namely pine, *rumex*, *plantago lanceolata*, and *pistacia*). Thus, the area's economy by the eighth and ninth centuries was focused on a mixture of oleiculture and pasturage, with olive groves and species that indicate pasturage growing side-by-side.[392] Further up the Maiandros River's valley, a sophisticated "lever and screw press," along with a crusher and a settling tank, was in operation at the city of Aphrodisias during the Middle Byzantine period. This press was large, and it reflects an

[392] Knipping, Mullenhof, and Bruckner, 377.

exception to what was happening with *Olea* in the rest of the Aegean littoral.[393] Thus the Maiandros valley's watershed may have been a particular locale that increased olive oil production in order to meet the demands of nearby soldiers and sailors stationed around Miletos, one of the few cities to continue to function as an administrative site for the Byzantine military apparatus, or alternatively, it may have increased olive production in order to satisfy the one potentially notable market in this period: Constantinople. Deprived of access to Syrian oil on account of the emerging Caliphate, and of interior Anatolian oil on account of the cessation of oleiculture in much of that region, it is possible that the capital turned to the Maiandros Valley's inhabitants for their olive oil demands, although this notion must remain conjectural for now.[394]

One of our only tenth-century provincial *vitae*, the *Life of Paul of Latros*, was composed in this area, its subject having been based in the lower part of the Maiandros valley (and for a while on the nearby island of Samos). This text provides a few references to its saintly protagonist possessing olive oil. In one instance, in which the hagiographer illustrates how little the young saint owned in his secluded cave, a small amount of olive oil is noted among his humble possessions.[395] Later in the text there is a story in which there is supposed to be a festival at Paul's monastery. There were problems with supply and thus there was no wheat, wine, oil, or pulses for those partaking in the festivities. A miracle drove two mules to arrive from the nearby city of Miletos bringing cheese, eggs, and wine.[396] While olive oil is not delivered in the miracle, its absence was mentioned as notable and distressing, thus indicating that it was probably not that rare in the local context in which the *vita* was written. Finally, before his death, Paul mentioned

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[393] K. Ahmet, "A Middle Byzantine Olive Press Room at Aphrodisias," *Anatolian Studies* 51 (2001): 159-167.
[394] For a brief reference to the decline of oleiculture in Anatolia in the seventh century, see John Haldon et al., "The Climate and Environment of Byzantine Anatolia: Integrating Science, History, and Archaeology," *Journal of Interdisciplinary History* 45, no. 2 (2014): 139.
[395] *Life of Paul of Latros*, chapter 13. Among his possessions are mentioned "a bit of oil (βραχὺ ἔλαιον)."
[396] *Life of Paul of Latros*, chapter 29.

oil (among other things) in his testament, permitting the monks in Paul's monastic foundation to have fish and oil in "moderation" at the "feast of the Annunciation."[397] The idea is that through Lent the monks are, according to the same section of the document, to abstain from any sustenance other than bread and water, so the consumption of oil and fish was something to look forward to.

While oil occurs in the *vita* of Paul of Latros on these few occasions, it is interesting that the young monk lived on mount Latros, right above Laka Bafa, the lone source of considerable olive pollen discussed in this chapter. In other words, this tenth-century *vita* that has olives and their oil playing a repeated role in the text comes from the one place in the postclassical Aegean Basin that demonstrated a rise in olive pollen. It is possible that olive oil was uncharacteristically available for the young Paul but not for his contemporaries elsewhere in the littoral.

Aside from the material for Lake Bafa, we have established that there was a diminishing presence of *Olea* in the seventh-century Aegean Basin. Pollen shows a decline and texts reflect a very faint echo of this tree and its oil well into the tenth century. When they do mention it, olive oil plays a role as a remarkable substance for elite lay writers or as a condiment or lamp fuel for monks. But how can one *explain* the decline of the olive pollen? What follows will provide hypothetical answers to the problem presented by the absence of pollen, which is actually the most tangible form of evidence regarding this tree's lowered profile in the postclassical centuries in Byzantium.

Where did the Olives go?

The low profile of pollen does not necessarily mean that there was a "lack" of existing olives trees. The notion that the majority of olive trees were cut down or destroyed in the

[397] Thomas and Hero, 140.

aftermath of the seventh-century's violence is highly improbable. Another explanation, that the trees died without human help is lacking in evidence.

As a matter of fact, it is very hard to kill an olive tree. This resilient species is adapted to Mediterranean conditions, and, much like its geographical peers, has little in the way of weaknesses. For example, if *Olea* loses a branch, it rapidly creates suckers to replace the lost limb.[398] Cutting down the entire tree does not eradicate it either; new shoots quickly emerge from the old stump.[399] Such tenacity makes *Olea* into a veritable hydra given its ability to keep surviving in the face of trauma. As already noted, it can handle limited water, and it does a good job surviving in shallow soils. *Olea*'s most noted vulnerability is the cold, as a frost at -7 degrees Celsius will seriously harm the tree. It is for this reason that one often finds the olive on south-facing slopes and not at very high altitude.[400]

In the Anatolian case, climate change has been suggested as a possible reason for the olive's early medieval decline.[401] A colder and wetter phase has been identified in the region between the late sixth and eighth centuries, which would have had more marked effects on elevated areas of Anatolia.[402] Olives planted at one thousand meters above sea level would have experienced considerable challenges to their existence.[403] But these newer arguments regarding climate change in the Byzantine world are admittedly limited in data, and they treat inland Anatolia and the Black Sea coast, which are very different environments than the Aegean littoral. The various coastlands that this dissertation treats are fortunate to have the moderating influence of the sea, and a very warm sea at that. Furthermore, the pollen samples in this chapter handle

[398] Mattingly, "First fruit? The olive in the Roman world," 218.
[399] Isager and Skydsgaard, 38.
[400] Foxhall, 5.
[401] Kaplan, *Les Hommes et la Terre*, 15-16; Haldon et al., 146-147.
[402] Haldon et al., 138.
[403] Haldon et al., 138.

data from lower elevations than those in the Anatolian uplands, many of which were over one thousand meters above sea level. As far as anyone can tell from the mainland Greek data, the climate was consistent throughout the Byzantine period.[404]

The lack of pollination can be explained via the tree's pollination habits as opposed to climatic shifts. When untended, olive trees can cease to pollinate, thereby rendering them invisible to the palynologist. This is where pruning becomes useful to this analysis. Pruning is what gets rid of the tree's deadwood and thus allows more pollination and more fruit to be borne but also minimizes the chances for pests and fungi to damage the tree.[405] Basically, people, via pruning, minimize the tree's leaf production and maximize its fruit production. Without pruning, this tree becomes a leafy organism with little output of pollen or fruit.

Without human involvement, domesticated olive trees can become feral, resembling the wild olive in their activity. Biologically, wild olives and cultivated olives are indistinguishable, and it is not possible to tell the difference between their pollen (beyond the fact that wild olives hardly release any pollen), their pits, or the remains of their wood in charcoal. In fact, the connection between these species is very close, with hardly any "true" wild olives existing anymore because the *oleasters* ("wild" olives) that inhabit so much of the Mediterranean scrubland at low altitudes possess some "domesticated" ancestry.[406] The differences between the two types are largely aesthetic, with human involvement playing a significant role in determining which type an olive tree assumes. The only distinction between the two is that the "domestic" ones have more meat on their fruit and produce more oil,[407] and the wild variety usually (but not

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[404] Curta, 210.
[405] For discussion on pruning, see Foxhall, 124-136.
[406] Foxhall, 5; Reinder Neef, "Introduction, Development and Environmental Implicaitons of Olive Culture: the Evidence from Jordan," in in *Man's Role in the Shaping of the Eastern Mediterranean Landscape*, eds. S. Bottema, G. Entjes-Nieborg, and W. van Zeist (Rotterdam: A. A. Balkema, 1990), 295.
[407] N. Liphschitz et al., "The Beginning of Olive (*Olea europaea*) Cultivation in the Old World: A Reassessment," *Journal of Archaeological Science* 18 (1991): 441-453.

always) has smaller fruits and spiny lower branches.[408] In addition, modern study of the olive tree's behavior has shown that "the majority of the pollen, if not all, is produced by cultivated trees."[409] Thus, if groves were abandoned amidst the economic collapse and the violent incursions of the seventh century, then these trees could have stopped producing significant pollen, thus explaining their invisibility in the pollen cores.

While Byzantine peasants around the Aegean littoral probably did not dig up and burn the roots of the majority of the olive trees lying in their vast Late Antique groves, they almost certainly stopped pruning them. Such neglect made sense in the postclassical economy, for even if one took the time to take care of a grove, gather fruit, prune the trees, crush the olives, press the mush, and store the oil, there was very limited scope for this oil's distribution. Oil, in large quantities, is particularly difficult to transport (as are all products in a preindustrial context).[410] Hence, scholarship has emphasized the importance of reliable distribution networks for oleiculture's success.[411]

In some cases, facing a diminished ability to acquire food in markets, some Byzantines may very well have removed olive trees and planted something else in their place. While we lack evidence of this process, it is completely reasonable to conjecture that it happened. During the Second World War, even with the presence of modern transportation such as modern ships and trucks, there were parts of German-occupied Greece in which the peasantry could no longer sell their olive oil, yet needed cereals for their diet. These cereals were costly in the context of war-induced food shortages and thus these modern Greek farmers chose to cut down and dig up their

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[408] Neef, 295.
[409] Sytze Bottema, "Landscape Archaeology and Reconstruction of the Mediterranean Environment Based on Palynology," in *Environmental Reconstruction in Mediterranean Landscape Archaeology*, ed. Philippe Leveau et al., The Archaeology of Mediterranean Landscapes 2 (Oxford: Oxbow Books, 1999), 13.
[410] Horden and Purcell, 210.
[411] Horden and Purcell, 212.

olive trees so that they could plant cereals in their place.[412] Olives are a terrific way to obtain profit, but cereals were necessary, and when food is acquired locally in the absence of interregional exchange peasants must change their strategies. In the case of the seventh and eighth centuries, with its almost non-existent shipping and minimized state-organized redistribution (as discussed in chapter 1), the vast majority of Byzantine peasants' *only* means of obtaining sustenance would have been to rearrange their local conditions to feed themselves.

The medieval Mediterranean's inhabitants could cook food and light their homes without olive oil. In the twentieth century, elderly farmers from Crete recollected cooking with animal fats while selling their modest olive oil yields for profit.[413] Such cases were not historically unusual, other parts of the Mediterranean witnessed this shift from olive oil to animal fats for cooking in the medieval era.[414] During the transition from Late Antiquity to Middle Byzantium, such adaptations seem reasonable too. As argued in chapter 2, the same period that witnessed a decline in oleiculture in the Aegean littoral also witnessed a rise in woodland and livestock. For illuminating rooms after nightfall, oil was still required, but that requirement did not predicate oleiculture. Fish and various nuts and seeds can also provide oil, of which Byzantines were certainly aware, as the *Geoponika* relates.[415] Furthermore, candles were a commonly referenced method of lighting, and as the last chapter posited, the Middle Byzantine period was a time with plenty of wax-yielding beehives.

Further explanation for the decline of the olive after the seventh century lies in the transformation of Roman culture as it moved into the medieval period. The ancient world's culture, with its emphasis on copious consumption of olive oil, was gone. Whereas the ancient

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[412] Halstead, 287.
[413] Halstead, 288.
[414] Tabak, 111.
[415] Kazhdan et al., 1519. See the *Geoponika* 9.18.1-2.

cities had made extensive use of the olive and its oil in their gymnasia, there was no real equivalent in the medieval period.

Between the reduced ability to move olive oil, the reduced demand for it, and the more readily available alternatives for cooking and lighting, there was less incentive for the Byzantine peasantry of the seventh through tenth centuries to prune their olive trees. Some peasants may have taken it upon themselves to do the difficult work of chopping down the tree and digging up its roots so that they could plant other food in its place. However, the majority of Byzantine peasants probably left the groves to do what they do on their own: devote their energy to produce leaves instead of fruit and pollen. Such energy commitment can explain the lack of pollen and *Olea*'s apparent invisibility in this period.

New Uses for an Old Object

Byzantine labourers excavating the foundation for a palace in Constantinople put the marble head of an ancient statue of an ox into a lime kiln, and, according to an eleventh-century chronicler, created an epizootic that killed cows for many years.[416] The epizootic aside, such an act was apparently common in the Middle Byzantine world, when old Greek and Roman works of marble and stone lay about, inviting re-use.

The olive was a counterpart to marble in the milieu of ancient culture, and both suffered accordingly during the transition to a medieval world in which recycling took precedence over ostentatious building projects. While Byzantines in the Aegean littoral ceased to maintain olive groves and the accompanying presses and crushers as they had previously done, they continued to make use of oleiculture's components, albeit in different ways. As the team that surveyed the

[416] Ioannes Skylitzes, *Ioannis Scylitzae Synopsis Historiarum*, ed. Ioannes Thurn (Berlin: W. de Gruyter, 1973), 252. For the English translation, see Ioannes Skylitzes, *A Synopsis of Byzantine History 811-1057*, translated by John Wortley (Cambridge: Cambridge University Press, 2010), 242-243.

Southern Argolid found, perhaps the most archaeologically noticeable feature of ancient oleiculture, the Roman-era's *trapetum*-style crushers, have often found been re-used as "animal watering troughs at wells."[417] For example, archaeologists found a *mortarium* of a *trapetum*, made from volcanic rock, that was probably of Late Antique provenance, reused as a watering basin at a spring 100 meters from a site, called Papoulia, that had a large concentration of Late Roman remains alongside medieval ones.[418] Clearly, elements of oleiculture could be re-worked to fit this new pastoral world that emerged out of the seventh century.

The olive tree itself could find new roles in line with this animal-centered economy too. Sheep and goats can and do eat the olive's leaves,[419] (even ancient writers such as Aelian were aware of this dietary choice).[420] Olive trees could also have been cut down and used for other purposes, for their wood, at least in ancient Greece, was often used for roofing and framing houses.[421] Thus the abundance of olive trees with no outlet for their fruit and oil could very easily have presented a useful and available source of wood for such purposes in the aftermath of the seventh century.

A very important potential use of the olive, once again closely linked with marble in this context, was as an ingredient in building projects. After all, Byzantine construction often preferred brick or stone to marble, but would still make extensive use of ancient marble *spolia* in construction. Often they would bind brick or stone or rubble by means of mortar (the mortar consisted of lime slaked with water, possibly with an extra ingredient), and this mortar required burnt limestone or marble.[422] Fuel, at best charcoal, was crucial for this process, and olive wood

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[417] van Andel and Runnels, 115.
[418] Jameson, Runnels, and van Andel, 506.
[419] Isager and Skydsgaard, 103.
[420] Isager and Skydsgaard, 103. See Aelian, *de Natura Animalium* 16.32.
[421] N. Liphschitz et al., 447-448. See also Vermoere, 239.
[422] Jonathan Bardill, "Building Materials and Techniques," in *The Oxford Handbook of Byzantine Studies*, edited by Elizabeth Jeffreys, John Haldon, and Robin Cormack (Oxford: Oxford University Press, 2008), 335-336.

was an excellent ingredient, being highly flammable.[423] Even in modern Greece people take the branches pruned from olive trees and use the stripped wood as fuel, sometimes turning it into charcoal.[424] The olive tree's wood is very good for fueling this process because it burns slowly and gives off immense heat, and thus there is a distinct possibility that much of the olives were burnt intentionally over time. In addition, olive pips are excellent fuel for kilns.[425] Finally, examples from modern Greece demonstrate that prunings from olive trees can provide fuel in domestic contexts for cooking and heating.[426] Thus, it makes sense that the plentiful abandoned groves were a resource for Byzantines who sought to build the new structures of the Middle Byzantine Period, and perhaps even to heat their homes.

Indeed, there is a Byzantine source that explicitly discusses the use of the olive tree's wood for fuel in the eleventh century. In the eleventh-century *vita* of Lazaros of Galesion, Lazaros orders one of his fellow monks to go to a nearby "wild" olive tree, and to cut it down and use its wood to make lime that would be utilized in the construction of his pillar.[427] Later in the text, some of the monks from Lazaros' foundation went up the mountain in order to gather wild olive roots and to use them as fuel in order to make charcoal.[428] The travelling up the mountain is significant, as olives generally are not grown that high up in altitude. Perhaps Lazaros' followers were burning up the old trees that had been maintained at a higher altitude in the Roman world and that had not been planted so high since. Such passages may be a testament

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[423] Lukas Thommen, *An Environmental History of Ancient Greece and Rome*, trans. Philip Hill (Cambridge: Cambridge University Press, 2012), 39.
[424] Isager and Skydsgaard, 103.
[425] Pamela Armstrong, "Merchants of Venice at Sparta in the 12th century," in *Sparta and Laconia: From Prehistory to Pre-Modern*, ed. W. G. Cavanagh, C. Gallou, and M. Georgiadis, British School at Athens Studies 16 (London: Short Run Press, 2009), 317.
[426] Hamish Forbes, "The Uses of the Uncultivated Landscape in Modern Greece: A Pointer to the Value of the Wilderness in Antiquity?" in *Human Landscapes in Classical Antiquity: Environment and Culture*, ed. Graham Shipley and John Salmon (London and New York: Routledge, 1996), 84.
[427] *Life of Lazaros*, 146 (chapter 58).
[428] *Life of Lazatos*, 335 (chapter 236).

to abandoned cultivation, from which we can infer that some abandoned olive groves had gone wild. Or it may be a testament to the presence and burning of truly wild olive trees (*Olea europaea sylvestris*), although that particular tree is more likely to grow closer to the coast and not up in the mountains. We cannot know the answer as to which type these were, but we can be sure that some of these Byzantine monks were in the process of using olive trees for fuel and that these actors were interacting with either wild or formerly cultivated trees. The choice to gather the roots is significant, because charcoal burning usually uses thicker timber or roots of trees (large roots that is).[429] If these monks were in the habit of digging up roots, they would have perhaps been killing the olive trees, rather than simply setting back their growth. Such circumstances could help answer the question of where the olives actually went, and imply that perhaps a decent amount of these old trees were dying as opposed to simply going feral.

There are other possible references in Byzantine sources to olive wood being burnt intentionally. For example, in Nikon's testament, the text claims that the saint's workers ultimately fired up fifty kilns in order to make lime to construct the monk's provincial church and made use of a considerable quantity of *spolia* in the process.[430] Olive wood is not explicitly mentioned in this part of the text, but the passage does reflect a considerable willingness (and infrastructure) to use a combination of ancient ruins and combustible wood in order to carry out construction around the year 1000 AD, in a provincial location, and on a significant scale. The location of the story is important, as the floor of the Evrotas valley (the incident occurred close to modern day Sparti) would not have been a likely place for other species that would provide charcoal or lime: pine and fir grow in considerable amounts today further up the neighbouring slopes of Taygetos and Parnon, and I suspect that they did then too, but abandoned olives, and

[429] Forbes, 86.
[430] Thomas and Hero, page 318.

possibly oak that readily colonizes neglected fields, would have been more plentiful and accessible on the valley floor. Thus olive wood could have been a significant component of the wood that Nikon's workers were burning. These burnings might not permanently remove the olive trees because they survive fire very well (unless if the roots were dug up and burnt too), but they would delay olive trees' productivity and they do represent a new priority in Byzantines' interaction with *Olea*.

If the ancient world's appetite for olive oil was great, the Middle Byzantine appetite for kiln fuel was equally so. Modern attempts to reconstruct pre-modern pottery production demonstrate a vast requirement for fuel when firing kilns, and this fuel often took the form of cuttings from olives or vines or prickly oak. A total of .4 to 1.3 tonnes of cuttings were required for a single kiln firing![431] Even if olive came well behind scrubby prickly oak in this fuel composition, substantial amounts were probably used, especially in cases like that of Nikon, who, if we are to believe the author of Nikon's testament, had fifty kilns burning simultaneously in his effort to build a new church.

Less intentional fire can provide another possible explanation for the decline of the olive in much of the postclassical Byzantine world. In their observations of Mediterranean ecology, Rackham and Grove noted that neglected olive groves are more likely to burn as the dead vegetation that piles up around the trees (such vegetation is normally removed by plowing around the trees as part of the grove's standard maintenance) eventually combusts, burning the olive trees with it.[432]

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[431] Guy Sanders, "New Relative and Absolute Chronologies for 9th to 13th Century Glazed Wares at Corinth: Methodology and Social Conclusions," in *Byzanz als Raum*, ed. K. Belke et al. (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 2000), 153-173.
[432] Grove and Rackham, 236.

Thus the apparent disappearance of *Olea* in the early medieval Aegean, whether in textual sources, archaeology, or fossilized pollen, makes sense when we take into account the economic and cultural shifts that characterized much of the transition from an ancient to an early medieval world. Obviously, this transformation should not be generalized too broadly, and geographical differences must always be taken into account, as should the small-scale, but consistent, demand for oil from the emerging monasteries and the lay elite, and, ostensibly, the peasantry. However, for the Aegean littoral, the seventh century was certainly the timespan in which a significant shift occurred regarding *Olea*'s economic role and presence in the environment. The postclassical economy and society rarely promoted the planting or nurturing of *Olea* or the transport or purchase of its oil. Essentially, the olive's botanical characteristics did not mesh well with the demands and priorities of a population of peasants who primarily pursued subsistence agriculture, as opposed to providing for large landowners that sought profit via bulk exchange. Instead, now situated in a material culture that emphasized re-using materials, the olive did not fare well. The decline in cultural demand for the olive that accompanied the disappearance of the ancient gymnasia and baths, and the warfare that characterized the seventh-century Aegean Basin, further assisted in explaining these ecological changes. And so the silences regarding the olive, whether taken from deposits of fossilized pollen, archaeology, or textual sources, begins to make sense. The postclassical olive, at least in the regions discussed in this dissertation, retreated from culture into nature, taking up a place as a wild tree again that produced little pollen or fruit. The groves, invaded by prickly oak and mastic, were home to feral olives with abundant leaves. Sometimes these groves burnt down because of their litter. Other times they were deliberately burnt in order to make charcoal. But, probably most of the time, Byzantines took their animals through these groves where they could eat litter, and perhaps these

same peasants maintained a few trees to obtain oil for their unpretentious requirements. Luckily for anyone with a palate around the Aegean, the olive returns to culture in the late tenth and eleventh century. How and why it did so is a story for chapter 5.

Chapter 4
Re-arranging woods and scrub

In 1071, while the many monks of the numerous houses of Mount Athos gathered for their Easter Assembly, a vocal member of this monastic community by the name of Theodosios, who was the *kathigoumene* (a monastic official) of the monastery of Vatopedi, took the opportunity to get the attention of the mountain's *Protos* (the chief monastic official of the Holy Mountain) in order to delineate a piece of land for his monastic house. Such requests were not unusual, although Theodosios' timing might have been. Proclaiming loudly in front of the mountain's monastic community, he told the *protos* Paul, and the elders of the monasteries, to accompany him to delimit woodland that was called "the forest of Hieropátor."[433] Allegedly, this Hieropátor, who is otherwise unrecorded for posterity, had left a piece of woodland to Vatopedi in order to obtain salvation for his soul. Paul and the elders agreed with Theodosios' proposal, and thus a large group of monastic elders walked from Karyes into the woodland that covered much of the Athonite peninsula. The business of delineation was often a difficult one on Athos (and we can assume elsewhere for that matter), because different parties wanted to make sure that the final boundary was not disagreeable to their sensibilities or damaging to their material interests. In this case, the monks of Vatopedi were allegedly entitled to a piece of woodland that bordered that of a monastery called Kallinikou, whose inhabitants were understandably leery that their property might be diminished on that fateful Easter day. Who would delineate this land? Who could be trusted with this task?

The Protos Paul asked the anxious *hegoumon* of Kallinikou (also called Paul) if he would like to make the delineation, a proposal that Kallinikou's new neighbor, Theodosios, was

[433] For this story, see *Actes de Vatopedi*, pp. 102-108, no. 9. The "forest of Hieropátor" is first mentioned on line 2. It reads τὸ ὄρος τ(ῆς) ὑπ' αὐτοῦ λαύρ(ας) τὸ λεγόμεν(ον) τοῦ 'Ιερωπάτορο(ς). I translate τὸ ὄρος as "woodland" or "forest."

surprisingly amenable to. Perhaps he wanted to avoid problems with Kallinikou by giving them the opportunity to set the border. Interestingly, Paul (the *hegoumon* of Kallinikou) declined this offer, citing his ignorance of the environs, and suggested that his servant Leontios be the one to make the delineation. The *Protos* of the mountain found the suggestion reasonable and so did Theodosios. And so this servant and monk Leontios proceeded to demarcate the woodland. Carrying a large wooden cross and walking past numerous landmarks, he shouted in a loud voice for the many elders to hear where the boundaries were between the trees owned by Kallinikou and those owned by Hieropátor. The group of monks proceeded along pathways or roads (we are not sure as to exactly what they were), noting the boundary lines that these paths functioned as between the locales of Tzernoglabou, Oxeai, and the chestnut-themed Kastanites.[434] They also pointed out engraved chestnut trees and engraved oaks as markers.[435]

This unusual document treats Byzantine woodland in ways that the numerous imperial chrysobulls that comprise much of the monastic archival material do not. It is perhaps not surprising to learn that Byzantine monasteries in the latter eleventh century were "owning" woodland. Nor is it surprising how ignorant the monastic leaders were of its borders. The fact that the leaders of two monastic houses and the *Protos* of the mountain did not know what to delineate, but had to use a "servant" to do so, gives us something of a window into the social relations of Byzantium in which, even in a monastic community, some figures dealt with manual labour and forestry while their superiors could be oblivious regarding the origins of their fuel and building materials. This Leontios, of whom we are otherwise ignorant, was probably accustomed to go into this woodland in order to gather firewood, building material, charcoal, and perhaps even chestnuts. He was acquainted with the many trees in these environs, knew where to find the

[434] The toponym is based on the Greek Kastania (καστανιά), chestnut.
[435] For an example of an engraved chestnut (ἐσφραγήσθ(η) καστανέα), see line 21; for an example of an engraved oak (δρῦς ἐσφραγήσθη), see line 23.

engraved ones, and had a familiarity with how to identify and how to work with these different trees, be they oak, chestnut, or fir, in a way that his monastic superiors most likely did not.

It is also, perhaps, surprising that so much woodland might be around the shores of the Aegean Sea in the late eleventh century; a period that Byzantine historians know was well along a phase of economic expansion that supposedly began around the turn of the tenth century. The economic historians of Byzantium, who have outlined this economic growth, have often focused on viticulture, cereal, livestock, and urban growth at the expense of the wood and scrub that continued to cover much of the Byzantine countryside.[436] Some of these scholars have even identified a process of deforestation in the tenth and eleventh centuries, a trend that this chapter acknowledges, but also seeks to add nuance to by pointing out that the changes in woodland composition were complex, and involved the privileging of certain species even in the midst of tree removal.[437]

As this chapter will argue, woodland was still common at the close of the eleventh century in the Aegean littoral, albeit with important changes from the evergreen-dominated one that characterized the opening of the eighth century that was discussed in chapter 2. It will advance the claim that people's priorities changed in the latter tenth, and eleventh centuries in the Aegean Basin with the beginning of a prolonged period of economic growth that lasted until the mid fourteenth century, and that along with this growth the composition of woodland changed too.[438] In some cases, clearance and deforestation was the norm, but in other cases it was probably not, with changes in vegetation being more complicated than the simple removal of

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[436] See this dissertation's introduction for these various historians' works.
[437] Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244.
[438] For this economic growth, see Harvey, *Economic Expansion in the Byzantine Empire*. See also, more specifically for Macedonia's case (where the majority of Athonite documents focus), Jacques LeFort and J.-M. Martin, "L'organisation de l'espace rural: Macédoine et Italie du Sud (Xe-XIIIe siècle)," in *Hommes et Richesses Dans L'empire Byzantin*, ed. Vassiliki Kravari, Jacques LeFort, and Cecile Morrisson, vol. 1, 2 vols., Réalités Byzantines 3 (Paris, 1991), 11-26.

tree cover. What changed from a social perspective was the increased importance of woodland as it was under further pressure, but that is a topic for this dissertation's last chapter. This chapter argues that in the context of more clearance and cereal cultivation, Byzantines gave a privileged position to the very useful deciduous oak that occurred in many of the places that were otherwise being cleared, and probably also to its relative, the chestnut. Deciduous oak even witnessed an increase in its uses in relation to the preceding period. Finally, this section cautions that, despite the period's economic growth and accompanying indications of clearance, woodland remained prominent in the region, with many people continuing to base much of their economic activities and sense of place around trees.

Complicating the Landscape

The composition of the woodland that surrounded the Aegean Basin continued to change in the latter ninth, tenth, and eleventh centuries, albeit in diverse ways. In many cases, there was clearance of vegetative cover as a more militarily-secure Byzantine population set about increasing their levels of economic exchange (which of course was predominantly based around agriculture in this pre-industrial context), be it for rent, tax, profit, or simply to supply a growing population. But we must be cautious about how this general story of "economic expansion," which Alan Harvey identified as taking place between the tenth and twelfth centuries, affected woodland. Pollen studies show that in some cases there was actually an increase of oak (particularly deciduous), and that in some places olive made a resurgence (a topic that the next chapter will treat). Meanwhile, in other places, juniper became more prominent, indicating grazing, while cereal's profile rose in numerous locales.

Some clearance is easily identifiable in the pollen studies, and it overlaps chronologically with this era of gradual, but prolonged, economic intensification. As Archibald Dunn pointed out in the principal article to discuss woodland history in Byzantium, pollen cores extracted from three sites distributed across western Macedonia and Thessaly reflect clearance starting around 850 AD, 900AD, and 1000 AD (the sites of Khimidatis, Pertouli, and Litokhoro respectively).[439] In these specific cases, tree pollen decreased relative to non-arboreal pollen and various pollens from agricultural crops rose again after a period of being negligible. The study at Gravouna, on the coastal plain of northern Greece, shows gradual clearance too, although the most dramatic changes in the landscape are probably from the Turkish period and thus well after the time that is the focus of this chapter. In the case of Gravouna, the fortunes of oak certainly declined once the middle Byzantine period really got under way, and the decline corresponded to the increase of cereal pollen, thus pointing to clearance and a shift to farming arable land.[440] But it does appear that this area, between the ancient world and middle Byzantine times was an oak forest that was reduced very slowly, with cereal consistently filling in the gaps, and there was no abrupt clearance phase throughout the Byzantine era.[441]

But many of the pollen cores do not tell us a story about clearance and greater cereal-culture. At Lake Lerna, on the Argolid Plain, cereal was not notable, but there was an increase in juniper around the year 1000, indicating that more grazing took place at that time.[442] In the subsequent layer, juniper fell while cereal rose, indicating a greater role for farming at the expense of pasturage. Likewise, according to the fossil pollen obtained from lake Bafa Gölü, it appears that in the lowlands of Anatolia beneath Mount Latros and at the terminus of the

[439] Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244.
[440] Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 246.
[441] Judith Turner and James R.A. Greig, "Some Holocene pollen diagrams from Greece," *Review of Palaeobotany and Palynology* 20, no. 3 (1975). See the diagram on page 202.
[442] Jahns, "On the Holocene Vegetation History of the Argive Plain," 198.

Maiandros valley there was no major replacement of woodland species with cereal. Instead, there was a gradual increase in oleiculture and a comparative decline in species that indicated pasturage. Essentially, woodland species such as evergreen and deciduous oak remained an important component of the local landscape, with the most notable change being an increase of olives in this time (which will receive attention in the following chapter) and the relative decline of species that indicate pasturage, notably *plantago lanceolata* (although even those indicators of pasturage still remained in their somewhat reduced status).[443] These transformations occurred gradually between the carbon date of 654 and the layer of sediment dated to the twelfth century.[444] These changes were not abrupt.

There was some clearance in several of the regions that this dissertation examines at the time of economic upswing in Byzantium. Yet other cases show an increase in pasturage, and yet others show a transition form a sylvo-pastoral economy to one with more of a focus on olives. The pollen is often hard to date in these cases, so one must understand that I am speaking very generally across the postclassical period. Indeed, the pollen cores told a much clearer and more consistent story in the seventh century than in the Middle Byzantine period because that particular story was one of human depopulation and a shift to autarchic and localized economies. However, it is fair to say that the economic upswing in Byzantium after the ninth century did not yield uniform or consistent results across the varied environs of the Aegean littoral, and that dramatic and major clearances were not the rule. Byzantines around the year 1000 must have still lived in many wooded locales.

Woodland's composition changed though, and there are several instances in which we see deciduous oak increasing its profile in local landscapes, while evergreen oak declined. At

[443] Knipping, Mullenhof, and Bruckner, 377.
[444] Knipping, Mullenhof, and Bruckner, 375.

Lake Volvi, along the northern edge of the Chalkidike, deciduous oak appears to have increased its profile at the same time that cereal did, which occurs after the 440cm and 420 cm depths of the core. The 440cm and 420cm depths represented the maximum arboreal takeover and minimum of cultivation that Dunn postulated were indicative of the early Byzantine period. Interestingly, through several consecutive layers of the core, evergreen oak's values dropped as deciduous oak's grew. These developments occur after the "trough" in agricultural indicators that Archibald Dunn suggested were representative of the period following the breakdown of the ancient economy.[445] In other words, as cultivation once again increased in the chronologically vague period after the low point of early Byzantine cultivation, deciduous oak managed to increase its profile considerably vis-à-vis its evergreen relative. Possibly, deciduous oak was increasing as evergreen oak was removed from the earth, or the evergreen oak was browsed enough to keep its pollen profile low while deciduous were protected or promoted in this more complicated agro-ecosystem that accompanied this latter part of the Middle Byzantine period. Further south of Volvi, and closer to the Athonite peninsula, the pollen sample extracted from the Tristinika marsh demonstrates that both deciduous and evergreen oak varieties became better represented after the sixth century, peaking in the eleventh, after which some clearance occurred.[446]

Just east of Athens at the Vravron marsh in Attika, the local inhabitants continued to live in an area that had some significant deciduous oak nearby. Between 600 and 1300, they gradually added cereal to their landscape while simultaneously increasing the presence of

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[445] For this core, see S. Bottema, "Palynological investigations in Greece with special reference to pollen as an indicator of human activity," 275. For the interpretation of this diagram, see Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244-245. The "trough" occurs between 440 and 420cm (discussed in chapter 2). At 399, 380, and 360cm depths the values were 54, 33, and 28 for evergreen oak while those for deciduous oak were 292, 359, and 367 respectively. For these values see the European pollen database.
[446] Panajiotidis, 314 and 319.

livestock (we know they did that because of the juniper's profile).[447] However, they made these changes without deforesting the deciduous oak in their locale, which maintained its notable signature in the pollen records past the period that this dissertation examines, indeed they remained notable right until the fifteenth century. Even further south at Lake Lerna on the Argolid Plain, there was an increase of deciduous oak and a decrease of evergreen oak, between the dates of 1109 and 951 years before the present, echoing the situation at Volvi insofar as the relationship between the two types of oak is concerned.[448]

We cannot know if deciduous oak was markedly increasing or if evergreen oak was simply being bitten down and thus not pollinating much in the context of an economy with more pastoralism. It is also possible that the increase in cultivation and pastoralism around the cores meant that other pollens (eg. olive, cereals, grasses, vines, weeds, etc.) simply took up more space and edged out the evergreen oak pollen that typically would travel from further away. What is evident is that deciduous oak, in many places, had become established in the landscape after a few hundred years and was pollinating more than it had in the preceding period. In light of the previously discussed changes in the agro-ecosytem and the woodland around the Aegean littoral, it is clear that deciduous oak was being maintained, protected, and perhaps even encouraged, by human actors. How and why people would have done so is a topic that will receive further attention below. But first this chapter will examine the social and economic contexts for the other types of woodland change that were occurring in the tenth and eleventh centuries, namely, clearance and pastoralism.

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[447] Kouli, 272, 275-276.

[448] Jahns, "On the Holocene Vegetation History of the Argive Plain," 187-203. See the European Pollen Database. Layers that are estimated for 82, 68, and 58 have values of 66, 66, and 20 for evergreen oak whereas those for deciduous are 61, 72, 78. These layers are estimated to be from 1364, 1109, and 951 years before the present respectively.

Contexts for Altering the Landscape

This section presents the social, economic, and cultural contexts for the changes in woodland composition outlined above. Much of the evidence for these changes is qualitative and obtained from texts and is hard to directly connect with the data from archaeological surveys and pollen cores. Nevertheless, this qualitative data can help us make sense of the changes in woodland composition presented in the pollen studies. Essentially, the explanations for the period's environmental transition are the following: the establishment of new Byzantine settlements and the necessary clearance to create those settlements, the expansion of herds of livestock in the hands of the emerging monastic and lay landowners, and more support for deciduous oak and chestnut in some places (a topic that will be discussed further below and separately).

The explanation for the arrival of these new landowners and the creation of these new settlements is well known to Byzantine historians. In late tenth and early eleventh centuries, the Byzantine state won significant military successes against the Bulgars, thereby consolidating their hold over mainland Greece and the Balkans. This state expansion was accompanied by economic growth and the arrival of representatives from an elite group that had been slowly coalescing around Constantinople since the ninth century.[449] Following on the heels of these Byzantine soldiers and tax collectors were monks and even transferred civilian populations who settled formerly abandoned lands. Peasants, both those who had lived on the western shores of the Aegean for some time and those who were newly arrived, were living in an increasingly secure environment and were under greater pressure to pay taxes and rents. Furthermore, they were able to sell more surplus than previously thanks to the expansion of trade, particularly as

[449] J.-Cl. Cheynet, "Fortune et Puissance de L'aristocratie (Xe-XIIe Siècle)," in *Hommes et Richesses Dans L'empire Byzantin*, ed. Vassiliki Kravari, Jacques LeFort, and Cecile Morrisson, vol. 2, 2 vols., Réalités Byzantines 3 (Paris, 1991). For the economic growth, see the introduction of this dissertation.

the eleventh century wore on. Population growth appears to have occurred from the tenth to the thirteenth century in tandem with these developments, and has been credited with the creation of settlements closer to flood plains and beneath hilltops; settlements that required clearance.[450] These developments are all discussed here because they had important consequences for the environment of the Aegean Basin.

There definitely was an increase in the number and size of medieval Roman settlements on the western shores of the Aegean Basin between the ninth and twelfth centuries. While it is hard to establish a direct causal link between the construction of new settlements and clearance, it makes sense that the creation of new towns, villages, and estates overlaps chronologically with the removal of woodland. As Archibald Dunn pointed out in an important article in 1992, the decline in arboreal pollen noted in the available pollen cores from northern Greece coincides with the increasing number of rural sites noted in the available archaeological surveys for southern Greece.[451]

The Lakonia survey found that, after the archaeologically-invisible eighth century, permanent Byzantine settlements re-emerged. Essentially, four sites were established in the ninth or tenth centuries (three of which were self-sufficient) and twelve more, along with a bridge spanning the Evrotas River, were added in the eleventh century.[452] Of the eleventh-century sites, some have been classified as farms, other as estates, and only one as a large settlement (site H40).[453] As the surveyors have interpreted from the location and size of the new sites, it appears that many of the eleventh-century sites were small and were established close to the bigger ninth-

[450] LeFort and Martin, 15.
[451] Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 246.
[452] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 355 (for the ninth- and tenth-century sites), 358 (for the 12 new sites from the eleventh century and the establishment of a stone bridge). For further discussion of the bridge, see Pamela Armstrong, William Cavanagh, and Graham Shipley, "Crossing the River: Observations on Routes and Bridges in Laconia from the Archaic to Byzantine Periods," *Annual of the British School at Athens* 87 (1992): 293-310.
[453] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 358-360.

and tenth-century ones, and thus many of these eleventh-century developments represent the work of independent cultivators who cleared modest parcels of land and built new farms on the outskirts of the older villages and hamlets that had been established on arable land in the ninth and tenth centuries.[454] Two sites, labeled sites M334 and M346, were almost certainly *proasteia* (land that peasants cultivated on behalf of absentee landowners), lying on arable flat land and within reasonable walking distance of Sparti.[455]

Working northward, one can see more limited developments occurring in the Southern Argolid than in Lakonia, with new sites emerging slightly later, starting around 1000AD. These sites were often established on upland areas with good soils and out of view from the coast, ostensibly to be unnoticeable to seaborne raiders.[456] The soil erosion from the area, dated to around 1000AD, indicates that people cleared land for these new settlements carelessly, a choice that also indicates that there was a lot of land to go around. However, one should acknowledge that this layer of erosion from the Middle Byzantine period is not as great as that from the Hellenistic through early Roman period, indicating that the Middle Byzantine re-colonization of this area was not as disruptive to local soil and vegetative cover as the abandonment of such land several centuries before.[457] In other words, Byzantine colonists showed up in the Southern Argolid around the year 1000 and created entirely new domiciles and farms in what had been an essentially empty landscape (empty as far as humans were concerned), taking care to live atop hills and probably pursuing subsistence agriculture, given that they did not live near the sea where trade would have been much easier.

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[454] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 360.
[455] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 360.
[456] Jameson, Runnels, and van Andel, 405-406.
[457] Jameson, Runnels, and van Andel, 409.

The Boiotia survey's findings echo those of its counterpart in Lakonia, consisting of modest developments outside established nucleated settlements, but maybe beginning slightly later. In addition to the handful of larger nucleated sites that had probably existed throughout the Middle Byzantine period (discussed above in chapters 1 and 2), new sites emerged in the eleventh and twelfth centuries. One site, labeled PP16, developed between the larger settlements of Thespiae and Neochori in the 11th and 12th centuries.[458] Furthermore, a Byzantine hamlet was established outside the ancient Greek Sanctuary of the Muses in the same period.[459] These developments indicated demographic and economic growth, but, similar to the Lakonian case, they were not large sites, and there is not any evidence for these new sites requiring substantial clearance.

Many of the examples listed above, particularly those from the Lakonia and Boiotia surveys, appear to fit the profile for *agridia*, a type of fiscal and economic development that was typical of the Byzantine world in the tenth and eleventh centuries. Essentially, as village populations rose, some people moved outside of the villages, cultivating and developing land (termed *agridia*) that was within the village's hinterland (and thus taxed as part of the village) but that were undeveloped as far as agriculture was concerned. Sometimes an *agridion* was the result of an enterprising peasant's labour, other times it was bequeathed by a deceased parent to one child while the other children were given the familial land within the village proper.[460] Regardless of the reasons, these settlements were small and occurred as attachments to the large and established village.

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[458] Bintliff, "The Archaeological Survey of the Valley of the Muses and Its Significance for Boeotian History," 201.
[459] Bintliff, "The Archaeological Survey of the Valley of the Muses and Its Significance for Boeotian History," 201. This development occurred at some point during the eleventh or twelfth centuries.
[460] For a good explanation of *agridia* and the fiscal policies towards them, see Neville, *Authority in Byzantine Provincial Society*, 57. See also Kaplan, *Les Hommes et la Terre*, 112-115 and 566-567; Harvey, *Economic Expansion in the Byzantine Empire*, 35-36.

The Byzantine state played an important role in driving some of these developments. After all, the government transferred people from the comparatively stable eastern provinces to the Peloponnese and Calabria in the early ninth century, specifically during the reign of Nikephoros I (r. 802-811).[461] That particular Emperor's actions might very well have been responsible for making Byzantine settlements archaeologically visible once again in Lakonia given that he allegedly order the city of Sparta re-populated and sent an army and a *strategos* (an official combining military and administrative capacities in the ninth-century context) to re-establish imperial authority in the region.[462] The Byzantine state also transferred inhabitants from the Armeniakon theme in eastern Anatolia to Macedonia, including the Chalkidike, during the later tenth century, thus swelling the population there, once again in an effort to make the area submissive to imperial authority and able to pay taxes.[463] Thus the state, in an attempt to re-establish control of the lands on the western side of the Aegean, brought about environmental changes.

Monks were another social group, albeit a numerically smaller one than the peasantry, who added to the human population along the shores of the Aegean Sea. Monasteries, overrepresented as they are in the surviving texts, were an important economic and social element because of their ability to act collectively, purchase land, obtain favours from the imperial government, and re-work the landscape. Indeed, monastic houses drove the most ambitious agricultural projects that are mentioned in the sources, such as irrigation. The monastery of Lavra, for example, invested 520 *nomismata* (valuable gold coins) into developing

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[461] Peter Charanis, "The Transfer of Population as a Policy in the Byzantine Empire," *Comparative Studies in Society and History* 3, no. 2 (1961): 144-145.
[462] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 353. For further discussion of these events, see Ivan Duičev, *Cronaca Di Monemvasia: Introduzione, Testo Critico e Note*, Instituto Siciliano Di Studi Bizantini e Neoellenici Testi e Monumenti 12 (Palermo, 1976), 21-23.
[463] Charanis, "The Transfer of Population as a Policy in the Byzantine Empire," 146. For the Chalkidike, see Smyrlis, "Settlement and Environment in Halkidiki, Ninth to Fifteenth Century AD," 112.

one vineyard, a true expression of focused and weighty economic transformation that had implications for the local landscape.[464] Hence, while numerically less significant than the peasantry, monks' role is worth discussing here, not only because the sources make such a discussion possible, but because monastic houses could and did change the composition of the vegetative cover. It was specifically in the Middle Byzantine period that monks, like the Byzantine state's soldiers and officials, moved out of the Byzantine heartlands around Bithynia in order to find deserted places elsewhere in the Aegean littoral. One can see this movement as symptomatic of the Byzantine "metropole" reasserting itself over the imperial "periphery" in the aftermath of the empire's successful defence against the Caliphate's attacks and its subsequent conquest and absorption of the Bulgar Empire. Rosemary Morris has convincingly argued that as the Byzantine military apparatus re-established hegemony over Anatolia and the Balkans, monasticism followed it into the countryside, a place where it was previously not noticeable in any significant way.[465]

The most important example of this monastic emigration was probably the influential figure Athanasios of Athos, a monk originally from Trebizond (northern Anatolia) who, after spending time in the imperial heartlands of Bithynia and Constantinople, came to Athos to develop his vision of monasticism there.[466] Other monks had lived there since at least 859, but it is clear that monastic communities grew quickly there after Athanasios' creation of a particularly well-organized group of houses.[467] The area became more peaceful in the mid-tenth century with the cessation of Bulgar raids, and by the years 970-972 when the Emperor Ioannes I Tzimiskes

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[464] *Actes de Lavra*, pp. 177-79, no. 26; Rosemary Morris, *Monks and Laymen in Byzantium, 843-1118* (Cambridge: Cambridge University Press, 1995), 227.
[465] Morris, *Monks and Laymen in Byzantium,* 23, 28-30.
[466] Morris, *Monks and Laymen in Byzantium,* 77-78.
[467] For discussion of Athanasios' predecessors, see Rosemary Morris, "The Origins of Athos," in *Mount Athos and Byzantine Monasticism: Papers from the Twenty-Eighth Spring Symposium of Byzantine studies, Birmingham, March 1994*, eds. Anthony Bryer and Mary Cunningham, Society for the Promotion of Byzantine Studies Publications 4 (Ashgate: Variorum, 1996), 39.

issued an imperial document called "the Tragos (Tzimiskes' *typikon* for Athos, made between 970 and 972)" there were at least 47 coenobitic houses on the Athonite peninsula.[468] By the end of the tenth century when the Byzantine military had made the area more stable for their purposes, and Athanasios had established his monastic community, it is estimated that over three thousand monks were on the peninsula.[469]

While monks were making permanent homes on the third finger of the Chalkidike peninsula, further south in the Greek mainland there were wandering monks roaming about. But, aside from Saint Luke's foundation, there is no evidence of settled monks living in monasteries until the following century, when several churches and monasteries were finally built there.[470] One of these new foundations was a product of the efforts of Saint Nikon's, a monk who originally came from the imperial heartlands in northwestern Anatolia, but who ended up in Lakonia where he established more than one monastery. Directly within the area of the Lakonia survey, is the monastic house called the Church of the Forty Martyrs.[471] Interestingly, the Forty Martyrs were popular in the part of Anatolia from which Nikon came, but had not previously been popular in mainland Greece. Their monastery was in Lakonia from at least 1305, but possibly earlier according to Pamela Armstrong. The connection between monasticism and Anatolia existed in Boiotia too. And thus while Saint Luke may have spent much of his youth in Boiotia, according to his *vita*, it was a "Paphlagonian (an archaizing term for a Bithynian or northwest Anatolian)" monk who established a monastery on the site (after receiving a vision that told him to do so) on which Luke's second-to-last cell had allegedly been established.[472] Thus, while the monastery of Hosios Loukas's patron saint was a Boiotian, it was once again

[468] Morris, *Monks and Laymen in Byzantium,* 45.
[469] Morris, *Monks and Laymen in Byzantium,* 221.
[470] Morris, *Monks and Laymen in Byzantium,* 27.
[471] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 391.
[472] *Life of Luke*, 110-111.

northwestern Anatolians who appear to have founded the impressive monastery that became a feature of the local economy and landscape in the eleventh century and onwards. The tenth-century "migration" of monks from the Bithynian coast also saw these monastic figures settle in the mountains of western Anatolia too, including Mount Latros.[473]

Monastic documents give us some of our only accounts of clearance in the Byzantine world, and they either depict their monastic protagonists as the people who engaged in this act or they are vague regarding how the vegetation was cleared, implying that holy men directed the work of others. Athanasios the Athonite, that great developer of the Athonite monastic community with its numerous buildings and modified landscape, discussed in his *typikon* for the monastery of Lavra how he (with the help of imperial funding and ostensibly many anonymous peoples' labour) chopped down trees and bushes, dug up roots, and removed rocks in order to establish a monastery and to convert the surrounding land to agricultural properties.[474] The document explicitly discusses a site called Mylopotamos, apparently ten miles from the monastery of Lavra, where monks cleared vegetation and established a vineyard. Athanasios' *typikon* emphasizes that he sought to preserve (or create, depending on one's point of view) the monastic community's isolation by means of creating self-sufficient monasteries with properties that provided the monks with all they needed to meet both their material and spiritual needs, including wine for the eucharist. However, the monasteries' vineyards clearly could supply massive quantities of wine and could have provided the eucharist to large populations, probably well beyond the Holy Mountain and the nearby city of Thessalonike. For example, the monastery of Lavra was given permission from imperial authorities, just before 1100, to keep seven boats for transporting goods. The storage capacity of these ships totaled over 16,000 modioi (over

[473] Morris, *Monks and Laymen in Byzantium,* 22.
[474] Thomas and Hero, 252-253; Morris, *Monks and Laymen in Byzantium,* 206.

273,000 liters), an impressive amount of potential cargo, and this volume only applied to one of several Athonite monasteries.[475] Earlier in the eleventh century, the Emperor Konstantinos IX decreed that the monasteries were permitted to own boats with cargo capacities of 200 to 300 modioi, or 3416.8 to 5125.2 liters.[476] Regardless of monks' motives and hagiographers' sincerity, such clearances were obviously important for the local landscape and environment, changing vegetative cover from woodland to vines.

It might be fair to say that Middle Byzantine hagiography provides a *topos* of monks clearing land to establish vineyards. These *topoi*, carried out often enough in reality, help explain the decrease of woodland pollen in some of the studies. There is a notably vivid late twelfth-century example from the Maiandros valley in which a charcoal burner-turned monk and vintner by the name of Gregorios cleared a piece of flat land in order to build a vineyard. The vineyard being a success, he built (as he had promised beforehand provided that the vineyard was indeed a productive one) a chapel to the *Theotokos* (the virgin Mary), which grew to become a monastery with twenty monks.[477]

Another monastic archival document, in this case from the monastery of Vatopedi, provides a useful example of the establishment of viticulture in a landscape that was most likely wooded. The monks of Vatopedi, when granted a piece of property called Pyropetrin, desired to use it "to plant a vineyard and to build houses."[478] The delimitation of the property gave the impression that woodland was still prevalent in this locale, despite its proximity to the entrance

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[475] Morris, *Monks and Laymen in Byzantium,* 233. For further discussion of the Athonite monasteries' export of wine to Constantinople and elsewhere, see Harvey, *Economic Expansion in the Byzantine Empire*, 238-240.
[476] See Thomas and Hero, 286 and n.7 for Athonite boats that could carry between 3416.8 and 5125.2 liters.
[477] For a treatment of this figure and event, see Thonemann, 178-179. For the account of Gregory's creation of a vineyard and monastic foundation, see *Actes de Vatopedi*, pp. 137-162, no. 15. See especially p. 84.
[478] *Actes de Vatopedi*, pp. 84, no. 5, line 17 (line 36 in the TLG). The Greek for the translated section is καταφυτεύειν τὲ ἀμπελῶνας, κτιζειν καὶ οικοδομὴν**…**. See lines 16 for the charcoal burner, and line 22 for the clearance of vegetation.

to the Athos peninsula with its contested lands bordering the village of Hierissos.[479] The delimitation includes "the lands of Zygou," or the "yoke," and "Kala Dendra," or "Good Trees," along with oak woods as boundary markers.[480] While the relevant text does not include any words for the physical acts of cutting down trees or digging up stumps, the monks of Vatopedi desired to establish a vineyard and contemplated such an expansion amidst a landscape that was dotted with place names reflecting a patchwork of cereal-bearing fields and woodland. Thus, this case of vineyard building most likely occurred at the expense of some woody species.

The poorly attested, yet almost certainly the most common type of clearance across the Byzantine world, was that of peasants doing their own piecemeal removal of trees. Indeed Alan Harvey suspects that peasants generally were self-motivated to clear land rather than do it at the direct behest of Byzantine society's elite, and that it was the peasantry as a social group that ultimately cleared the most area, doing so in this self-serving fashion.[481] While the texts, which reflect the cultural hegemony of their authors who were typically either monastic officials or tax collectors, give hardly any glances into this process of peasant-driven clearance, the monastery of Iviron has left us the case of Pantoléôn, a notable exception to the silence of the sources. While the document that provides us with the only known evidence of Pantoléôn's existence was focused on determining what lands were owned by the monastery of Iviron, the text briefly references within its *periorismos* (the delineation of the property in question) the "small farm cleared by Pantoléôn, the son-in-law of Dobrobétés," which lay somewhere between a village

[479] For the site's location, see the editors' analysis in *Actes de Vatopedi*, vol. 1, p. 29.
[480] For the oakwood, see *Actes de Vatopedi*, pp. 85, no. 5, line 27 (line 61 in the TLG). The oakwood, δρυὸ(ς), has rocks in it, which indicates that it refers to a group of oaks rather than just one tree. Kala Dendra and Zygou are mentioned throughout the text.
[481] Harvey, *Economic Expansion in the Byzantine Empire*, 64; Harvey, "The Middle Byzantine Economy: Growth or Stagnation?" 247.

called Zidomista and a place called Beltzia Poléna.[482] The farm has older trees within and around it, thus emphasizing the role of clearance in the field's creation but also the deliberate preservation of specific trees that were fruitful for the owner of the field. Specifically, Pantoléôn left behind an evergreen oak and another oak that bore edible acorns.[483] While quantity is impossible to discuss given the nature of the sources, it seems reasonable that peasants were clearing land in order to pay rents and taxes, a phenomenon that will receive further treatment below.

The increase in livestock was another significant economic change that explains the ecological transformation presented in several pollen samples. Changes in vegetative cover, particularly the decline of evergreen oak and the increase of juniper, make sense given an increase in the number of goats and sheep and their increased dietary demands. Growing human population ultimately prompted additions to livestock populations, and the principal drivers of this growth were probably the new large-scale landowners that achieved their positions in the tenth and eleventh centuries around the Aegean Basin. Monasteries, with their significant herds, could greatly increase such pressures. For example, the monastery of Xenophon acquired outside of Athos livestock that included over 2000 goats and sheep, 150 cows, and 130 buffalo, among other animals.[484]

While the wealth of the lay landholding elite in eleventh-century Byzantium is very hard to quantify thanks to the fragmentary nature of the evidence (in comparison to monastic

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[482] *Actes d'Iviron II*, pp. 187, no. 48, line 5. It reads: τὸ χωρ(άφιον) τὸ ὑλοκωπηθ(ὲν) π(αρὰ) Παντ(ο)λ(έοντος) γα(μβροῦ) Δοβροβήτ(ου). See also LeFort, "The Rural Economy, Seventh-Twelfth Centuries," 271, n. 281.

[483] *Actes d'Iviron II*, pp. 187, no. 48, lines 4-5 (line 7 in the TLG). "…And it comes down to the two trees that have been inscribed, that is the prickly-oak and the edible acorn-bearing oak, and cuts in half the small farm cleared by Pantoléôn, the son-in-law of Dobrobétés…" διἔρχ(ε)τ(αι) τὰ δυο δένδρ(α) τὰ ἐσφραγισμ(έ)ν(α), ηγουν τὸν πρινον (καὶ) τὸ ἡμεράδ(ιον), καὶ κόπτ(ει) μέσον τὸ χωρ(άφιον) τὸ ὑλοκωπηθ(ὲν) π(αρὰ) Παντ(ο)λ(έοντος) γα(μβροῦ) Δοβροβήτ(ου).

[484] Morris, *Monks and Laymen in Byzantium*, 232 made this observation. See the editors discussion of the monastery's holdings in *Actes de Xénophon*, 17.

landowners), it appears that they possessed plenty of animals too.[485] Of the three available examples of lay landowners who left descriptions of their assets, namely Michael Attaleiates, Eustathios Boilas, and Gregory Pakourianos, only the latter left any count of his livestock. As of 1083, this number included 47 yokes of oxen and over 110 horses among his property (along with sheep, rams, goats, and buffalo), which was considered to be a mid-level aristocratic holding in comparison to the exceptionally powerful families of the Komnenoi, Phokades, and the Skleroi.[486] Gregory Pakourianos, and other aristocrats apparently, possessed horses in considerable numbers, which were a special marker of status.[487] It is true that equids would do little to disrupt woodland directly, instead using grasses for their feed. However, people have often been willing to remove woodland in order to use the space to such grow feed, once again helping explain the pollen samples' apparent decline of arboreal species and increase in cereals and grasses.

Provincial hagiography depicts landscapes with plenty of livestock. The *Life of Lazaros* mentions shepherds in several cases, including a man named Kerkyros (who later became a Galesiote monk) shepherding animals on the mountain on behalf of Lazaros' monastery.[488] In other passages, there is mention of a "sheepfold" with a bronze pot and cooked meat inside,[489] and of a sheepfold on Mount Galesion that was the workplace of a shepherd who had a vision of the *Theotokos*.[490] The *Life of Lazaros* also discusses a cheese shortage that induced anxiety in the

[485] Cheynet, "Fortune et Puissance de L'aristocratie (Xe-XIIe Siècle)," 202.
[486] For Pakourianos' livestock, see Thomas and Hero, 554. For the assessment of Gregory Pakourianos as a middling elite figure in the context of eleventh-century Byzantium, see Cheynet, "Fortune et Puissance de L'aristocratie (Xe-XIIe Siècle)," 204.
[487] Cheynet, "Fortune et Puissance de L'aristocratie (Xe-XIIe Siècle)," 205.
[488] *Life of Lazaros*, 252. See page 138 for another shepherd, namely one who met an untimely demise while working on a cliff on the mountain. See pages 125-126 for a story about a shepherd who accidentally killed a holy man, afterwards living in the holy man's cave in order to preserve his memory.
[489] *Life of Lazaros*, 148.
[490] *Life of Lazaros*, 334.

community's monks, and the presence of wool and wool clothing.[491] These examples, however banal they may be, highlight the centrality of goats and sheep in the local economy in which the *vita* was written. Indeed, the prevalence of goats appears, at least in the case of Mount Galesion, to have gone beyond domesticated livestock. According to Saint Lazaros' hagiographer, wild goats were a recurring phenomenon around the mountain.[492] In one case, a group of wild goats were temporarily domesticated (or at the very least, rendered exceptionally obedient) thanks to one of Lazaros' monks casting a spell.[493]

The available *vita* from Lakonia also provides an image of a provincial context in which livestock was prevalent and important. It mentions Saint Nikon's modest monastery owning some livestock; which were ultimately the target of both an aggrieved local notable and a group of neighbouring Slavs.[494] We receive a further reference to livestock with the *vita*'s story of a horse tamer by the name of Ioannes.[495] Other textual sources discuss shepherding in Lakonia too, specifically near Elos (located on the coast just south of Sparti and its environs). Ioannes Skylitzes' *Synopsis* of histories makes a reference to shepherding in this locale, specifically discussing the area's local shepherds who allegedly communicated with demons.[496] Skylitzes even attributes the location's name's etymology to the Greek word "Elos," which means "marsh" or "meadow-marsh," but can also refer to a forest, an attribution that the chronicler makes in the passage. Further textual references to shepherding in Lakonia have caught the attention of recent scholarship such as that by Florin Curta. He noted that the references in the *De Administrando Imperio* to Peloponnesian abbots and soldiers contributing many horses in the reign of Romanos

[491] *Life of Lazaros*, 307, 251, 302.
[492] *Life of Lazaros*, 244.
[493] *Life of Lazaros*, 166-167.
[494] *Life of Nikon*, 198-201 and 208-209 respectively.
[495] *Life of Nikon*, 242-243.
[496] Ioannes Skylitzes, *A Synopsis of Byzantine History 811-1057*, translated by John Wortley (Cambridge: Cambridge University Press, 2010), 152-153. For the original Greek, see Ioannes Skylitzes, *Ioannis Scylitzae Synopsis Historiarum*, ed. H. Thurn (Berlin, 1973) 159.

I Lekapenos (r. 920-944); to Ioannes the horse trainer and the references to livestock rustling in the *vita* of Nikon; and to a slaughterhouse in the *typikon* of Nikon's monastery, all point to a specialization in livestock in the Byzantine Peloponnese.[497]

The environmental evidence meshes well with the image of Lakonia as a region with a considerable pastoral component to its economy in the Middle Byzantine period. The wetlands of Lakonia, particularly around the mouth of the Evrotas River, near modern Skala, which is the area once known as Elos, provide excellent terrain for horses because such animals are well disposed to the wet pasturage. The exit of the Evrotas River into the sea became marshier over the course of the postclassical centuries with the formation of a bigger soft coast.[498] While Gytheion (now known as Marathoníси) had been the Lakonian port in the Roman period, Skala (formerly Elos) was the port in the Byzantine era. Skala was further inland than Gytheion, and thus more defensible versus pirates.[499] It was also very marshy, and still is today.

One could perhaps say that this material interaction with the landscape that focused on pastoralism was mirrored by an "equestrian" mental culture in the region. There are many equestrian saints in Lakonia, and their presence is mostly attested from the thirteenth century, which indicates that the pastoral economy was alive and well long after the period in which the *vita* of Nikon was finished. Recent scholarship has claimed that equestrian saints were especially popular in Lakonia. St. George had a notable presence there, as did "the martyr Niketas," and there is a thirteenth-century cave church illustration in the area that depicts 6 equestrian saints.[500]

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[497] Curta, 186 and 217.
[498] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 342. See J. M. Wagstaff, *The Development of Rural Settlements: A Study of the Helos Plain in Southern Greece* (Amersham, Eng.: Avebury, 1982), 55-56 for the maps that show this alluviation between the ancient and modern periods.
[499] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 342.
[500] Ilias Anagnostakis and Titos Papamastorakis, "St. Romanos *epi tēn sklepan*. A Saint Protector and Healer of Horses," in *Animals and Environment in Byzantium (7th-12th C.),* eds. Ilias Anagnostakis, Taxiarchis G. Kolias, and Papadopoulou (Athens: The National Hellenic Research Foundation/Institute for Byzantine Research, 2011), 159.

Furthermore, after 1259 the cult of "St. Romanos epi tēn sklepan" became very popular in the area. Thus, as of the twelfth and thirteenth centuries, Lakonia was home to a provincial society that spent a great deal of time working with, and thinking about, livestock and horses.

As previously discussed, the Southern Argolid lacked evident Byzantine settlement until about the year 1000.[501] Once these new sites of habitation were established, some Byzantines certainly made use of their new environment to practice herding. Archaeologists found one site, a cave that clearly functioned as a goat-fold even until the present.[502] This particular site contained modern and medieval sherds and pieces of roof-tiles. Interestingly, while Helladic remains from the distant past were also present at the site, there were no remains from the ancient Greek, Hellenistic, or Roman eras, indicating that it was only around 1000, at the earliest, that people resumed using this site for herding activities. Of course, it is possible that the cave acquired this function even later in the medieval period, but one can still be sure that the Southern Argolid's late tenth- or early eleventh-century Byzantine arrivals were moving animals through the landscape and having an effect on the vegetative cover. Indeed, another sheep fold, the Dhidhima cave, included medieval remains beside the Middle and Late Roman ones, indicating either that this was a site for those shepherds who theoretically still passed through the Southern Argolid during the seventh through tenth centuries, or was utilized by Byzantine newcomers after 1000.[503]

In addition to grazing, the growing economy's demands for more amphorae and *pithoi* (and other ceramics in general), cooked food, heating, and baking created great demands for fuel, quite likely evergreen oak. While all of these demands are almost impossible to quantify, one can simply point to the much greater material remains from this period as outlined in the

[501] For the lack of remains before 1000, see Jameson, Runnels, and van Andel, 113 and 409.
[502] For this site, see Jameson, Runnels, and van Andel, 521. The site is G9.
[503] Jameson, Runnels, and van Andel, 477. The site is the Dhidhima cave, labeled D3 in the survey.

archaeological surveys. After all, such surveys' finds often focus on ceramics, which provide us with an appreciation for fuel requirements. As discussed in chapter 3, recent reconstructions of the process of firing a kiln have demonstrated that significant quantities of deadwood were required for fuel, even when only a modest amount of ceramic containers were being fired.[504] Evergreen oak is an excellent fuel for kilns, and it seems that at some sites, such as Lerna and Volvi and Vravron (see above) there was a slight decrease in evergreen oak at this time. Such an attribution must be treated with caution, but it is certain that fuel was required, and evergreen oak scrub is ideal for such an activity. Of course, basic heating also requires considerable quantities of fuel. The typical family in the Southern Argolid during the twentieth century (specifically those that did not have access to a gas supply) used 2 metric tons of wood and brushwood per year for their heating needs.[505] Some of this supply came from pruning fruit trees, but the majority came from common lands, mainly located in the hillier areas. Indeed, there are sixteenth- and seventeenth-century sources for the Southern Argolid that mention the area's pine trees as used for firewood, perhaps shedding some light on the decline of pine in some of the other pollen samples.[506] As mentioned in the previous chapter, olive wood is useful for this purpose too, but given the concurrent increase in olive oil production during the later tenth and eleventh centuries (an increase that the next chapter will discuss), emphasis reasonably could have shifted to evergreen oak as a potential fuel source.

It is hard to quantify the changes in the vegetative cover of the various regional landscapes discussed above over the course of the tenth and eleventh centuries. However, the

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[504] Guy Sanders, "New Relative and Absolute Chronologies for 9th to 13th Century Glazed Wares at Corinth: Methodology and Social Conclusions," in *Byzanz Als Raum*, ed. K. Belke et al. (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 2000), 167-169.
[505] Jameson, Runnels, and van Andel, 308.
[506] For this observation from the sixteenth- and seventeenth-century sources, see Jameson, Runnels, and van Andel, 308. Also see page 308 for reference to prunings from fruit trees and wood from common areas as fuel sources for peasants.

general trend of declining arboreal values (especially pine and evergreen oak) make sense given the emergence of new sites, clearance for cereal and other agricultural species, and the establishment of more substantial herds under the new landowning elite. However, as the remainder of this chapter will argue, woodland remained important to Byzantines living around the Aegean Sea in the eleventh century, and certain species appear to have fared rather well within this context of economic intensification.

Deciduous Oak's Fortunes

Why did deciduous oak's profile remain steady or even increase in some cases amidst a general decline of tree pollen? Some clearance was occurring, but deciduous oak was weathering the storm rather well because of what it could offer. Indeed, the blip in deciduous oak that was evident in some of the above pollen samples could reflect the maturation of trees that peasants had protected or encouraged for various purposes. While it is not possible to determine who planted or protected these deciduous oak trees, it is evident that local inhabitants living around Lake Lerna, Lake Volvi, and the Vravron marsh, and ostensibly elsewhere in the Aegean littoral, left these trees where they were and probably encouraged their offspring to develop too, even as they uprooted other trees in order to make space for cereals and grazing. I shall discuss below the choices that influenced people to leave deciduous varieties of *Quercus* in their soil and how they made use of them.

The presence of deciduous oak was not by chance in this Mediterranean context, but was closely linked with humans' priorities. As discussed earlier in this work, deciduous oak often exists on land that has moist and relatively deep soils, in other words, the same land that is amenable to agriculture. Thus, deciduous oak's presence is often indicative of either an absence

of agriculture-pursuing humans, which even in the most demographically depleted context in Byzantium was highly improbable, or a human community's willingness to leave the deciduous oak woodland undisturbed and to work with it.[507] In the case of Byzantium, especially in the tenth and eleventh centuries with their modest clearance and increased grazing, the latter case appears to be a far more likely scenario. A case from modern Greece can illustrate how communities can go about this process. In the 1920s, the village of Plikati in the Pindos mountains of northern Greece designated an area as out-of-bounds for grazing for almost a decade. They also banned the removal of the deciduous oaks there because they wanted as much deciduous oak as possible given that it was the "preferred" provider of feed for their animals. Villagers, acting under the Mayor's permission would enter this designated woodland in the late summer in order to cut down branches for use as "leafy hay."[508] This example pertained to collective land, and illustrates how people wanted deciduous oaks around, but also had to cooperate and protect it if they wanted the deciduous oak to survive in the face of acquisitive livestock.

The first, and perhaps the most immediate factor that peasants took into account when deciding whether or not to remove deciduous oak trees, was *Quercus*' ability to ground itself and seriously challenge anyone's desire to remove it from the soil. While Byzantine sources are almost non-existent for describing this process in either qualitative or quantitative terms, modern parallels can provide useful perspectives for the experience. For example, in one case from northern Greece in the 1930s, a father and son worked every precipitation-free day in a six-month period, and managed to clear 1 hectare of deciduous woodland.[509] The work was difficult,

[507] Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244; Grove and Rackham 161-162.
[508] Halstead, 306.
[509] Halstead, 260.

and while the boy cut off the trees' branches the father had to use a pick to work through the roots so that the trees' stumps could eventually be removed from the soil. In order to expedite the process, much of the brushwood was burnt on top of the stumps so that what was left of the oak would die and become easier to extract from the earth. Deciduous oak stumps could even be left for several years to rot on account of how hard they were to take out of the soil. Calculations from other examples further emphasize the difficulty of clearing deciduous woodland. When big trees are present, it can require 180-200 days of labour to uproot and remove a hectare of deciduous woodland in a context without power tools and mechanization.[510] Of course, this clearance only makes sense when there is not more pressing business for cultivators, such as harvesting or planting or vintage. Even after the land has been cleared, the soil is hard and requires considerable tillage to break it up, often necessitating the use of especially strong animals to pull the plow. In the early twelfth century, many Byzantine peasants, at least according to the archives of Athos and Patmos, had two, one, or no oxen in their immediate family, and so such work, while it still would have been possible, had to be weighed carefully against other activities such as plowing and harvesting.[511] Furthermore, the land, once cleared, may yield very good crops for the first few seasons, but the cost in labour is massive and only makes sense for a peasant when there are notable rewards from a market that has great demands or there is coercion from landowners or the state to produce more agricultural surplus. Quite simply, clearance requires certain economic and social conditions.

Instead of engaging in the tiring and calorie-consumptive exercise of clearing oak, people can choose to leave it behind for a variety of reasons, working around the tree in order to acquire

[510] Halstead, 262.
[511] See Harvey, *Economic Expansion in the Byzantine Empire*, pages 50-52 for discussion of this topic. Thonemann, 269, discusses how the inhabitants of the lower Maiandros in 1073 were essentially subsistence farmers with few oxen.

arable land but respecting the fact that *Quercus* can provide a lot if left undisturbed. First, deciduous oak is an abundant provider of leaf fodder, and many species are prolific producers of acorns, and such fodder would make it worthwhile to keep these trees, even when removing other forms of vegetation. Indeed, some mature oaks can provide several hundred kilograms of acorns in a good year, an excellent source of nutrients for people either through direct consumption of acorns or the more likely indirect consumption of these calories via pork.[512] Leaf fodder is a reliable product too and one that is well suited to the many goats and sheep that were ambling through the Aegean countryside in this period. Thus, Pantoléôn's clearance may have removed a lot of other trees from his field, but he left behind the two oaks in the middle of his property, preferring to work around them.[513] Presented with the choice to either cut down the tree and dig up the roots and pull out the stump (probably with the assistance of animals or other family members) and sow cereal in its place, or to leave the two trees and obtain leaf fodder for his (most likely) small number of animals and to have edible acorns for himself, he chose the latter. Two trees that could yield a few hundred kilograms of acorns every two to four years was worth a lot more than the extra bit of cereal he could extract from the few square feet on which they grew.

While, aside from the case of Pantoléôn, explicit reference to leaving the oak behind amidst other clearance in Byzantium is elusive, modern parallels illustrate the practice. In modern Liguria in Italy, there was an example in which people cleared land for farming, cutting down the beech and alder trees but leaving behind the oaks for their leaf fodder.[514] Such choices would have made perfect sense in the Byzantine context between the tenth and twelfth centuries. After all, pastoral economies remained prevalent in the Aegean Basin in this period of economic

[512] Lyle, 372.
[513] *Actes d'Iviron II*, pp. 187, no. 48.
[514] Halstead, 268.

expansion, probably even increasing in tandem with the growth of land devoted to cereal cultivation, given what we have seen with the profile of juniper above. The oaks that served as boundary markers in the Athonite documents (discussed below) may very well have been such relicts of the countryside pre-clearance.

Aside from keeping a supply of fodder, there are several more reasons for leaving deciduous oak trees behind when clearing other forms of woodland. It can sustainably provide small pieces of wood for building purposes, such as lintels. And as discussed in chapter 2, *Quercus* can also provide sustainable firewood should one choose to pollard or shred the tree. Additionally, these trees can provide a desirable shaded area for farmers to take respite beneath during the work of tillage and reaping (we know from modern cases of Greek cultivators clearing land but leaving the odd deciduous oak tree for shade). Indeed, in modern Lakonia, farmers often leave the tree alone in their fields for that specific purpose.[515]

The Byzantine peasants themselves might have been eating some of these acorns too. After all, as previously mentioned, humans can eat acorns, with the early tenth-century Saint Paul of Latros explicitly having done so.[516] The text that discusses Pantoléôn's two trees labels one of them as "himeradion (ἡμεράδιον)," which modern editors have rendered "edible acorn-bearing oak."[517] Another document from Iviron's archives mentions villagers dividing up acorns in the hills above monastic lands.[518] While such sustenance was not necessarily central to the Byzantine peasants' diet, peasants could obtain an impressive amount of nutrients from it. Apparently three weeks of gathering acorns in pre-modern California could keep the foragers fed for two years, according to modern ethnographer's studies. While the Byzantine case was

[515] Rackham, "Observations on the Historical Ecology of Laconia," 82.
[516] Lewthwaite, 217-230; J. McCorriston, 97-107.
[517] *Actes d'Iviron II*, pp. 187, no. 48, line 5 (line 7 of the TLG) "…ἡμεράδιον." The editors render this word as an edible acorn-bearing oak on page 187.
[518] *Actes d'Iviron I*, pp. 160-163, no. 9.

certainly not the same, it was a rational decision for these peasants to preserve the deciduous oak trees in order to add some security to their food sources.[519]

Another use of oak, albeit a use that did not result in a commodity or product, was as a boundary marker. The Athonite archival material from the eleventh and twelfth centuries provide a plethora of examples of deciduous oak playing this role in their descriptions of the landscape. Unlike earlier documents, such as the Farmers Law, the Athonite texts often use the word "drus (δρῦς)" in their descriptions of property and property boundaries, specifying deciduous oak for the reader.

A listing of examples of this phenomenon in Athonite texts would go on for pages, so one example will suffice.[520] One Athonite text rich in oak trees as boundary markers is a document from the monastery of Iviron's archives, written in 1062. In this text, Petros, an official and holder of the imperial title of *asekretis*, along with local bishop, delineated land in order to settle a dispute between the monastery of Iviron and the inhabitants of the nearby *kastron* of Ézéba.[521] Apparently, the latter group had attacked monastic lands en masse and had destroyed Iviron's property and cut down some of their trees. In the document's *periorismos* the text mentions a "withered" or "dead" oak tree, an oak tree inscribed by "us (or the "monks")," and "an oak tree, newly-inscribed."[522] In other words, several deciduous oaks, each of which was specifically acknowledged for some sort of physical feature, played roles as symbols in a particular local landscape. The same document also contains a delimitation for a field that the monastery owned, and it had a couple of oak trees in its delimitation too, one of which was "old-inscribed," the

[519] Logan, 55-56.
[520] In addition to the oak boundary markers already addressed, further examples (although still not a complete list) are available. See also *Actes d'Iviron I*, pp. 243-247 no. 27; *Actes d'Iviron I*, pp. 262-270, no. 30, line 4; *Actes de Vatopedi*, pp. 81-86, no. 5, line 27.
[521] *Actes d'Iviron II*, pp. 98-104, no. 35.
[522] *Actes d'Iviron II*, p. 103, no. 35. See line 25 for the "withered" or "dead" oak trees (τοῦ ξηροῦ δρυός); see line 28 for the oak inscribed by "us (τοῦ νῦν σφαγισθ(έν)το(ς) παρ' ἡμῶ(ν) δρυός)"; see line 29 for the newly inscribed tree (ἐν ὧ καὶ νεοσφάγιστος δρὺς ἵστατο).

other of which was a "great inscribed" oak.[523] This is not to say that oaks were the only type of tree used as boundary markers in this document; a plane tree was also mentioned in this role.[524] However, deciduous oaks were by far the most common type of tree to serve as boundary markers in the Athonite records.

While such a topic is poorly conveyed outside of the Athonite archives, one receives whispers of it in the limited source base of provincial hagiography. The *Life of Lazaros* makes repeated references to a specific oak tree (even called "the" oak tree) that had a cross on it, and there was another tree known to the *vita*'s audience, named "Philippikos' oak."[525]

It made sense to use such trees as boundary markers: they could not be moved, a problem that occurred in the disputes of this rural world. In one case, a document from the monastery of Lavra accused the monastery of Iviron's monks of ripping several boundary markers out of the land and moving them elsewhere.[526] Oak, as a noticeable tree, one that people would desire to keep, and a difficult one to remove from the soil, was an excellent means of conveying a boundary marker. On one occasion, the monks of the Athonite monastery of Esphigmenou accused their neighbours of deliberately chopping down trees that functioned as boundary markers.[527] Imperial judges saw to it that the boundaries were restored, and thus the culprits had wasted a considerable amount of work to no avail.

Finally, Byzantines had a specifically cultural reason for leaving deciduous oaks alone, namely that negative supernatural forces were often associated with these trees. Notably, the hagiographer of Saint Lazaros recounted a story of the devil tempting and confusing a layman

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[523] *Actes d'Iviron II*, p. 103, no. 35. See line 36-37 for the "old inscribed oak" (παλαιοσφραγίστου δρυός) and the "great inscribed oak" (ἐσφραγισμ(έ)ν(ου) δρυὸ(ς) τοῦ μ(ε)γ(ά)λ(ου)). Alternatively, see line 79 of the TLG.
[524] *Actes d'Iviron II*, p. 103, no. 35, line 25. The text mentions πλατ(α)ν(ος), which means "plane tree."
[525] For "the oak tree," see the *Life of Lazaros*, 265, 268. For Philippikos' oak, see the 342.
[526] *Actes de Lavra*, pp. 203-207, no. 35.
[527] *Actes d'Esphigmenou*, pp. 49-54, no. 4, especially lines 22-25.

(who was about to be tonsured) after he fell asleep beneath an oak.[528] This particular tree was apparently untouched when the hagiographer wrote the *vita*, and it was even named in the text as "Philippikos' oak," an object still present in the immediate environs of the monastery and ostensibly one that the *vita*'s audience knew about. Such concerns were prevalent in the ancient Greek world too, despite the study of ancient Greek religion's relative ignorance of the topic.[529] Ancient Greek literature has yielded several examples of stories in which nymphs inhabit oak trees, living as long as their arboreal abode survives. In one example, supplied by Ovid, when the mythical Erysichthon cut an oak tree, the tree bled, the nymph within it died and cursed him as she did so, and he eventually suffered an awful death.[530] Thus, nymphs (for trees and small bodies of water) were an important feature in the rural world and its lore in ancient Greece, and this importance apparently continued through the twentieth century in many parts of the countryside. Even a few decades ago, according to some ethnographers, there were Greek peasants who claimed that nymphs (alternatively referred to as nereids or dryads or naiads) lived in oak and plane trees.[531] Falling asleep beneath such trees, or cutting them down, was often considered hazardous to one's health and soul. In one instance, in a story related in 1900, Arkadian woodcutters were known to flee the moment the large oak (or pine) on which they were working began to fall, accordingly hiding and being silent, lest the Nereid within the fallen tree find the woodcutter and punish him for the act of felling.[532] Given the presence of these beliefs in both the ancient and the modern Greek countryside, there is simply no reason to

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[528] *Life of Lazaros*, 342.
[529] Jennifer Larson, *Greek Nymphs. Myth, Culture, Lore* (Oxford: Oxford University Press, 2001), vii. Larson emphasizes that the study of ancient Greek religion, with its urban and elite focus, typically neglects the concerns and lore of the poor and rural population. Thus Gods receive more attention than nymphs and other beings that actually would have been very relevant to the average person in the ancient Greek world.
[530] Ovid, *Metamorphoses* 8.873-878. See also Larson, 76. Erysichthon's curse was to become insatiably hungry, ultimately eating himself.
[531] Larson, 10-11; John Cuthbert Lawson, *Modern Greek Folklore and Ancient Greek Religion* (New York: University Books, 1964), 155-156.
[532] Lawson, 159.

discount their presence in the Byzantine era. Such an explanation, while not an economic one, is very powerful. Indeed, it provides another possible rationale for certain oak trees surviving the clearance of the tenth through twelfth centuries.

Despite the slightly higher profile of deciduous varieties of *Quercus* in the pollen samples and despite the ongoing phenomenon of clearance in the countryside during the tenth and eleventh centuries, it actually appears that Byzantines in this period made more use of deciduous oak in their daily lives than before. Perhaps with greater availability, people felt freer to use deciduous varieties of *Quercus*. For example, Middle Byzantines had a preference for oak in church construction, a preference that is reasonable given the tree's ability to supply hard, excellent timber. Peter Kuniholm's analysis of wood in church beams from the middle Byzantine period show a preference for oak, along with some conifer and juniper, and a solitary case of chestnut.[533] This development could easily be a departure from the Late Antique world, a context in which the few references to the topic seem to focus on exceptionally tall and straight cedars, pines, and cypresses gathered from Lycia, Cyprus, and Lebanon.[534]

But there were increases in oak's use specifically as the middle Byzantine period progressed. Essentially, medieval Romans were more likely than their predecessors in Late Antiquity to use oak (and also its relative, the chestnut) for ship construction. According to the data taken from the comprehensive archaeological work on shipwrecks in the harbor of Constantinople, it appears that between the ninth and eleventh centuries, oak was preferred for constructing trade ships.[535] These species had very resistant wood, taking a longer time to rot than their competitors. This choice of wood use represents a break from earlier periods, such as

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[533] Peter Ian Kuniholm and Cecil L. Striker, "Dendrochronological Investigations in the Aegean and Neighboring Regions, 1977-1982," *Journal of Field Archaeology* 10, no. 4 (1983): 411-420.
[534] Cyril Mango, *Byzantine Architecture* (New York: Rizzoli International Publications, 1985), 11-12.
[535] Ünal Akkemik and Ufuk Kocabaş, "Wood of Byzantine Trade Ships of Yenikapi (Istanbul) and Changes in Wood Use from the 6th to 11th Century," *Mediterranean Archaeology and Archaeometry* 14, no. 2 (2014): 317-327.

the ancient Roman era and Late Antiquity, in which coniferous species, namely pine and cypress, were the dominant material for trade ship construction. The assessment of over 3122 samples of wood from the wrecks in the Constantinopolitan harbor indicates that the major shift from coniferous trees (especially pine) to oak and chestnut occurred in the ninth century. Indeed, the ninth to eleventh-century remains are primarily oak and chestnut for planking, oak for ceilings, oak for the keel (along with hornbeam, beech, and plane), and exclusively oak for the futtocks (along with ash).[536]

The authors of the study on Byzantine trade ships acknowledge that the location from which the wood was derived remains mysterious. The two suggested locations are the northern shores of the Sea of Marmara, and the northern shores of the Aegean Sea.[537] The logic behind choosing the northern shores of the Sea of Marmara as the source is that that particular region is home to oak forests with relatively little pine. However, in light of the pollen records for sites such as Lake Volvi, the Tristinika marsh, and Gravouna, similar claims can be made for the northern shores of the Aegean Sea too. Regardless of the original home of this wood, what is clear and important is that Byzantine shipwrights were interested in using quality timber for their work, and they were using available wood from relatively close to home (not Italy or Syria or elsewhere in the Mediterranean). Such an emphasis is important and demonstrates both the availability of oak and the value placed on its qualities. Essentially, there was a change in mentalités about what wood to use for building ships during the Middle Byzantine era.

We are left with an intriguing problem about the supply of oak around the Aegean Sea during the tenth and eleventh centuries (and ostensibly going back to the murky seventh and eighth centuries). One can see that this tree was carefully maintained around the Aegean Basin,

[536] Akkemik and Kocabaş, for planking, see page 320; for ceilings, see page 322; for keels, see page 322; for the futtocks, see page 323.
[537] Akkemik and Kocabaş, 323.

on account of oak providing timber, shipbuilding materials, and fodder for animals. It is reasonable to hypothesize that people were growing deciduous oak and protecting it. However, sources are woefully inadequate for telling us what this process would actually have looked like. The *Geoponika*, an admittedly problematic source given that it might only represent fantastical agrarian ideas of tenth-century urbanite elite men from Constantinople, mentions planting holly oaks (evergreen oak) before March first.[538] Archibald Dunn's work shed some light on the Byzantine state's role and the role of forest guardians in the thirteenth century in protecting state-owned woodland, but the middle Byzantine period remains opaque in this regard. In one intriguing example, albeit recorded in the thirteenth century, Byzantines from the village of Mantaia on the western shores of Anatolia maintained a grove of oak trees, apparently irrigating them.[539] While one cannot be sure if such trees were deliberately planted in the few hundred years before the text was written (they probably were old though given the tree's long lifespan), it is certain that these peasants deliberately maintained *Quercus*. Such an example emphasizes that the oak, while a woodland variety of tree, can function very much like a fruit tree in the minds of people.

Despite the clearance of woodland, the increase of cultivation, and the larger herds in the context of a society that featured more big landowners than before, and despite the desire to use deciduous oak in ships and churches, there seems to be no major decrease in these species during our period. If anything, deciduous varieties of *Quercus* actually experience a slight increase in their profiles according several of the pollen samples. While we cannot be absolutely sure if

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[538] *Geoponika*, 239.

[539] For an excellent analysis of the village of Mantaia and its agrarian regime, see K. Smyrlis and D. Kyritses, "les villages du littoral égéen de l'Asie Mineure au moyen âge," in *Les villages dans l'empire byzantine: IVe-XVe siècle*, ed. Jacques LeFort, Cécile Morrisson, and Jean-Pierre Sodini, Réalités Byzantines (Paris: Lethielleux, 2005), especially 439 and 444 for these oaks. For the relevant texts, see Miklosich and Müller, vol. IV, pp. 94-95, 104, 110, 112-113, 122, 126.

there were many "oakeries" of deliberately planted oak trees that had matured, or if that clearance simply made the deciduous oak seem much larger *proportionately* than before in relation to pine and evergreen oak, we can be sure that oak trees were often spared when clearance took place in several locales around the Aegean's shores. Indeed, it is possible that all of the above scenarios occurred simultaneously. Deciduous oak had become valued in the landscape, Byzantines protected them, and they even developed new uses for them.

Chestnut

Quercus' cousin, and fellow member of the family of *Fagaceae* (an arboreal family that includes oak, beech, and chestnut), the chestnut (*Castanea Sativa*) appears to have also found new uses among the Aegean Basin's inhabitants in this period. While its history is much more obscure than that of oak, receiving less mention in texts and being harder to trace in the pollen samples, *Castanea* does illustrate the importance of woodland in daily life in the tenth and eleventh centuries and helps demonstrate how the Aegean littoral's inhabitants used woodland. While not matching the central importance of chestnut that Paolo Squatriti identified in early medieval Italy, the role of *Castanea* in the Aegean Basin during the tenth and eleventh centuries provides another indicator of changed land use and economy in the middle Byzantine context.[540]

Deciduous forests with chestnut are very common in the eastern Chalkidike today, and were even prominent in the less wooded period at the beginning of the twentieth century.[541] Indeed, in that comparatively recent time, people from villages near the Chalkidike were

[540] For the role of chestnuts in the early medieval Italian landscape, and for the use of chestnuts as a means to analyze the changing land use and culture of early medieval Italy, see Paolo Squatriti, *Landscape and Change in Early Medieval Italy: Chestnuts, Economy, and Culture* (Cambridge: Cambridge University Press, 2013).
[541] A. G. Ogilvie, "A Contribution to the Geography of Macedonia," *Geographical Journal* 55 (1920): 12. See pages 15-16 for an account of the reduced amount of trees in that period.

documented gathering chestnuts and bringing them to the city of Thessalonike.[542] Further south, and immediately in the vicinity of the location from which the greatest concentration of Byzantine monastic sources originated, the Athonite peninsula itself has many chestnut trees in its mid to upper elevations.[543] And while chestnut is a poor pollinator, lone grains of *Castanea* have been deposited in the sediments of Lake Volvi during the era that this chapter examines.[544]

Chestnut is common in another region in which this dissertation focuses, namely, Lakonia, where they are often wild today, particularly around the Parnon mountain range.[545] The Venetian censuses of the early 1700s mention three villages which had place names based on the chestnut tree.[546] Interestingly, the Barrington Atlas of the Greek and Roman world has no such chestnut-themed toponyms in Lakonia.[547] This evidence alone is not indicative of a major takeover of the Parnon hills by chestnuts during the Middle Byzantine period, but it does reflect that at some point between the ancient and early modern periods, people were naming areas around Lakonia after these trees.[548]

Byzantines were eating chestnuts in the tenth and eleventh centuries. The rule of Athanasios the Athonite mentions chestnuts as part of the monastic diet, specifically as a food

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[542] A. G. Ogilvie, "Physiography and Settlement in Southern Macedonia," *Geographical Review* 11 (1921): 184.
[543] Graham Speake, *Mount Athos: Renewal in Paradise* (New Haven and London: Yale University Press, 2002), 9.
[544] For the Lake Volvi core's diagram, see S. Bottema, "Palynological investigations in Greece with special reference to pollen as an indicator of human activity," 275. For the interpretation of this diagram, see Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244-245. For the presence of chestnut between the proposed ancient Roman and later medieval layers, see the European pollen database's information at the layer of 340, 320, and 300cm.
[545] Rackham, "Observations on the Historical Ecology of Laconia," 87.
[546] Rackham, "Observations on the Historical Ecology of Laconia," 109. For the census that occurred between 1704 and 1711, see Malcolm Wagstaff, "The Formation of the Modern Landscape of the Survey Area," in *Continuity and Change in a Greek Rural Landscape: The Laconia Survey*, ed. William Cavanagh et al., vol. 1, 2 vols., Annual of the British School at Athens, Supplementary Volume 26 (London" British School at Athens, 2002), 405.
[547] R. Talbert, ed., *Barrington Atlas of the Greek and Roman World* (Princeton: Princeton University Press, 2000), 58. However, the map includes a town called "Kastanies" on the island of Keos, just off of Attika. This is a notable exception in an otherwise chestnut-less collection of toponyms.
[548] Squatriti, *Landscape and Change in Early Medieval Italy*, 127 uses this methodology.

that can be eaten during Great Lent.[549] However, the model upon which Athanasios' late tenth-century document is largely based, the ninth-century Rule of Stoudios does not mention the chestnut in its sections discussing diet, despite the considerable overlap between the two texts regarding the dietary stipulations for monks.[550] It is reasonable to conclude that Athanasios, who adapted the Stoudite rule for the most part, was addressing the accessibility and desirability of chestnuts for his monastic brethren located in the Eastern Chalkidike. The inclusion of chestnuts in the Athonite diet represents a development on Byzantine monastic tables that took place in the tenth century, making use of a nut found in the woodlands that surrounded the monastic houses.

While chestnuts were clearly finding their way onto Byzantine monastic tables in the late tenth and eleventh centuries, it is not clear that Byzantines were specifically setting aside land for these trees and harvesting them in the deliberately planted groves that Paolo Squatriti examined from early medieval Campania and the Po Valley. Rather, it appears that various Byzantines were going into woodland to gather chestnuts. In 1017, several monks delimited an area near the entrance to the Athos peninsula in order to determine which lands were the property of the monastery of Lavra and which were those of the convent of Gabriel of Ptérè.[551] What is interesting for this chapter's purposes is that the agreement addressed a solitary holy man, named Kosmas Tornares, who lived amidst the lands being delimited. The document states at one point: "but the monk Kosmas Tornares, since he is a neighbor, he holds the right to cut wood and to collect chestnuts in the portion of Krabatou and in the portion of the monastery of lord Gabriel of

[549] Thomas and Hero, 226.
[550] Compare to Thomas and Hero, 109-111.
[551] *Actes de Lavra*, pp. 162-166, no. 21. There is a slight chance (see editors' comments on page 163) that this document is a copy of an original with some sneaky changes. However, authenticity is overrated and the important point for this argument is that it was a reasonable scenario for some solitary holy man to gather wood and chestnuts and to have usufruct.

Pteres called Philotheou."[552] Thus Kosmas, who was in the habit of acquiring sustenance from the chestnut trees, and possibly firewood as well (although such wood may have been gathered from other arboreal species), would continue to gather such products from this land even though it was now clearly divided by these two monastic houses. In this case, chestnuts were gathered from trees that had probably furnished these nuts for generations (it is a long-lived tree) and were not collected from carefully manicured groves on the monastery's properties.

Byzantine peasants were making use of chestnut trees located in tree-covered hills too. In a document from the monastery of Iviron's archives, dated to 995, a provincial judge gave the right to villagers of Siderokausia and the *paroikoi* of the monastery of Kolobou's *metochion* at Belikradou, to divide up acorns and chestnuts from a particular hill above the monastery's *metochion* (an agricultural property).[553] Specifically, the document states that if there were a shortage of acorns or chestnuts elsewhere, the villagers of Siderokausia were to have access to a hill above Kolobou's *metochion* (the *metochion* was called Belikradou) in order to obtain some nuts to make up for the shortfall.[554] The text does not specify if the nuts were for the monastery's *paroikois*' and Siderokausia's villagers' pigs or if any of the people themselves ate the nuts, but clearly, chestnuts were receiving distinction from acorns in this text and they were used for sustenance in some form, whether as pannage or as a product on humans' tables. And clearly

[552] *Actes de Lavra*, p. 165, no. 21, lines 19-20. The relevant excerpt reads: Ο δε μοναχὸς Κοσμας ο Τορναρής, επει γείτων εστιν, ἐχέτω ἐπαδίας ξυλ[εύεσ]θαι κ(αί) κάστανα συλλέγειν εἴς τε τὸ μερ(ος) τοῦ Κραβάτου κ(αί) εις το μέρ(ος) της μονης [[κυρ μονης]] τοῦ κῦρ Γα[βρ]ιὴλ τῆς Πτέρης ἤγ(ουν) του Φι(λο)θέου. I have rendered "ἐπαδίας" as equivalent to the modern "η επαδεια," or the "right to." I thank Aleksandar Jovanović for assisting me with that particular rendering.

[553] *Actes d'Iviron I*, pp. 160-163, no. 9.

[554] *Actes d'Iviron I*, pp. 160-163, no. 9, lines 48-50 (lines 91-92 in the TLG). "…at a time when a dearth of acorn or chestnut may come to pass, [a dearth] of the hillside's fruits, the inhabitants of Siderokausia are not to be shut out [from] distributing among themselves the acorns, by a pretext from the *metochion* of the monastery (ἡνίκα ἀφορία βαλάνου γένηται ἢ κασάτνου, τῶν ὀρεινῶν καρπῶν, οὐδὲν τοὺς οἰκήτορας τῶν Σιδηροκαυσιτῶν προφάσει τῶν μετοχίων εἴργεσθαι παρὰ τῶν τῆς μονῆς νέμεσθαι τὰς βαλάνους.)."

there were two different parties of peasants who were accustomed to gather such nutrition, with the villagers using at least one other location too.

Middle Byzantines also made more use of *Castanea'*s wood in their ships than ancient Romans had done, a development that occurred in tandem with the previously mentioned shift to oak as a material for the Aegean Basin's shipwrights. According to the data taken from the comprehensive archaeological work on shipwrecks in the harbor of Constantinople, it appears that between the ninth and eleventh centuries, chestnut became an important and common component in shipbuilding.[555] Specifically, after the ninth century chestnut became, along with oak, the principal material for ships' planks, a position that had previously been occupied by pine.[556] Thus, Middle Byzantines had found a new use for chestnut.

The evidence of chestnut in Byzantium is certainly not as abundant as that for oak. But the details that exist indicate a story in line with that already discussed for deciduous oak. People were making use of this tree in woodland, and were even adopting new uses of it in the less populated aftermath of Late Antiquity. While the economy was growing again, people continued to make room for this particular species.

Room to Maneuver

Despite all the references to clearance and the pollen cores' indications of such removal of trees, woodland continued to play a prominent role in the lives and landscapes of most Byzantines in the Aegean Basin. As the document from Vatopedi's archive illustrated at the beginning of this chapter, imperial officials and even lay and monastic landowners were often ignorant regarding who owned what land and where the boundaries between properties lay, thus

[555] Akkemik and Kocabaş, 317-327.
[556] Akkemik and Kocabaş, 320.

relying on the local knowledge of local people; people who knew the terrain and often knew it via its trees. Not only did these local experts know their landscape via its trees, they often lived in areas where trees were copious. In other words, even at the end of the eleventh century, there was plenty of wood and scrub in the Chalkidike, and probably in the areas in which archaeological surveys have been conducted.

The Athonite documents from the mid-eleventh century still portray a world with many trees, along with rocks, paths, and fields, and even ruined vineyards.[557] While such an image depicts a peopled rural world with agrarian activity, it also depicts a world that is far from densely populated, had old unworked or ruined property, and plenty of woodland to go around. One has to be cautious about how far to take ideas of economic growth in the tenth and even eleventh centuries. This is not to say that such growth had not occurred, but it had not yet created a countryside denuded of trees and covered in fields and villages.

Local knowledge was crucial in such a humanized and wooded context. One text from the monastery of Lavra's archive, discussing an incident in which the monks of Iviron had allegedly usurped land from Lavra, sheds light on a monk whose knowledge of the local landscape, particularly its arboreal cover, enabled him to determine where one monastic house's land ended and another's began. Allegedly, one Konstantinos Psellos and his unnamed mother had given their fields (fields which were alongside Lavra's) to the monastery of Iviron. Iviron's monks in turn had seized some extra land, taking some of Lavra's property, and destroying and displacing boundary markers in the process.[558] In this confusing context in which the boundaries were unclear, the various parties decided to ask an elderly monk, a local ("entopion" εντοπιῶν) named Nikon, who had grown up in the area, to demarcate the land, because he allegedly knew

[557] For this particular old vineyard, see *Actes d'Iviron II*, p. 103, no. 35, line 26.
[558] *Actes de Lavra*, pp. 203-207, no. 35. For the complaint, see lines p. 204, lines 6-13.

who owned what, whereas the heads of the monasteries of Lavra and Iviron, and the original seller of the property, Konstantinos Psellos, apparently did not.[559] The old monk Nikon took the witnesses along the *periorismos*, using as his reference points, along with streams and rocks, a plane tree, "the trees named Antigonia of Saint Nicholas" (one of which was a curved tree that held a cross), a great triple-trunked oak, a great oak holding a cross, a small inscribed oak in a dried up stream, an old-inscribed oak standing amongst old hollows, and a twin (double-trunked) inscribed oak in a ditch.[560] These trees certainly mattered to the old man (and the landowners who wanted to figure out their property lines). His familiarity with them demonstrates, not only that there were still plenty of trees to go around in the area even in the context of the growing agrarian economy of eleventh-century Byzantium, but that these were trees that he knew for their roles as symbols in the landscape. Their ages, appearance, and in one case name, all were familiar to him. This is an important part of the experience of Byzantine people that was almost certainly central to their daily lives, in the same way that street signs are in industrial- and post-industrial North America. And yet it is something so hard for modern readers to find in the sources given that its ubiquity made such symbols unremarkable and often of no interest to those who wrote the materials that survive from that period.

And such knowledge had to exist because people needed it for their sustenance and material culture. Despite the clearance of woodland and the greater proportion of land devoted to cultivating cereals, vines, and olives (the latter will be discussed next chapter), the usufruct

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[559] *Actes de Lavra*, pp. 203-207, no. 35, lines 20-23 mention that Nikon had lived there since being a kid (πεδωθεν, see line 22), and was "someone from among the locals (τις εκ τον εντ(ο)πιῶ(ν), see line 20)."

[560] *Actes de Lavra*, pp. 203-207, no. 35. For the plane tree (πλατ(α)νὸς), see line 31; for the named trees (ηστα δένδρα τ(ὰ) λεγὼμενα Αγτ(ι)γωνια του Αγιου Νικολ(ά)ου), see line 34; for the tree holding a cross (εν ο εστην κυρτ(ὸν) δενδρὸν εχῶ(ν) στὰβρῶ(ν)), see line 35; for the great triple-trunked oak (μεγαν τρικλαδῶ(ν) δρυν), see line 39; for the great oak holding a cross (μεγαν δροιν εν ο εστην σταβρος), see line 41; for the small inscribed oak in a dried-up stream (ερχετε ηστὸ ξεροροιακῆν εν ο (καὶ) δροις μεικρος εσφραγηστέ), see line 42; for the old inscribed oak in the hollows (τ(ὰς) γουβα(ς) τας π(α)λεα(ς) εν ο (καὶ) δροὶς εσφραγησμενος), see line 45; for the double-trunked inscribed oak (εν ο (καὶ) δροις δοιδυμ(ος) εσφραγηστέ), see line 49.

discussed in chapter 2 was still alive and important in the countryside around the year 1000, with people continuing to use space in a fluid manner and with woodland continuing to be something that people were accessing in order to acquire nutrition and materials. Iviron's archives have shown villagers and *paroikoi* both making use of acorns and chestnuts in woodland.[561] In this example, the distance involved was particularly important, with the villagers travelling nine kilometers from their homes in order to obtain nuts. The village in question, Siderokausia, was twelve kilometers from the gulf of Strymon and yet the village's limits (as far as the definition provided by the state's fiscal apparatus was concerned) included the seashore.[562] Clearly, people were making use of woodland and over considerable distances. More modest and localized use of woodland was certainly occurring too, the hermit monk Kosmas Tornares (discussed above) continued to gather chestnuts and wood in properties that now belonged to two different monastic houses, but to which he had commonly frequented.[563]

While the pollen samples and the archaeological surveys cannot tell us about the extent of arboreal cover in the tenth and eleventh centuries, the surveys do indicate that, despite the economic growth of the Middle Byzantine era, there was probably still a lot of land to go round with a low density of sites compared to the late antique and ancient periods, even in the eleventh century. The Lakonia survey shows that as late at the twelfth century the area's marginal land was still not worked.[564] Interpretations from the Boiotia survey provide a similar image with the archaeologist John Bintliff asserting that medieval populations were not near "maximum carrying-capacity" in the survey area.[565] The southern Argolid, while resettled, did not have

[561] *Actes d'Iviron I*, pp. 160-163, no. 9.
[562] Kaplan, "L'activité pastorale," 418.
[563] *Actes de Lavra*, p. 165, no. 21, lines 19-20. See above for the Greek.
[564] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 368.
[565] J. L. Bintliff, "Explorations in Boeotian Population History," *The Ancient World* 36, no.1 (2005): 5-17.

many sites within view of the coast.[566] Given that nothing in the area is datable to before 1000, it is reasonable to infer that in this particular case there was a considerable amount of land remaining outside of cultivation.[567]

Thus, woodland was still fairly plentiful in the later eleventh century, albeit with some more human pressure on its existence, a pressure that escalates with the Komnenoi's greater monetization of the Byzantine economy and government apparatus. The pollen samples and archaeological surveys reflect changes in the composition of woodland, but these are complex changes, and they do not tell a simple story of widespread deforestation. Rather, as land was cleared, mainly for cereals, grazing became possibly even more important, and people continued to make us of woodland for gathering nuts and pasturing animals. In addition, people privileged deciduous oak (and probably chestnut too) as they removed other vegetation. These leftover oak trees held an important place in the landscape, not only as sources of wood and food, but also as notable markers of what belonged to whom (be they monastic landlords, peasant cultivators, or supernatural forces). People, not climate, appear to have been the driving force behind this change (whereas earlier it had been the trees' actions). Even in areas with plenty of woodland, conflict could and did occur over access to it. And that is a remaining theme for this dissertation. At the end of the eleventh century, with the rise of the Komnenoi who adopted the mantle of vigorous tax collectors, people became more plentiful and worked harder to obtain coins in order to pay the state.[568] The result was an acceleration of what had previously been a rather slow process of removing woodland or reworking woodland. Consequently, clashes over land (including woodland) became more apparent in the sources. But before treating that topic, we

[566] van Andel and Runnels, 124.
[567] For the lack of remains before 1000, see Jameson, Runnels, and van Andel, 113.
[568] For a concise and thoughtful description of Komnenian taxation, see Neville, *Authority in Byzantine Provincial Society*, 63.

must return to the olive, a useful indicator of what these economic transformations looked like on the ground.

Chapter 5
The return of the olive

This chapter examines the state of the olive in the Aegean Basin between the later tenth and early twelfth centuries, and proceeds to use this tree and its fruit to shed light on changes in the Byzantine economy, both among monks and that segment of the Byzantine population that has typically been elusive to historians, the peasantry. After demonstrating that *Olea* obtained a greater presence during that particular period in comparison to its status between the seventh and tenth centuries, this chapter seeks to understand why this change occurred, alternating between using social and economic explanations for the olive's greater role in the landscape and using the olive itself as a lens for understanding the choices of both monastic and peasant cultivators. It argues that two major developments led to *Olea*'s improved stature. First, monasteries cultivated the olive as they sought self-sufficiency for their own dietary and lighting purposes. Second, and almost certainly larger in scale than the monastic olive economy, despite presenting a smaller corpus of evidence for the historian, was the trade in olive oil in which Italian merchants purchased large quantities of the product in locales around the Aegean Sea and accordingly shipped it to Constantinople and other urban centers. This aspect of the olive oil trade, while visible in its infrastructure and in the surviving merchant contracts, is hard to understand with regards to how its exchange worked and the role that landowners played. Despite gaps in the information available, this chapter argues, based on the archaeological remains and the quantities and types of trees mentioned in the laconic sources, that this trade was the consequence of a critical mass of factors. Essentially, a Komnenian-led Byzantine state demanding more tax revenue, an emerging class of big landowners seeking rent, the presence of Italian merchants permitted to trade across the Aegean's waters, and peasants pressured to produce a surplus that

garnered coins on the market, all combined to create a context that pushed the olive to a more central place in the economy and landscape. The result was an oligopsony, a situation in which many peasants produced small quantities of oil and collectively supplied a notable bulk product to a comparatively small number of Italian merchants.

This chapter's focus on the olive in the years immediately before and after the reforms of Alexios I Komnenos (r. 1081-1118) can add to scholarly understanding of Byzantine economic history. On the one hand it allows a much greater appreciation for the motivations of monastic houses with respect to their agrarian possessions and their consumptive demands. On the other, it permits greater awareness of the ways that peasants in this later period went about obtaining coins to pay taxes and rents, something that other historians of the Byzantine economy have paid little attention to. Largely this chapter is in agreement with other economic historians of Byzantium as far as the general effects of the Komnenian reforms and the consequences of Italian merchants' activities are concerned. It also supports other historians' notion that the Byzantine economy of the Komnenian period possessed a significant oligopsonistic component.[569] But these historians, as discussed in chapter 3, have not treated the olive and so I use it to add to the picture of economic growth and agrarian strategies of this period. By making *Olea* the focal point of analysis, this chapter sheds light on the volume of actual exchange and allows a window onto the impact of Alexios' reforms "on the ground."

[569] For a Byzantine economic historian who used this term, see George Maniatis, "The Byzantine Cheesemaking Industry," *Byzantion* 84 (2014): 271. For another example, see also Angeliki E. Laiou, "Exchange and Trade, Seventh-Twelfth Centuries," in *The Economic History of Byzantium from the Seventh through the Fifteenth Century*, edited by Angeliki Laiou (Washington, DC: Dumbarton Oaks, 2002), 743.

Where and When the Olive Returns

In the textual, archaeological, and pollen records, *Olea* becomes more noticeable again in the Aegean Basin, experiencing earlier reappearances in Lakonia and southwestern Asia Minor in the tenth century, followed by further revivals elsewhere in the eleventh.

The evidence for the olive's comeback in southwestern Anatolia is mostly palynological, while the textual evidence for this return is a product of a slightly later date. As discussed in chapter 3, the fifth layer of the pollen core extracted from Lake Bafa, located at the mouth of the Maiandros valley in southwestern Anatolia, reflects an ongoing presence of olive cultivation in the medieval period, with the presence increasing by the tenth century.[570] In turn, the sixth layer of the sample, estimated to represent the twelfth and thirteenth centuries, presents a massive olive signature.[571] Indeed, the rise of *Olea* in this latter layer occurs in tandem with a decline of indicators for pasturage. Thus, by the twelfth century the composition of the area's agro-ecosystem had shifted significantly, changing from a local landscape that shared pasturage with oleiculture to one in which oleiculture was dominant.

The pollen evidence is matched by the material from the monastic archives located on the western littoral of Anatolia, such as that of the monasteries of Mount Latros overlooking the lower Maiandros valley. These texts provide examples of olive groves with increasing regularity into the thirteenth century. While much of this textual evidence refers to the presence of olive trees three quarters to a full century after the period that this chapter discusses, the long-lived trees themselves were most likely the products of twelfth-century, and in some cases eleventh-

[570] Knipping, Mullenhof, and Bruckner, 377.
[571] Knipping, Mullenhof, and Bruckner, 377.

and tenth-century, actors' decisions, and are thus relevant here and will be discussed further below.[572]

While pollen cores are absent from arid Lakonia, the evidence from archaeological and textual sources provide the impression that the region's inhabitants were cultivating, crushing, pressing, and consuming the olive in the late tenth century, with such activities reaching relatively impressive dimensions by the mid twelfth. The *typiko*n, or testament, for the tenth-century Saint Nikon's monastic foundation in Sparti commands that the peasant tenants of the monastery's nearby properties should send their revenue, including that of olive trees, to Nikon's church of the Savior.[573] In addition to this monastic document, Nikon's *vita* includes a reference to the monastery owning an olive crusher. The story in which this crusher was mentioned took place sometime by the mid twelfth century, although it is possible that this particular crusher was installed in the eleventh.[574]

Archaeological work in Sparta has been particularly enlightening regarding the existence of oleiculture in Middle Byzantine Lakonia. Excavations have found a donkey-powered olive crusher from the "later medieval" period, in a space that the site's archaeologists suspect might have been a "workroom" of a monastic building.[575] The excavations of Sparti have brought many other examples of crushers and presses to light, often with a direct correlation to the reestablishment of Byzantine authority and culture in Lakonia in the tenth century. For example, a stone olive press was found in Sparti next to a middle Byzantine church and bath, and is estimated to be from the period between 1100 and 1260, while another olive press was found

[572] For examples from Latros and elsewhere in western Anatolia, see Miklosich and Müller, vol. IV, pp. 56-57, 115-117, 122-123, 320-322, 324-325.
[573] Thomas and Hero, 319.
[574] *Life of Nikon*, 229.
[575] G. B. Waywell and J. J. Wilkes, "Excavations at Sparta: the Roman Stoa, 1988-91 Part 2," *The Annual of the British School at Athens* 89 (1994): 394.

beside a seal for a mid-to-late 10th century figure by the name of Ioannes who held the title of *protospatharios* and was the *tourmarches* (an officer rank) of a military unit in Sparta. The placement of these presses next to such dated items indicates that these presses were in use in the late tenth through twelfth centuries.[576] More recent work on the Byzantine section of Sparti, which was built over the area southwest of the city's ancient acropolis, has found a further four medieval olive presses, and an example of the highly specialized *trapetum* style olive crusher (this type of crusher was discussed in chapter 3).[577] Byzantine Spartans were also consuming olives directly: archaeobotanical work on a refuse pit from the Byzantine level in Sparti has shown that, along with carbonized wood, cereals, grape pips, fig pips, sheep and goat dung, and animal bones, olives were an element of the varied local diet, with their pips ending up in the sample.[578]

Further north in Attika, there is some palynological and textual evidence for *Olea*'s presence in that region during this period. While the dating is not precise in the study taken from the Vravron marsh, it appears that after a radiocarbon date that is calibrated to between 692 and 934AD there was a moderate increase of olive.[579] In addition, a fiscal document, known as the Attika *praktikon*, mentions several small groves of olive trees in a (probably) twelfth-century context.

Further north in the Chalkidike, an area that, thanks to its colder winters, was less amenable to oleiculture than Lakonia or the Maiandros valley, one sees some olive trees appear

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[576] Ch. Stavrakos, "Byzantine Lead Seals and Other Minor Objects from Mystras: New Historical Evidence for the Region of Byzantine Lakedaimon," *Byzantinische Zeitschrift* 103, no. 1 (2010): 139-140.
[577] Aimila Bakourou, "Τοπογραφικές παρατηρήσεις για τη Μεσοβυζαντινή Λακεδαιμονία," in Sparta and Laconia: From Prehistory to Pre-Modern, ed. W. G. Cavanagh, C. Gallou, and M. Georgiadis, British School at Athens Studies 16 (London: Short Run Press, 2009), 307-309.
[578] Jon G. Hather, Leonor Peña-Chocarro, and Elizabeth J. Sidell, "Turnip remains fom Byzantine Sparta," *Economic Botany* 46, no. 4 (1992): 395-400.
[579] Kouli, 272 and 275.

in the monastic archives, beginning in the later eleventh century.[580] In addition to these whiffs of oleiculture in the texts, there was some olive pollen wafting through the air along the northern end of the Chalkidike after an absence of some time, indeed for the first time since the layer that is posited to represent the vegetative cover of Late Antiquity.[581]

On the southern edge of the Chalkidike, in the sample obtained form the Tristinika marsh, it is clear that between the eleventh and fifteenth centuries the olive reached its highest values compared to any other layer (including the late antique one), after a minuscule presence between the sixth and tenth centuries.[582] The olive pollen could easily have come from Athos, for Athonite pollen gets deposited in the Tristinika marsh on account of the way the winds work in the area.[583]

Finally, in the eleventh century, there appears to have been a broader resurgence of the olive in Byzantine literature, with elite figures making use of the fruit and its oil. In his letter to the Emperor Basil II (r. 976-1025), a bishop by the name of Leo of Synnada bemoaned his situation in his see in the uplands of western Anatolia, claiming that he was living in a harsh locale in which so little could be grown.[584] Along with his complaints about the lack of wine, the use of barley as opposed to wheat, and the use of animal dung rather than wood for fuel, he noted "we cannot cultivate the olive."[585] In this case, the olive is presented as part of a collection, along with wheat, wine, and wood fueled fires, that are necessary for a decent level of comfort. The

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[580] *Actes de Lavra*, pp. 179-181, no. 27; *Actes de Lavra*, pp. 275-276, no. 53; *Actes de Xenophon*, pp. 61-75, no. 1, lines 92-93.
[581] S. Bottema, "Palynological investigations in Greece with special reference to pollen as an indicator of human activity," 275. For the interpretation of this diagram, see Dunn, "The exploitation and control of woodland and scrubland in the Byzantine world," 244-245. For the return of olive, see the European pollen database's information at the layer of 420cm.
[582] Panajiotidis, 314-315.
[583] Panajiotidis, 311.
[584] Leo of Synnada, *The Correspondence of Leo Metropolitan of Synnada and Syncellus*, trans. M. P. Vonson, Corpus Fontium Historiae Byzantinae 23 (Washington, D.C.: Dumbarton Oaks, 1985), 68-70.
[585] Leo of Synnada, 68-69. Ἔλαιον γὰρ οὐ γεωργοῦμεν.

tone of the letter makes it seem that the olive was common and expected in Constantinople and the heartland of the Empire and Leo's rhetoric emphasizes its absence to portray the highlands around Synnada as a backwater. However, one must be cautious in applying Leo's claim to broader Byzantine society, as perhaps olive oil was popular among the elite as a condiment or maybe he was invoking the idea of oleiculture as a cultural marker in his work. Such reasons on Leo's part do not necessarily mean that oleiculture was widespread throughout Byzantium or that olive oil was a common product for the rest of Byzantine society even in the early eleventh century.

While the cantankerous metropolitan Leo complained to the Emperor Basil II about the lack of olives in his immediate environment, Basil's niece, the Empress Zoe (r. 1028-1050), seemed to have a taste for table olives, specifically the smallest ones available.[586] And not long after Zoe would have been eating such miniscule drupes, the late eleventh-century chronicler Ioannes Skylitzes wrote a passage in his *Synopsis* claiming that, during the reign of Romanos III (r. 1028-1034), God made the right amount of rainfall for crops to flourish, noting "especially the olives."[587] Such a comment may be an attempt on Skylitzes' part to emphasize that God was pleased with the actions of Romanos III in contrast to those of his successor Michael IV (r. 1034-1041) who Skylitzes credited with apparently causing bad weather by means of his less than laudable actions. Regardless of authorial intent, the fact that Skylitzes mentioned the olive as an especially bountiful species in the reign of Romanos III is important because it shows that by the eleventh century, the olive was receiving more attention among writers in Constantinople and

[586] Michael Psellos, *Michael Psellos: Chronographie, ou Histoire d'un siècle de Byzance*, ed. and trans. Émile Renauld (Paris: Les Belles Lettres, 1967), 1:147. Psellos describes these olives as the "some of the smallest of olives (ἐλαῶν τέ τινων σμικροτάτον)." For readers who want an English translation, see Michael Psellos, *Michael Psellus: Fourteen Byzantine Rulers*, trans. E.R.A. Sewter (London: Penguin Books, 1966), 185-186. Sewter translates Pellos' Greek as "dwarf olives."

[587] Ioannes Skylitzes, *Ioannis Scylitzae Synopsis Historiarum*, ed. Ioannes Thurn (Berlin: W. de Gruyter, 1973), 376. For an English translation, see Ioannes Skylitzes, *A Synopsis of Byzantine History, 811-1057*, trans. John Wortley (Cambridge: Cambridge University Press, 2011), 355.

that they may have been under the impression that it was an important tree. Skylitzes' (nearly) contemporary historian, Michael Attaleiates, also mentions the olive as a good fruit in the late eleventh century, although he refers to its presence in the territory of eastern Anatolia and not in the Aegean Basin.[588] But whatever *Olea*'s geographic situation, Attaleiates was mentioning the fruit as a desirable commodity.

Despite these indicators of a comeback, *Olea* did not succeed uniformly in every region that surrounds the Aegean Sea. The extensive findings of the survey and excavations in the southern Argolid reflect eleventh- and twelfth-century Byzantines' willingness to use ancient olive crushers and presses as elements in the construction of local chapels rather than as implements for extracting oil. For example, at a site called Melindra that contains twelfth- to fourteenth-century material, a chapel utilized a Roman *trapetum*'s *orbis* as part of its altar.[589] The site's archaeologists suspect, given the fact that the site is devoid of any evidence that Roman-era people used this spot, that the Roman *orbis* was brought to the chapel from afar. Another chapel from the southern Argolid, ostensibly of twelfth-century origins, made use of an ancient olive press' limestone weight as part of the building's structure.[590] Finally, at a church called Ayia Triadha, which is reasonably dated to 1244 thanks to an inscription, workers also made use of an ancient press' limestone weight (along with a hollowed-out Corinthian column that served as a water container for animals) in their construction.[591] Thus the Byzantines who colonized the southern Argolid at the beginning of the second millennium, unlike their neighbours in Lakonia

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[588] Michael Attaleiates, *The History*, trans. Anthony Kaldellis and Dimitris Krallis, Dumbarton Oaks Medieval Library 16 (Cambridge, MA: Harvard University Press, 2012), 216-217.
[589] Jameson, Runnels, and van Andel, 439-440. The site, labeled B5, contained some Helladic and Classical, but principally medieval remains. Thus it appears that the spot was uninhabited or unused during the Roman era, reinforcing the notion that this site was established anew in the Byzantine era, after 1000.
[590] Jameson, Runnels, and van Andel, 496. This site, labeled E50, had a solitary Late Roman and three early Helladic sherds, in contrast to several medieval and modern sherds and roof tile fragments.
[591] Jameson, Runnels, and van Andel, 505. This site, labeled E81, was, according to its inscription, founded in 1244 by Manuel Mourmouras and his clan and employed an Athenian artist to make its frescoes.

and Attika, did not engage in any noticeable oleiculture and instead utilized olive-oil producing implements to add aesthetic appeal and structural integrity to places of worship.

With notable exceptions such as the Southern Argolid, it is clear that between the surviving crushers and presses, specific mentions of olive trees in monastic and fiscal texts, casual references to olives in texts written by the elite, and the pollen deposited in lakebeds, *Olea* was a more noticeable feature around the Aegean Sea in the eleventh and twelfth centuries. How this greater presence came about is a topic for the remainder of this chapter.

Monastic Assistance

Olea's discernable return to the landscapes of Lakonia, the Maiandros valley, and the Chalkidike, and to the texts of urban elite writers in Constantinople, occurred within the context of Byzantium's growing economy and the greater military stability that characterized the late tenth and eleventh centuries. But who specifically was tending to these trees and gathering their oil? Who was shipping it? And who was consuming the product? The answer to these questions is that there were two economies that made use of the tree and its fruit. The first existed within the monasteries that wanted to use olive oil for a variety of purposes inside their own monastic walls. The second was the largely invisible economy consisting of peasants who tended to the trees and picked the fruit, and that moved olive oil to urban centers where merchants purchased and transported it and in turn moved it to other urban centers and consumers. That economy finally became visible, and probably grew considerably, during the Komnenian period (1081-1185), and will be discussed further below. Of course, there may have been a demand for olive oil from the peasantry that could have existed across the whole period of Byzantine history, but such an appetite is very hard to find or gauge. Generally speaking, most of the available accounts

of olive tree holdings are from ecclesiastical sources because that is simply the nature of the Byzantine source base. The following analysis of these sources indicates that monastic landowners were mainly pursuing autarchy and were not pursuing substantial oleiculture for export.

Many of the archaeological examples of Byzantine olive crushers come from monasteries too. A notable example of a monastery that adopted rather sophisticated oleicultural equipment is the monastery of Hosios Loukas in Boiotia, which possessed a sophisticated Roman-style *trapetum* olive crusher in its workshop, although the dating is not certain.[592] The donkey-powered crusher identified from the "later medieval" period in Sparti, is believed to have been situated in a "workroom" of a monastic building, a building that was possibly part of Nikon's monastery.[593] The archaeologists who carried out the excavation even note that the location and description of Nikon's monastery in the *vita* of Nikon matches well with the area excavated: the monastery was allegedly situated on the southern side of the medieval Spartan marketplace, near the ancient Roman *stoa*; a key focus of the archaeological work.[594]

In part, this location of crushers in monastic buildings is a result of Byzantinists' archaeological interest in monastic and ecclesiastical structures and the relative ease with which such sites can be accessed in comparison to the typically invisible sites of peasant villages. But the preponderance of crushers in monasteries is also, as I argue here, a result of the economic agenda and the cultural requirements of monastic houses. Given their needs for lamp fuel, and their explicit references to oil in the monastic diet, and their alleged attempts to avoid interaction with merchants (an avoidance that autarky could supposedly make possible), monasteries had a clear set of incentives to supply themselves with their own olive oil.

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[592] At the present, one can see the crusher in the workshop beside the main church.
[593] Waywell and Wilkes, 393, 427-428.
[594] Waywell and Wilkes, 393. See also page 229 of the *Life of Nikon*.

Indeed, the crusher in Nikon's foundation was most likely intended for modest purposes and probably aimed to achieve monastic autarky. Nikon's testament commands that the monastery's *metochia*, or properties, called Sthlavochorion and Parorion, should send their revenue, including that of olive trees (alongside vineyards, small farms, fruit-trees, and non-fruit trees) to Nikon's church of the Savior.[595] In this context, the olives are one of many agricultural resources, indicating mixed farming. In addition, the passage aims at securing the sustenance of the five brothers living in the monastery, for whom the surplus was designated.[596] Such textual evidence seems to indicate small-scale cultivation, which would make the monastery's crusher adequate for a few baskets of olives, with the peasants of those *metochia* transporting un-pressed fruit to the site for pressing. The only surplus discussed in the text was some wine and a basket of apples that were to be sent to the theme's military official (the *strategos*) and a judge.[597] Furthermore, there is one story in Nikon's *vita* in which a man steals oil from the room in which the monastery's crusher was housed, specifically stealing enough oil to fill a pitcher or "hudrian (ὑδρίαν)." A large surplus-producing olive grove accompanied by workshops with barrels and barrels of oil would make a pitcher harder to miss, but the loss of a pitcher could be a nuisance in the context of a small monastery seeking self-sufficiency in order to provide lighting and oil for five monks.

Lazaros' monastery, in southwestern Anatolia, produced olive oil too, but, similar to the case of Nikon's monastery, this olive oil appears to be modest in quantity. Apparently, a nun from the island of Chios would customarily travel to Lazaros' monastery in order to get a jar of

[595] Thomas and Hero, 319. See item number 10.
[596] Thomas and Hero, 320. See item number 13.
[597] Thomas and Hero, 319. See item number 2.

oil that the monastery would produce on Lazaros' day.[598] The nun would then proceed to use this oil to heal people back in "her own land." Clearly, this oil was valuable because of its alleged healing properties, and thus the story gives the indication that it was more akin to a luxury item than a bulk commodity. In effect, the monastery's olive oil was a spiritual item, not a product reflective of an economy of scale.

Despite these examples of monasteries producing oil, it is evident that monastic houses were also sites of olive oil consumption. The balance between the two, or to put it another way, the question of whether Middle Byzantine monasteries were net importers or exporters of olive oil is very hard to gauge and most likely would have varied considerably from case to case. The various *vitae* of Byzantine provincial Saints provide important examples of monasteries acquiring oil from elsewhere in order to meet their immediate demands for the substance. For example, the *vita* of Lazaros includes a story in which two monks (each guiding a mule) brought wine, oil, and loaves of bread from their monastery to that of Lazaros, representing a case of a monastery consuming oil produced elsewhere, despite the fact that Lazaros' monastery was in the habit of producing oil that went as far away as the island of Chios.[599] There is another story in the text, in which a monk leaves Lazaros' foundation in order to obtain three measures of oil from a neighbouring monastic community, only to return to the monastery and expect to get his regular share of oil there too. Ultimately, Lazaros could tell what had happened, and the monk confessed to this tricky attempt to obtain more oil than the monastery's rule allowed him to have.[600] While the hagiographer's probable objective was to demonstrate Lazaros' insight into matters unseen, one can easily view this latter example as an indication that the oil was carefully

[598] *Life of Lazaros*, 165. The modern editor of the *vita*, Greenfield, believes that this is oil produced on Lazaros' Saturday, which is the Saturday before Palm Sunday, making it a reference to the Biblical Lazaros and not to the Byzantine Lazaros.
[599] *Life of Lazaros*, 304.
[600] *Life of Lazaros*, 183.

distributed in the monastery and that it was not copious enough to permit an acquisitive monk to easily obtain more oil than the monastic superiors wanted to provide.

Compounding monasteries' consumptive demands was their willingness to act as "redistributors" of commodities such as oil. For example, Lazaros acted as a re-distributor when he doled out some oil to a lucky impoverished man (along with various other foods and a goat).[601] Thus, while Lazaros' monastery produced its own olive oil on site, it still had to obtain oil from elsewhere to meet all of its demands for food, fuel, and charitable gifts.

Lamp fuel was important for monasteries, not only to help monks see things at night, but also for an important spiritual reason: icons had to be lit because such light both honoured the depicted saint and made the icons appear more vivid.[602] David Mattingly calculates, based on his experience with one such lamp, that a Roman lamp could get 134 hours of light from a single liter of olive oil.[603] If a monastery's or chapel's lamps were not that different from the ancient ones, and if they needed one lone lamp to keep a monastery or chapel illuminated for an average of eight hours a day, then a modest Byzantine monastic chapel might need 21.79 liters of olive oil a year. While fuel needs may have been limited for a chapel or a small monastery with few icons and lamps, they could be substantial for a large monastic foundation or a church. For example, the Constantinopolitan monastic church of Christ Pantokrator was required, by the orders of the Emperor Ioannes Komnenos (r. 1118-1143) to keep twelve lamps burning constantly, three extra lamps burning all night, and twenty-nine more lamps were supposed to burn during matins, the liturgy, and vespers.[604] The Emperor even ordered that more lamps be lit

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[601] *Life of Lazaros*, 233.
[602] Nesbitt, 156.
[603] Mattingly, "First fruit? The olive in the Roman world," 224.
[604] For the adding up of the lamps, see Nesbitt, 156. For the Greek text, see Paul Gautier, "Le typikon du Christ Sauveur Pantocrator," *Revue Des Études Byzantines* 32 (1974): 36-39. For an English translation of the text, see Thomas and Hero, 740-741.

during the various feasts.[605] If one makes the very rough estimate that the twenty-nine lamps that were temporarily lit for daily liturgical purposes burned for a mere hour of the day, and then combined that figure with the twelve lamps that were supposedly burning continuously and the additional three that were burning through the night, then one arrives at the colossal figure of 124,465 hours of lighting per year.[606] If these lamps could obtain 134 hours of light from one liter of olive oil, then the monastery as a whole would have required a significant 929 liters of oil per year for lighting alone, and that figure does not include additional lighting for feasts. These calculations are obviously rough and speculative, but they certainly illustrate that large amounts of oil were required to illuminate the bigger, and more numerous, monasteries and churches that were built in the eleventh and twelfth centuries in Byzantium. While many of these larger buildings were located outside of the Aegean littoral, in cities such as Constantinople, it is clear that the aggregate demand for olive oil was growing in Byzantium, and that this amplified aggregate demand was partially met by oil produced in the littoral.

In order to meet these needs, many monasteries grew their own olives. Luckily for Byzantinists, the Athonite and Latriote monastic archives provide a few remnants of information regarding the quantities of olive trees that monasteries possessed. By 1089 on Mount Athos, at the monastery of Xenophon, a figure called "Symeon the Sanctified," who had formerly been a great *droungarios* (a high-ranking official with military and later judicial tasks) under the Emperor Nikephoros III Botaneiates (r. 1078-1081), went about increasing that monastery's

[605] Thomas and Hero, 741.

[606] My very rough calculation runs as follows: 12 lamps continuously burning oil x 24 hours a day x 365 days a year equals 105,120 hours of illumination. 3 lamps burning at night x 8 hours a day (almost certainly a serious underestimate) x 365 days a year equals 8,760 hours of illumination. 29 lamps lit for matins/liturgy/vespers x 1 hour a day (almost certainly a serious underestimate) x 365 days a year equals 10,585 hours of illumination. 105,120 plus 8,760 plus 10,585 equals a total of 124,465 hours of illumination per year. 124,465 hours divided by 134 hours of lighting per liter of olive oil equals 928.8 liters of olive oil per year for lighting purposes, not including feasts.

properties, including its vineyards and olive trees.[607] One method by which he carried out this expansion was through the receipt of a gift of land with 300 olive trees on it from the properties of a monastery called Saint Nicholas tou Chrysokamerou.[608] Another monastery, Skamandrenos, owned 15 trees and was expected to pay a total of 15 *litrai* of oil to the monastery of Xenophon, but was entitled to keep whatever oil remained from that modestly sized grove.[609]

While 315 trees (at a minimum) may sound impressive, one must bear in mind that, with scholarly estimates of the average olive tree's yield in the context of pre-mechanized agriculture being between 3.85 and 9.75 kilograms per tree, the monastery of Xenophon's yields were not particularly massive, and certainly not if they were only demanding one *litra* (between 319 and 324 grams) per tree from a monastic tenant.[610] If the 300 main trees each yielded the maximum estimated amount of 9.75 kilograms of oil per tree, and that of course would only be every other year (given that olive trees fruit biennially), then the monastery would have received a grand total of 2925 kilograms of olive oil in a given two-year period. If this maximum figure was divided by the 55 monks that apparently inhabited the monastery of Xenophon in 1089, then one arrives at the figure of 26.5 kilograms of oil per monk per year (or roughly 1,775.5 tablespoons), and that is only if the trees were producing the maximum possible yield of oil, something extremely unlikely in any case, and certainly implausible along the Aegean's colder northern shoreline, which was where the monastery of Xenophon was situated.[611] Furthermore, such a

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[607] Harvey, *Economic Expansion in the Byzantine Empire*, 145.
[608] *Actes de Xenophon*, pp. 61-75, no. 1, lines 92-93, and the editors' comments on page 63. See also Morris, *Monks and Laymen in Byzantium*, 227.
[609] *Actes de Xenophon*, pp. 61-75, no. 1, and the editors' comments on page 63. See also Morris, *Monks and Laymen in* Byzantium, 227.
[610] For these estimates, see Decker, *Tilling the Hateful Earth*, 212. Decker brings together estimates by several scholars in this field, including Mattingly and Amouretti. Foxhall, 79, suspects that 3.4 Kg was a reasonable yield per tree. Note, I have tried to discuss olive oil quantities in kilograms as opposed to liters because most of the scholarship on this topic ahs done the same. For those who prefer volume, bear in mind that 1 kilogram of olive oil equals 1.08 liters.
[611] *Actes de Xenophon*, pp. 61-75, no. 1, lines 80-81.

calculation does not address the use of oil for lighting or soap making or as a preservative, or for any other use that this commodity had in the medieval world. Thus the monks of Xenophon, while possessing some notable groves, were probably not in the business of exporting surplus olive oil to urban markets or other monastic houses. Rather, this amount of trees was probably intended to supply the monastery first and foremost.

The monastery of Stylos in southwestern Anatolia provides similar documentation to that of Xenophon regarding the scope of monastic olive-growing capacity. Paul of Latros' foundation "owned an estate of olive trees" with 370 trees in total, and was paying 36 *hyperpyra* (gold coins in twelfth- and thirteenth-century Byzantium) in tax on this property in the twelfth century until the Emperor Manuel I Komnenos (r. 1143-1180) gave this monastery a tax exemption.[612] Apparently, the monks leased the property out to tenants in return for 24 "*metra* (μέτρα)" of the property's olive oil.[613] This particular measurement, a "*metron* (μέτρον)" or "*metra* (μέτρα)" in the plural, was 9.1 liters when applied to a volume of olive oil.[614] In this case 24 such units would have amounted to 218.4 liters, or around 200 kilograms, of oil from 370 trees.[615] Once more, taking into account scholarly estimates of the average olive tree's yield having been between 3.85 and 9.75 kilograms per tree in the ancient and medieval worlds, this measurement indicates a very reasonable rental demand of barely over half a kilogram of oil per tree. Thus, it appears that lessees were paying the monks a small portion of the oil yield, and there was still a decent amount left over that could have been sold or consumed by the monastery's tenants. Stylos had at least one other olive grove too, perhaps giving them more security against bad

[612] Miklosich and Müller, vol. IV, pp. 320-322. See also Harvey, *Economic Expansion in the Byzantine Empire,* 145.
[613] Miklosich and Müller, vol. IV, p. 321.
[614] For Byzantine units of measurement see Morrisson and Cheynet, 817.
[615] 1 Kg of oil is generally 1.08 liters in volume.

yields in one location by possessing olives in another.[616] Olive yields aside, the monks were avoiding becoming overly involved in the processing and trading of oil themselves, instead seeking a consistent set amount for their own needs while leaving the pruning, harvesting, and transportation to the grove's tenants.

A document from the Monastery of Lavra's archives contains a rare example of an individual monk's oil rations from the twelfth century, providing a portrait of modest oil consumption that is in agreement with the images of monasteries' collective usage of oil described above. In this Lavriote case, written in either 1101 or 1102, the annual food pension of a monk named Damianos is recorded. It includes, along with the typical supply of wheat, wine, legumes, and honey, 12 *litrai* of olive oil.[617] Given that a *litra* represented a weight between 319 and 324 grams, or roughly one pound, then Damianos was receiving a supply of approximately twelve pounds of oil per year.[618] One such pound is about 23 tablespoons, meaning that Damianos, supplied with 12 such pounds, received around 276 tablespoons of olive oil per year. Once more, it appears that Byzantine monks were ingesting very modest quantities of this commodity, probably treating it as a condiment or relish.

Economically, it was definitely in the interest of monasteries to grow their own olive trees and to avoid buying oil from elsewhere. Isaakios Komnenos' *typikon* for the monastery of Kosmosoteira, probably written in 1152, ordered the monastery's officials to buy their oil once a year from merchants who arrived in the nearby harbor of Ainos rather than buy from the retailers (πραγματευταί) who sold the oil for a much costlier price.[619] As will be discussed below, Italian

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[616] Miklosich and Müller, vol. IV, pp. 323-325. See also, Morris, *Monks and Laymen in Byzantium,* 214.
[617] *Actes de Lavra*, pp. 279-281, no. 54. See line 14 for the oil. This allotment is also presented in Morrisson and Cheynet, 870.
[618] For the *litra* as a unit of weight, see Thomas and Hero, 1684. The Liddell and Scott Lexicon puts the measurement at one pound.
[619] Thomas and Hero, 826; Stavrakos, 142-143.

merchants were involved in a lucrative olive oil trade by the twelfth century, and profit was a feature of this economy. Monks, desiring to have a steady and significant supply, could meet their needs with their own groves for a reasonable price and amount of labour.

Thus, a partial explanation for *Olea*'s elevated profile in the eleventh- and twelfth-century Aegean Basin lies with monasteries' demands for its fruit and oil. However, the monastic economy of oleiculture continued, as far as one can tell, to be based around autarky. Other figures were responsible for growing olives and trading the oil outside of monasteries; a set of actions that became more common in the eleventh and twelfth centuries and that will be discussed next. Nevertheless, the growth of monasticism along the shores of the Aegean Sea in the tenth and eleventh centuries moved in tandem with the re-emergence of *Olea*, explaining an important aspect of this species' return to that particular environment.

From Peasants to Merchants

Outside of the monasteries, a second olive economy existed, one in which merchants, like the ones mentioned by Isaakios Komnenos, made their trade. This second olive economy functioned very differently than the monastic one, involving merchants and peasant cultivators, the latter being propelled to a significant degree by the actions of state officials. Lacking monastic record keepers, this is a much less accessible economy for the modern investigator, but one that was probably much bigger in volume than that of the monasteries. By examining the disparate evidence, the olive can shed light onto the existence of an oligopsony; an economy is which a few large buyers obtained their product from numerous small sellers. Essentially, many peasants obtained oil from a modest numbers of trees, selling the oil in order to obtain a few extra coins with which to pay rents and taxes. The impetus for this development was probably

the reforms of the Komnenoi, which included both the establishment of a more demanding tax collection apparatus and permission for more foreign merchants to sail in Aegean waters. This impetus aligned a nexus of actors: Italian merchants, peasant cultivators, and consumers throughout the Mediterranean. These actors combined to bring more olive trees into cultivation and more oil into production. But before discussing that consequence of these developments, I shall briefly outline the social and economic developments that accompanied the Komnenian dynasty's time in the palace in Constantinople.

The Komnenian dynasty, particularly under Alexios I Komnenos (r. 1081-1118), provided a major stimulus for people to cultivate more crops that could obtain coins at market.[620] Scholars of Byzantium have convincingly demonstrated that the Komnenian dynasty gathered taxes with increased vigour in comparison to its early and mid-eleventh-century predecessors. Such a change in tax collection makes sense given that when Alexios I Komnenos became Emperor of the Romans in 1081, he faced an acute shortage of money, particularly with the loss of the imperial estates of Anatolia to the Turks: estates that had been a key source for financing the Byzantine army and state in the previous two centuries. In need of new sources of revenue, Alexios set about, with the assistance of his mother Anna Dalassene and a revamped bureaucracy, determining how much money taxpayers owed the state. This project resulted in a surge of tax assessments, some of which still survive today in the monastic archives of Mount Athos.[621] Furthermore, Alexios empowered fiscal officials to take land that was not worked away

[620] For the Komnenian state and its economic influences, see also Paul Magdalino, *The Empire of Manuel I Komnenos, 1143-1180* (Cambridge: Cambridge University Press, 1993), 160-171.
[621] Neville, *Authority in Byzantine Provincial Society*, 63.

from large landowners (such as the Athonite monasteries) and to hand over the said property to other people who would work it more intensively, thus being better positioned to pay taxes.[622]

While Alexios' decisions pressured Byzantine cultivators to produce more surplus, they also enabled more transactions with foreign merchants; specifically the Italian merchants that were an increasingly prominent component of Mediterranean trade over the course of the twelfth century. Essentially, Alexios decreed that Venetian merchants were entitled to access several ports in the Aegean Basin, and that they no longer needed to pay the *kommerkion,* a ten per cent tax on all commercial transactions in Byzantium.[623] A few years later, in 1126, Alexios' son and successor Ioannes II Komnenos (r. 1118-1143) further improved the opportunities of Venetian merchants when he declared that everyone in the Empire was exempt from paying the *kommerkion* if they were buying from or selling to the merchants of that city.[624] Byzantine rulers made similar concessions to Genoese and Pisan merchants in the twelfth century, and by 1204, relations between Byzantines and significant communities of Italian merchants within several Byzantine cities had become a focal point of both economic activity and social tensions.[625] Regardless of these tensions, the Italian merchants became a very common feature of the Byzantine economy between the late eleventh and twelfth century, and were frequently involved in moving commodities around Byzantium and beyond it to Italy and the Levant.

Overlapping with these rather abrupt fiscal changes and the increased presence of an Italian merchant class in the eastern Mediterranean, were longer-term developments that altered

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[622] For a description of this process and a list of pertinent examples, see Neville, *Authority in Byzantine Provincial Society*, 51-52.
[623] Angeliki E. Laiou and Cécile Morrisson, *The Byzantine Economy* (Cambridge: Cambridge University Press, 2007), 144, and for a brief description of the *kommerkion*, see page 52.
[624] Laiou and Morrisson, 144.
[625] For an extended treatment of the relationships between the Byzantines and the Venetians, see Donald M. Nicol, *Byzantium and Venice: a study in diplomatic and cultural relations* (Cambridge: Cambridge University Press, 1988). See also Harvey, *Economic Expansion in the Byzantine Empire,* 217-221 and 238 for examples of the economic interaction between Venetians and Byzantines.

Byzantine society between the late tenth and early twelfth centuries: more land became concentrated in fewer hands. By the time Alexios I Komnenos became Emperor, there were more peasants paying rent to landowners, and fewer peasants directly paying land taxes to the state, than had previously been the case. In effect, the fewer and wealthier landowners now paid the bulk of the taxes to the Byzantine state, acting as a middleman that gathered taxes from their tenants (known as *paroikoi*).[626] Furthermore, landowners were pressuring tenants to produce more coins for rents, a development that occurred on top of the tax demands of the state. Indeed, the standard rents (in the surviving *praktika*) show peasants paying twice as much in rent as they would have paid for the simple Byzantine tax rate on a given piece of land (the tax would have been 1/24th of the land's value).[627] As a result, between the pressure of acquisitive Komnenian tax collectors and the desire for tax and rent on the part of emerging landowners, by the beginning of the twelfth century Byzantine peasants found themselves under more pressure to produce surplus and acquire coins than they had for some time, indeed since Late Antiquity.

Lastly among these developments that encouraged surplus production and commercial transactions, coins were more common in Byzantium as the eleventh century progressed, and they were minted with greater regularity outside of Constantinople than before. Under Michael IV (r. 1034-1041) a gold coin-producing mint was re-established in Thessalonike, a mint that became permanent by the reign of Konstantinos IX (r. 1042-1050).[628] In addition, by the reign of Manuel I Komnenos (r. 1143-1180) at the latest, but perhaps as early as the reign Alexios I, a mint was producing copper coins somewhere in Hellas, either in Thebes, Corinth, or Athens.[629] Regardless of the specific location of this mint, it is apparent that by the mid-twelfth century,

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[626] Neville, *Authority in Byzantine Provincial Society*, 48.
[627] Laiou and Morrisson, 107.
[628] Michael F. Hendy, *Studies in the Byzantine Monetary Economy, c. 330-1450* (Cambridge: Cambridge University Press, 1985), 427.
[629] Hendy, *Studies in the Byzantine Monetary Economy,* 435.

there were many more coins available along the western shores of the Aegean Sea than had previously been the case, at least since Late Antiquity. Finally, with Alexios I's fiscal reforms between 1106 and 1109, a lot more money was in circulation: soldiers were paid more in coins and less supported from military lands than before.[630] Such developments are significant for the story of *Olea* around the littoral, as the greater availability of coins in provincial contexts, as opposed to the Constantinopolitan one, meant that trade was now easier to carry out in the places that this dissertation examines.

The combination of acquisitive tax collectors and landowners, available coins, and Italian merchants, brought about real physical changes in the landscape. Some of these trends, such as the provincial mint and the emergence of bigger landowners, had their origins in the early eleventh, and perhaps even tenth, century. However, the economic intensification that had previously occurred at a slow velocity underwent a remarkable acceleration under the Komnenoi, with significant consequences for Byzantine cultivators. Archaeological surveys have shown an increase in twelfth-century sites, including a notable surge in Lakonia. Indeed, the Lakonian archaeological survey found 67 sites from the Komnenian era, compared to a mere 19 sites that had existed earlier in the eleventh century.[631] This increase involved a dispersal of rural sites with numerous non-nucleated sites emerging in the twelfth century, many of which were clearly for agricultural production as opposed to habitation.[632]

Demographic growth alone does not explain this proliferation of sites. The twelfth century was certainly a time when the population increased concurrently with greater per capita agricultural productivity and yet this growth did not overstretch the capacity of the land, as there

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[630] Harvey, "The Middle Byzantine Economy: Growth or Stagnation?" 255-256.
[631] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 364. For the 19 sites from the pre-Komnenian period, see the charts on pages 348-350.
[632] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 364.

was no evidence of any food shortages.[633] The population growth was impressive. For example, the village of Radolibos, of which we are relatively well informed regarding its human population, went from a population of 122 *paroikoi* in 1103 to 222 in the early 1300s.[634] Such an increase was significant for a pre-industrial context, and also follows the Komnenian fiscal reform. In other words, and as is now proposed by scholars for the contemporary western European case, greater pressure for surplus from elite figures led to economic and demographic growth, *not* the other way around.[635] Put another way, economic growth and agricultural intensification were the consequences of a more demanding elite rather than demographic growth. Thus one should look to the other reasons discussed above as explanations for the increase in surplus-producing agriculture in the late eleventh and twelfth centuries.

By the end of the eleventh century, the circumstances were fitting for an increase in surplus agriculture, including olives. But what did this oleicultural component of the economy actually look like? Can it shed light on the Byzantine economy beyond what is stated above, perhaps providing more specificity regarding what the nexus between landowners, peasants, Komnenian tax collectors, and Italian merchants looked like, particularly in the realm of exchange? And can this oleicultural component reveal more about the choices that peasants were making?

The most thorough set of evidence that one can use to answer these questions, albeit still a fragmentary set of evidence, is found in the Lakonian context. With the Lakonian examples functioning as an entry point, one can then broaden the horizon to incorporate the scarcer

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[633] Laiou and Morrisson, 100.
[634] Harvey, *Economic Expansion in the Byzantine Empire*, 49-50. For the detailed account of this topic and the sources for Radolibos, see J. LeFort, "Radolibos: population et paysage," *Travaux et Mémoires* 9 (1985): 195-234.
[635] Hoffmann, 126. For this idea in the Argolid, see van Andel and Runnels, 102.

material from other regions in the Aegean Basin's later eleventh- and twelfth-century context in order to attempt to answer the questions above.

Various claims make it appear that Lakonia and the Peloponnese were olive-producing areas by the twelfth century. An English traveller observed that Korone (admittedly not in, but near Lakonia) was an area with lots of olives during the years immediately preceding the Second Crusade.[636] In fact, modern scholars of Byzantium have acknowledged that the region had a significant traffic in olive oil, citing such references such as the one above as evidence for such production and trade of this commodity.[637] Some sources make it appear that Venetian merchants specifically frequented Lakonia. The *vita* of Nikon tells a story about two "Latin" brothers who lived in Sparti for the purpose of carrying out trade.[638] Venetian documents testify to the existence of a handful of figures that purchased and shipped oil from Lakonia and elsewhere along the western shores of the Aegean Sea. One Dobramiro Stagnario was recorded moving oil out of Sparta to Alexandria in 1135,[639] and a figure named Romano Mairano was credited with dominating the sale of oil from Sparta (along with Corinth and Thebes) between 1165 and 1171.[640] Perhaps the most notable textual examples of oleiculture in eleventh- and twelfth-century Lakonia are two Venetian commercial contracts, in which a group of Italian merchants purchased olive oil in Sparti, and then shipped it to Constantinople.[641] This pair of very short Venetian texts discusses the purchase of oil from the "Greeks" in Sparti.[642] The quantity

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[636] *Gesta Regis Henrici Secundi Benedicti Abbatis. The Chronicle of the Reigns of Henry II and Richard I AD 1169-1192; Known commonly under the Name of Benedict of Peterborough*, ed. W. Stubbs (London, 1867) 2: 199.
[637] Harvey, *Economic Expansion in the Byzantine Empire*, 147, references the mention of olives in Benedict of Peterborough and the contracts from the Venetians cited in Thiriet.
[638] *Life of Nikon*, 250-251.
[639] Freddy Thiriet, *La Romanie Vénitienne Au Moyan Age: Le Développement et L'exploitation Du Domaine Colonial Vénitien (XIIe-XVe Siècles)*, Bibliothèque Des Écoles Françaises D'Athènes et de Rome 193 (Paris: De Boccard, 1959), 47.
[640] Thiriet, 48.
[641] Armstrong, "Merchants of Venice," 314-316.
[642] Armstrong, "Merchants of Venice," 314-315.

discussed in the contracts was allegedly four hundred measures, termed "metra" in these Latin documents.[643] It is highly probable that the Latin "metra" was a transliteration of the Byzantine unit "*metron* (μέτρον)," or "*metra* (μέτρα)" in the plural, a unit that amounted to 9.1 liters when measuring the volume of oil.[644] Thus, 400 *metra* would have amounted to 3,640 liters of oil. Evidently, this purchase was significant with respect to quantity.

But, while the merchant contracts give the impression that some serious quantities of olive oil could be bought in Sparti, the archaeological data is frustrating as far as its ability to indicate the scale of oleiculture in medieval Lakonia. Despite the findings outlined previously concerning the presence of olive crushers and four olive presses in the medieval urban center of Sparti, the Lakonia survey found no remains of olive presses across the Evrotas river; an area that represents a significant portion of Sparti's rural hinterland.[645]

This lack of presses in the survey area leads one to ask: where were the olives pressed? How did Lakonian peasants pursue the crushing and pressing stages of oleiculture in the eleventh and twelfth centuries? Typically, people press olives close to the location where the fruit is gathered, mainly because it is expensive and laborious to transport the uncrushed olives.[646] The archaeologist Pamela Armstrong presented two possible scenarios that explain the lack of presses in the survey area. The first one is that people brought olives to Sparta, where there definitely were crushers and presses, in order to extract the oil. The second hypothetical case is that people moved olives over land and processed them near a Lakonian port, most likely Skala, from whence the olive oil was shipped.[647] Either scenario would be laborious and difficult, the latter

[643] Armstrong, "Merchants of Venice," 314.
[644] For Byzantine units of measurement see Morrisson and Cheynet, 817.
[645] Armstrong, "Merchants of Venice," 316 and 318. The survey found two olive presses, but they are of a much later Ottoman date. See Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 385. For the olive presses, see above.
[646] Foxhall, 138-139.
[647] Armstrong, "Merchants of Venice," 316.

one incredibly so. In addition, there is no substantial evidence for export amphorae from medieval Lakonia, which one would expect from a region that exported olive oil.[648] However, as archaeologists have noted, the use of barrels constructed from perishable wood could explain the absence of potsherds related to olive oil export.[649]

Another possible answer to this question of where the oleicultural infrastructure was located is that the Lakonian peasants were making use of less archaeologically visible crushers and presses. As discussed in chapter 3, such crushers can vary between appearing like a large mortar and pestle to a "roller and bed" type.[650] As examples from the ancient Greek context have shown, large olive crushers were expensive and required some expertise to build, whereas these simpler alternatives were perfectly suited to cultivators who did not possess massive quantities of olives for crushing.[651] Even on large estates in the ancient Athenian context, several of these simple crushers could be used to extract oil and then could be dismantled until the next olive harvest, which would typically occur two years later.[652] There is no reason to think that the eleventh- and twelfth-century Lakonian context was different, especially if peasant households with few trees were providing the majority of the oil for trade.

Alternatively, people maybe brought small amounts of olives into the town of Sparti in order to press them there, perhaps paying a fee or giving a portion of their oil at the monastery's (or ostensibly other owners') olive crushers and presses in order to make use of these tools. Even in the modern era in the Maiandros watershed, farmers have, on good "bumper" years, taken their olives to the larger pressing establishments in order to have them processed into oil, leaving a portion of the resultant oil as a payment. In bad years the farmers would be able to crush and

[648] Armstrong, "Merchants of Venice," 316.
[649] Armstrong, "Merchants of Venice," 316.
[650] Foxhall, 179-180.
[651] Foxhall, 179.
[652] Foxhall, 180.

process the olives themselves with their simpler implements that handled smaller capacities. The archaeologist K. Ahmet suggests that this arrangement could have happened in the ancient and Byzantine world too.[653] After all, archaeologists found the oil presses from medieval Sparti in public spaces,[654] and it has been suggested that this infrastructure was situated in such a way as to be publicly accessible.[655]

Thus the lack of presses and crushers in the countryside versus their prevalence in the urban center of Sparti indicates that many people brought relatively small quantities of olives into the city in order to crush and press them. In turn, a few buyers, in this case Venetians, bought large quantities of this olive oil and shipped them to distant markets.

There is one piece of documentary evidence (although admittedly a few decades after the terminus of this dissertation's focus) that may shed light on the cultivator's side of Lakonian oleiculture, perhaps pointing to the minimal sizes of the peasants' groves. An inscription of a dedication to a church in Lakonia, dated to 1278, commemorates several people donating olive trees in ones, twos, or fours, to a church.[656] The document does not discuss large groves at all, instead focusing on the ownership and use of individual trees. In this case, with even more certainty than Nikon's testament, the number of olive trees was very small, and it would make sense for the owners of these trees to use small and almost archaeologically invisible presses and crushers, or for them to use a press somewhere else once every two years for their very modest pressing requirements. In the latter case, one can envision these peasants taking their humble baskets full of olives from their one or two olives trees into Sparti and paying or bartering in order to make use of one of the crushers found in the city's excavations. While it is possible that

[653] K. Ahmet, "A Middle Byzantine Olive Press Room at Aphrodisias," *Anatolian Studies* 51 (2001): 159-165-166.
[654] Bakourou, "Τοπογραφικές παρατηρήσεις για τη Μεσοβυζαντινή Λακεδαιμονία," 307-309.
[655] Armstrong, "Merchants of Venice," 318.
[656] D. Feissel and A. Philippidis-Braat, "Inventaires en vue d'un recueil des inscriptions historiques de Byzance. III. Inscriptions du Péloponnèse (à l'exception de Mistra)," *Travaux et Mémoires* 9 (1985): 314-317.

a peasant might have only donated one tree out of a grove of twenty or fifty trees, it is interesting that no one donated more than four olive trees to this particular church, indicating that either large groves were not common amongst the Lakonian peasantry and minor landowners, or that this local population was stingy in their charity towards spiritual foundations.

Although the Lakonian archaeological material provides valuable insight into the eleventh- and twelfth-century physical infrastructure that accompanied the processing of olives in Byzantium, one must look elsewhere for information regarding the "front end" of oleiculture (specifically the growing of olives) in this period. Luckily for posterity, a fiscal document known as a *praktikon* from Attika allows a glimpse into this aspect of Byzantine oleiculture.[657] The examples of olive tree possessions listed in that document, spread out across the hinterland of Athens, show only a few trees here and there amongst the landowner's diverse tenants. Before delving into this source, a quick explanation of the *praktikon* is in order.

In the eleventh and twelfth centuries a new variety of fiscal document, called *praktikon*, became common in Byzantium. These documents recorded all the properties owned by a given household and presented the taxes of that household as an entirety, thus, organizing and recording tax assessments by landowners' obligations, not by the total amount assigned to a village commune or any other geographically-defined area.[658] After all, by the twelfth century there were many wealthy households in Byzantium that owned property spread across vast distances, making this newer form of tax assessment practical for the state. Fiscal officials would evaluate a landowner's possessions and accordingly make a copy of the *praktikon* while the landowners would keep a copy for themselves. These documents over time became more and

[657] For this document, see Eugénie Granstrem, Igor Medvedev, and Denise Papachryssanthou, "Fragment D'un Praktikon de La Région d'Athènes (avant 1204)," *Revue Des Études Byzantines* 34 (1976): 5-44.
[658] For a good explanation of what these documents were and how they displaced the earlier system of tax assessment, see Neville, *Authority in Byzantine Provincial Society,* 47-48.

more common while the older type of tax document that assessed the amount of taxes owed by a village collective, called a *kodix*, disappeared.[659]

This particular *praktikon* from Attika exists in one damaged copy written in a thirteenth-century hand, but addressing an eleventh or, probably, twelfth-century context.[660] The document definitely discusses lands in Attika, given the place names (some of which are located within the city of Athens), and assesses the dispersed lands of a notable Attikan landowner, perhaps a convent or monastery.[661] The text gives basic information on the land owned, mentioning if the property was a field, a vineyard (or in two cases, woodland), the dimensions of the plot, and if it had olive trees.[662] The document also lists the *paroikoi* who lived on and worked these properties, and recorded whether the *paroikoi* and their family owned two, one, or no oxen.[663]

While the text's anonymous landowner owned several properties spread across Attika, only six out of twenty-nine properties had olives.[664] In the cases in which a property included olive trees at all, the numbers of trees were never high, with a place called Chrysochos having the greatest total at sixty-one olive trees (distributed amongst nine sub-properties), along with five "dried half-olive trees," one "lopped" olive tree and seven wild ones.[665] The other olive-bearing properties had 10,[666] 9,[667] 2,[668] and 1 tree respectively.[669] Such holdings were simply not substantial. Interestingly, Attika is an excellent olive-growing region, and a poor one for growing much else on account of its particularly arid climate. If anywhere in Byzantium was optimal for

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[659] Neville, *Authority in Byzantine Provincial Society,* 48.
[660] Granstrem et al., 7. The text cannot treat a date later than 1205, because by that time Attika was in the hands of Crusaders who did not produce Byzantine tax documents.
[661] Granstrem et al., 8.
[662] Granstrem et al., 8.
[663] Granstrem et al., 17.
[664] Granstrem et al. Consult the tables on pages 10-14.
[665] Granstrem et al. See pages 10-11 for the table illustrating the holdings at Chryochos. See pages 31-32 for the Greek text.
[666] The number of trees at the property of Persai. See Granstrem et al., 19, lines 2-3.
[667] The number of trees at the property of Myrontas Kokkila. See Granstrem et al., 18, lines 27-29.
[668] Both Thronoi and Thronoi Reumata had 2 trees each. See Granstrem et al., 23, lines 4-6 and 6-11 respectively.
[669] The number of trees at the property of Kokkinades. See Granstrem et al., 39, line 18.

growing olives in the absence of other crops or forms of land use, Attika was an excellent option. The fact that the number of trees was not great in any one place among the possessions of a significant landowner cautions one regarding how significant oleiculture was in the commercially vibrant context of eleventh- and twelfth-century Byzantium.

In addition to the Attika *praktikon*, some of the archival documents from the eastern shores of the Aegean Sea shed light on the numbers of trees owned by Byzantine cultivators in the thirteenth century. Obviously that date range is later than the focus of this dissertation by several decades, but the trees themselves were probably planted during the Komnenian era, perhaps even before then. Some of these examples of olive groves are provided indirectly through accounts of individuals' donations of olive trees to monasteries in return for spiritual assistance in the donor's afterlife. In 1232 or 1233, a figure called Alexios Tesaites donated 150 olive trees, among other things, to a monastery of Saint Panteleemon near Smyrna,[670] and a monk named Loukas Tzouroulos donated 46 trees to an unspecified monastery in 1285.[671] Other documents discuss the sales of properties with olive trees. One text from 1274 specifically discusses the sale of 44 olive trees, which were irrigated, indicating that there was a conscious attempt on the cultivator's part to increase their yield.[672] Another example testifies to a figure, Maria Angelina Chrysoberga, selling 14 olive trees along with a field and three oaks in 1181.[673]

These examples obtained from southwestern Anatolia provide greater numbers of trees than those in the Attikan source base, as limited as it is. The differences with respect to the sizes of groves might simply be coincidences, but they might also reflect the greater numbers of trees

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[670] Miklosich and Müller, vol. IV, pp. 56-57. According to the *Oxford Dictionary of Byzantium*, this property was near contemporary Smyrna.
[671] Miklosich and Müller, vol. IV, pp. 137-138.
[672] Miklosich and Müller, vol. IV (Vienna, 1860-90), pp. 116. See also Smyrlis and Kyritses, 444. The text notes that the trees are watered (ὕδατος).
[673] Miklosich and Müller, vol. IV, pp. 122-123.

in the more mature olive groves from the mid-to late thirteenth century (reflected in the Anatolian texts) as opposed to the less developed groves of the late eleventh or early twelfth (reflected in the Attika *praktikon*). Alternatively, they might reflect the fact that Attika almost certainly re-developed its oleiculture later than southwest Anatolia, given that we know from the Bafa pollen core that oleiculture was present there even in the 10th century (as already discussed in chapter 3), whereas the western shores of the Aegean Sea were really only brought back into the political and economic orbit of Constantinople in the ninth century.

The available evidence indicates that, while oleiculture was more prominent in the economy and landscape of the eleventh- and twelfth-century Aegean littoral, the olive functioned within an oligopsony, with many peasants possessing a handful of trees and pressing the oil so that a few major traders could obtain large quantities and distribute the product elsewhere. Textual references from Attika and southwestern Anatolia give this impression, while archaeological evidence from Lakonia illustrates a situation in which cultivators brought small quantities of olives into the town of Sparti in order to make use of the town's crushers and presses.

Olives from the Scrub

A botanically-informed reading of the pertinent documentation from the eleventh and twelfth centuries indicates that many of the olive trees mentioned in the *praktika* and monastic documents were only recently brought from the "wild" back into cultivation. My suspicion is that people selected wild olives, performed some grafts using branches from domesticated trees, and began producing a small quantity of oil either to meet very modest needs or obtain a few

coins at market. Thus, Byzantines established domesticated olive trees, often going into local woodland and scrub in order to do so.

A principal method of setting up a new olive grove in a preindustrial context (although it has been done in recent history too) is to go into the *maquis* and scrubland that naturally covers much of southern Greece and other parts of the Aegean littoral, find some oleasters (wild olives) that frequently occur in that environment, and then clear out the scrub around them in order to improve access to these trees. Once these wild olive trees have become easily reachable, cultivators can graft domesticated olive branches onto the wild trunks.[674] Indeed, the ancient Greeks were aware of the possibility of grafting domesticated branches onto a wild olive tree, and thus there is no reason to doubt that Byzantine inhabitants of the Aegean littoral were conscious of this practice too.[675] There are two ways to accomplish this goal.[676] The first option is to clear out the *maquis* but leave a few promising wild olive trees with generous spacing between them, about eight to ten meters apart, that will in turn be pruned and trained.[677] The second option is to remove these promising wild olive bushes from the scrub and transplant them into an established grove. Regardless of the option chosen, the cultivator must prune, chopping the multiple trunks of these wild olive bushes every year for three to five years until there are only one or two trunks left. These surviving trunks become very thick and are able to take grafts of smaller branches from domesticated olive trees, thus becoming more productive fruit-bearing structures, at least as far as human priorities are concerned. The first option is less laborious than the second, the latter requiring one to make trips with these cumbersome wild bushy trees, and

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[674] Forbes, 77.
[675] Isager and Skydsgaard, 35.
[676] For what follows, see the excellent analysis of olive cultivation in Nicolas Gavrielides, "The impact of olive growing on the landscape in the Fournoi Valley," *Annals of the New York Academy of Sciences* 268 (Feb, 1976): 153-154.
[677] Even in the modern era, people in the southern Argolid have created new groves in this fashion. Jameson, Runnels, and van Andel, 164.

needing to regularly water them for five summers. Whereas in the less laborious first option, the cultivator obviously needs to graft branches from cultivated trees and do their fair share of pruning, it allegedly makes the first five years easier with regards to summer watering. The more laborious second option makes sense if one is trying to transplant trees onto level ground, which, often in the Aegean littoral's context with its limited flat land, meant that a field or vineyard was being converted in order to make space for this new olive grove.

The grafting process complete, the resultant hybrid olive tree is a fusion of a wild trunk, wild roots, and domesticated branches. Given the wild nature of the trunk and the roots, these components of the tree will continue to shoot out new branches and shoots and possibly even trunks that are wild. A lack of pruning means that these wild elements will eventually turn the tree back into a bushy form and will smother the domesticated branches, thus decreasing the output of fruit.[678] Thus maintenance is necessary if one wishes to continue to obtain olives from the tree.

In the limited Byzantine textual material there are some mentions of people using "waste" or scrubland or woodland in order to work a wild olive tree or two. There are several instances in the Attika *praktikon* in which the text mentions "wild olives," using the Greek "elaia agria (ἐλαία ἀγρία)."[679] The adjective *agrios* (also *agria* or *agrion*) referred to many things in the Greek language, but when referring to plant matter meant "wild," or "uncultivated."[680] In these cases, it appears that people were either harvesting olives from wild trees that were being "domesticated," or from trees that were somewhat feral on account of minimal maintenance. I advance the latter option in light of other terminology employed in the text to refer to "cut" or "lopped" olive trees, which were probably wild trees in the process of being brought into

[678] Gavrielides, "The impact of olive growing on the landscape in the Fournoi Valley," 154.
[679] For examples, see Granstrem et al., 32, 38.
[680] See the word's entry in the Liddell and Scott lexicon.

cultivation. In contrast, the "elaia agria" probably were olive trees that received minimal maintenance and had taken on a largely leafy and wild appearance.

The Attika *praktikon* provides vocabulary that probably refers specifically to wild trees being brought back into cultivation. It uses the word "*koutoules* (κουτούλης)," a derivation of "*koutouloi* (κουτοῦλοι)," which means "lopped" or "tonsured" or "struck" when mentioning certain olive trees.[681] While the modern editors of the document suggest that this "lopping" refers to an activity in which cultivators strike branches off trees that have become unproductive, ultimately making them fruitful once again after three or four years pass and new branches grow back, I suggest an alternative explanation. Rather, these "lopped" trees might represent the wild olives being brought into cultivation by having many of their multiple trunks removed and then grafted with branches from cultivated ones. Regardless of which suggestion is correct, the late eleventh- or twelfth-century cultivators mentioned in the document were making use of wild trees, and in some cases were quite probably bringing feral or wild trees back into cultivation.

One document from the monastery of Lavra's archives, written in 1097, provides another example of people owning an olive tree outside of cultivated properties. In this instance, a brother and sister by the names of Ioannes and Maria were selling their family's small vineyard along with another part of the family's property that included two modioi of wasteland or barren land "chersos (χέρσος)." This waste land, almost certainly scrub, included fruit-bearing trees, one of which was an olive (elaian mian or ἐλαίαν μίαν) while the others were figs.[682] Interestingly, this land was located next to a road that went to Thessalonike, Byzantium's second largest city, indicating that this property enjoyed access to a significant urban market and that

[681] Granstrem et al., 31, 32, 36, 37. For the word usage, see the footnote on pages 31-32 that describes usage of the word κουτούλης.
[682] *Actes de Lavra*, pp. 277, no. 53. See line 13 for the reference to wasteland, and line 14 for the reference to an olive tree in it.

surplus agriculture was practical for the plot's owners. Indeed, the family's vineyard perhaps was originally intended to supply some drinkers in the city, while the lone olive tree's role would have remained more mysterious, perhaps providing fruit for the owners to eat, or the tree had simply ceased to receive any maintenance and had become wild in the distant past. Regardless, it was a lone tree lying amidst "dry" or "barren" land and, while noted in the sources, was not part of a true olive grove. This singular tree, while either a formerly cultivated one that had become feral due to neglect or a wild tree that had grown without human assistance in the scrub, was worth mentioning in the document because it somehow could add value to the land should the buyer decide to work with it.

Thus, the evidence from the Attika *praktikon* and a few Athonite texts, when read in light of techniques for working with wild olives, yields an image of eleventh- and twelfth-century people actively increasing the numbers of olive trees that they owned by means of utilizing "wild" trees from the waste land. Essentially, this material indicates that people were trying to expand their olive groves by one, two, or four trees in order to obtain some extra oil for coins. The scale was modest, but it ought to have been sufficient for growing enough olives to produce a few liters of olive oil and acquire a handful of coins on the market. The confluence of factors that included the Komnenian tax reform and the presence of merchants helped drive peasants into the scrub and woodland that had surrounded them for centuries in order to make use of some wild trees. They were probably already familiar with these trees, their ancestors having perhaps made use of them in Late Antiquity or more recently for the odd handful of drupes that could provide dietary variety or fuel a lamp for a special occasion.

Finally, while some monks and peasants were growing a few olives, it does not appear that major landowners were directly driving this olive cultivation. The "olive oil power"

mentioned in chapter 3 as a useful concept when examining the hypothetical links between economic power and social mobility in the ancient Roman world, specifically the cases in which provincial elite households in Spain and northern Africa became very powerful in lockstep with olive oil export, does not find a peer in this late-eleventh and twelfth-century Byzantine context. In Lakonia, by the beginning of the thirteenth century, a family known as the Chamaretoi had emerged as the dominant clan in the region.[683] It is not impossible that the cultivation and export of the mulberry, vine, and olive, all of which occurred in Lakonia in this period, helped drive the clan of the Chamaretoi to local prominence and eventually assisted them in setting up their own realm as the Byzantine state fragmented in the first decade of the thirteenth century thanks to the Crusaders' and Venetians' conquest of Constantinople. However, there is no evidence that this was the case, and if it had been, it would have been exceptional among the instances in which aristocratic elite figures created their own autonomous or semi-autonomous positions in the late eleventh and twelfth centuries in Byzantium. In fact, it appears that the figures who led major revolts and challenged imperial power in Byzantium in the years around 1204 were not able to do so by virtue of provincial landholding. Rather these individuals attained their status and power by means of their military expertise, experience, and titles.[684] Indeed, as far as the Chamaretoi are concerned, one of their clan, Leo, held the imperial title of *proedros*, indicating some function in the Byzantine state apparatus.[685] I posit that the disparities in the cultivation of the olive between the ancient and medieval Roman contexts reflect a telling difference between the political cultures and social structures of the ancient and medieval Roman worlds. As John

[683] Jean-Claude Cheynet, *Pouvoir et Contestations à Byzance (963-1210)* (Paris: Publications de la Sorbonne, 1990), 152-153. See also, Steven Runciman, *Mistra: Byzantine Capital of the Peloponnese* (London: Thames and Hudson, 1980), 14-17.
[684] Peter Frankopan, "Land and Power in the Middle and Later Period," in *A Social History of Byzantium*, ed. John Haldon (Malden, MA: Wiley-Blackwell, 2009), 128-129. For the most systematic and in-depth treatment of rebellion in Byzantium during this period, see Cheynet, *Pouvoir et Contestations à Byzance*.
[685] Runciman, *Mistra*, 14.

Haldon argued, the Byzantine social elite got more "status" from their "membership" in the "imperial system" than from land.[686] In addition, economic historians of Byzantium have argued that, for the most part, major landowners in this period did not actually intensify their estates too much, and cannot be credited with creating "economies of scale."[687] A closer look at the oleicultural component of the Komnenian era economy seems to support both of those arguments, with major landowners, such as those whom the Attika *praktikon* addresses, exhibiting no interest in creating large-scale olive groves and instead leaving it to their tenants to grow piecemeal clusters of trees.

Despite the modest amounts, the evidence, whether textual, palynological, or archaeological, demonstrates that thanks to the efforts of human actors the olive staged a comeback in the Aegean littoral in the eleventh and twelfth centuries. Two major, and somewhat distinct, developments explain this resurgence. First, monasteries needed *Olea* and its oil in order to act as consumers for lamp fuel, consumers for a dietary condiment, and redistributors for the poor. Second, the peasantry, under pressure from Komnenian tax collectors, squeezed out some extra income via olives, whose oil was now more easily moved across the Aegean Sea because of Italian merchants. The latter trade should not be represented as one with massive estates of olive trees employing contracted seasonal labour (which has been the case in other historical contexts such as second- and third-century Roman Africa), but as an oligopsony consisting of dispersed peasant tenant families that provided themselves with a method for paying rents and taxes in the changed circumstances of the Komnenian era. These peasants were numerous and they tended to small groves and, in some cases, went into the scrub that surrounded their villages and *agridia* in order to transplant or alter the neglected or wild olive trees that existed in such

[686] John Haldon, "Social Elites, Wealth, and Power," in *A Social History of Byzantium*, ed. John Haldon (Malden, MA: Wiley-Blackwell, 2009), 195.
[687] Laiou and Morrisson, 103.

spaces with minimal previous human interference. Thus, between peasants who grudgingly went into “waste” land, vigorous Komnenian tax collectors, emergent Italian merchants, and new landowners who sought rents but cared little about the details behind such payments, the circumstances were ripe for *Olea* to become more noticeable in the Aegean littoral’s environment and economy.

Chapter 6
The Devil chops wood

This chapter, focusing on monastic documents and hagiographical sources from the Middle Byzantine Aegean littoral, discusses the increasing social conflict that accompanied Byzantium's economic intensification in the eleventh and twelfth centuries. While the greater social complexity and conflict within Byzantine provincial society in that period is not surprising to Byzantinists, this chapter suggests that this conflict can be situated in the transformed landscape discussed in the previous two chapters, a landscape in which woodland and pasturage became less available, if not necessarily less plentiful.[688] In other words, social conflict in the landscape illuminates, in an indirect way, how economic change led to transformations of the environment and humans' interaction with it. This rearrangement meant that, with less woodland and pasturage to go around, more conflict occurred in these localized provincial settings as people competed more over space or attempted to steal each others' livestock. A handful of monastic archival works illustrate this point: having been written within the context of the economic intensification of the period, they depict the tensions that arose in the more crowded landscape of the eleventh and twelfth centuries. In contrast, there are essentially no monastic archival documents that treat the period before the intensification and thus that genre can provide little comparative material from beforehand. However, the ability to make a comparison is made possible by means of the surviving hagiography from Byzantine provincial society. I argue that by comparing the two principal eleventh- and twelfth-century *vitae* written for Byzantine Saints

[688] For these topics, see Neville, *Authority in Byzantine Provincial Society*; Judith Herrin, "Realities of Provincial Government: Hellas and Peloponnesos, 1180-1204," in *Margins and Metropolis: Authority Across the Byzantine Empire*, by Judith Herrin (Princeton, NJ: Princeton University Press, 2013), 58-102. Sarris, "Law and Custom in the Byzantine Countryside from Justinian I to Basil II (c.500-1000)," 61, suggests that the proliferation of legal edicts and chrysobulls in the eleventh century reflected the more competitive countryside of the period, with peasants and landowners using legal officials in their struggles with one another.

in the Aegean littoral (one from Lakonia and the other from the Kaystros watershed in southwestern Anatolia) against those from the ninth and tenth, one can see that changes in the landscape, and in how people were operating within it, had occurred. Notably, theft, rustling of livestock, and disputes between monasteries and other landowners had all become concerns for Byzantines living around the Aegean Sea by this later period. I suggest that the monastic authors from the later centuries developed literary methods to address this more conflict-ridden landscape, methods that attempted to cement the roles of Saintly protagonists in local environments. By no means were these concerns those of monks alone, rather, as is so often the case in the Byzantine source bases, they were the social element that wrote and preserved the texts with which moderns scholars have to work. Finally, using the very limited textual material available, this chapter postulates that these writers might have been less positive towards the woods and scrub that surrounded them than had previously been the case in the earlier portion of the Middle Byzantine period.

Social causes and outcomes of contested countryside

Monasteries, as proclaimed by their archives, emphasized the property that they owned, and jealously guarded it. Such sentiments made it more likely they would come into conflict with the peasantry, who appear to have placed more emphasis on use and had less intensive economic relationships with the land that surrounded agricultural property, an assertion advanced above in chapter 2. This conflict could involve access to, or collection of revenue from, woodland and its products, or over where to pasture animals. As is already apparent, what posterity knows about Byzantine peasants' strategies is often the product of monastic records, which of course treated the peasants' agricultural and pastoral activities when those activities came into direct contact

with those of monastic communities. Despite the size of the Athonite monastic archival collections, there are few pieces of evidence for the occasions when peasants, with their very different economy than those of monasteries, found themselves in direct confrontation with monks over woodland and pasturage. However, it is reasonable to think that these conflicts were a common feature of the more crowded landscape of the eleventh and twelfth centuries. The few texts that can shed light on this situation are valuable and should not be seen as anomalies in Byzantine social, economic, or environmental history.

The archives of the monastery of Iviron contain a principal example of the clash between the economic power of monasteries, combined with their clearly defined sense of ownership, versus the less organized village economy that focused on the use of "waste" around the village hinterland. In a document from 995, the inhabitants of a village neighbouring Athos, called Siderokausia, were quarreling with their neighbours at the monastery of Kolobou and that particular monastery's peasant tenants.[689] The dispute was a lengthy one and involved an extensive list of complaints, including the claim that Siderokausia's inhabitants were accustomed to using a wooded plain and a hill to gather wood, pasture their animals, and harvest chestnuts. The villagers did not own this land, a point that the representatives of Kolobou made clear in the text. The site in question, called Arsinikeia, was 9 kilometers (5.5 miles) from the village of Siderokausia, indicating that peasants were taking their animals substantial distances in order to obtain fodder and to make use of this woodland.[690] In effect, far roaming villagers with livestock were clashing with a monastery over access to woodland that had previously been open to both parties.

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[689] Kaplan, *Les Hommes et la Terre*, 57.

[690] *Actes de Iviron I*, pp. 160-163, no. 9. For the terrain being a plain and wooded, see lines 15 and 17. For the villagers rights to use the land, see lines 49-50.

This particular document from Iviron is also important as a source for the disputes that could arise between monasteries and peasant communities because it reveals the role that monastic livestock could play in such cases. According to the judge's account of the event, Siderokausia's inhabitants alleged that the monastery's cattle trampled the crops that the villagers had planted at Kato Arsinikeia, which was located next to the woods at Ano Arsinikeia.[691] The monks responded to the complaint by saying that they "owned" all of Arsinikeia and were entitled to its land according to documents in their possession. Land titles aside, this event illustrates the different priorities of the respective sides involved in this argument, with the monks focusing on cattle and ownership, whereas the peasants focused on use and woodland products.

Furthermore, the inhabitants of Siderokausia dwelled in lowland, not highland. These were not semi-nomadic people descending into lowlands on a seasonal basis in order to pasture their animals and thereby coming into conflict with sedentary agriculturalists. Rather, they were fellow agriculturalists living on the coastal plain who now found themselves competing with their monastic neighbours over woodland for gathering nuts and feeding their animals. The distinction is important, and reflects how this countryside was becoming more crowded at the dawn of the eleventh century, and what had previously been enough land to allow different parties to obtain wood and fodder was no longer adequate for the needs of the different communities at the entrance to the Athonite peninsula.

Another example of such contests, although from the end of the thirteenth century, shows a struggle over access to pasturage near Smyrna (on the western shores of Anatolia). The

[691] *Actes de Iviron I*, pp. 160-163, no. 9, lines 20-22. See also Leonora Neville, "Organic Local Government and Village Authority," in *Authority in Byzantium*, ed. Pamela Armstrong (Farnham, UK; Burlington, VT: Ashgate, 2013), 289.

resolution to this conflict saw an agreement to limit access to pasture to within certain periods of the year for respective parties.[692]

It appears that monks increasingly challenged not only peasants', but also fellow monks', access to woodland in this context, and that this struggle could possibly be indicative of a decline in the amount of trees available. The Emperor Ioannes Tzimiskes' (r. 969-976) *typika* for the Athonite monasteries, written sometime during 971 or 972, said practically nothing regarding woodland. The one instance in which it treated this topic was a brief and vague one in which the Emperor forbade the Athonite monks from exporting the firewood that they cut on the mountain, instead ordering them to sell it to laymen only in times of need.[693] In contrast, the Emperor Konstantinos IX's (r. 1042-1055) *typika*, written in 1045, provided a much more specific and negative picture of the monks' interaction with their surrounding woodland. His text bemoans the fact that the monks were complaining that the common areas of the mountain had shrunk over time as more and more of this land fell into the hands of specific monasteries.[694] Consequently, the Emperor ordered the monks to permit one another to gather firewood wherever they found it. As for building purposes, while the monks could make use of the common areas of the mountain, they needed permission to gather timber from one another's properties.[695] Compared to Tzimiskes' *typika*, one gets the impression that changes in demands on the woodland had truly occurred over the intervening 73 years. As good supplies of timber and firewood declined, either absolutely or in proportion to the number of human inhabitants of Athos, monastic houses attempted to prevent each other from acquiring wood that they wanted as their own. Thus an eleventh-century Emperor's commands were a lot more specific when it came

[692] Smyrlis and Kyritses, 444. Miklosich and Müller, IV, p. 181.
[693] Thomas and Hero, 240.
[694] Thomas and Hero, 288.
[695] Thomas and Hero, 288.

to how the monks were to interact with this landscape than a tenth-century predecessor's had been. And perhaps it is because of this more competitive countryside that some Athonite monasteries were engaged in demarcating, claiming, and making their ownership of woodland explicit, such as in the case of the monastery of Vatopedi's document that treated the woods of Hieropátor (discussed in chapter 4).[696]

While the imperial figurehead could attempt to regulate access to Athonite woodland, other members of the imperial family could try to obtain income from its use. A late eleventh-century document from the monastery of Lavra provides an example of state officials in conflict with monks over the revenue and product of woodland. In this text, written in 1092, the monks of Lavra asked the Emperor Alexios I Komnenos to protect their *metochion* of saint Andrew, which was near Thessalonike, by granting it an exemption ("adeia kai exkousseia" or ἀδείας (καὶ) ἐξκουσσείας) when cutting and transporting wood and charcoal.[697] Apparently, officials from the properties of Isaakios Komnenos (who was the brother of the Emperor Alexios Komnenos) were making the *metochion* pay additional charges for carrying out these activities.[698] In the resulting document, a *sigillion* or a decree sealed by the Emperor, Alexios ordered that the monks of Lavra and its *metochion* mentioned in the text, were to receive the exemption and that therefore the cutting and transport of wood, and the supply of charcoal-making wood, were to be unhindered and not subject to any further financial exactions. The document "specified" that the agents of Isaakios' domains were not to abuse or cause problems for the *metochion*, its dependencies, and *paroikoi*. Rather, these agents were supposed to content themselves to receive the regular taxes due by the monks. Such a document is important, indicating that real conflict was occurring in this area by the late eleventh century over such woodland resources and the profits that came

[696] *Actes de Vatopedi*, pp. 102-108, no. 9.
[697] *Actes de Lavra*, pp. 269-271, no. 51. See line 7 for ἀδείας (καὶ) ἐξκουσσείας.
[698] *Actes de Lavra*, pp. 269-271, no. 51. See lines 13-18.

from them, with representatives of one member of the Komnenoi dynasty being involved. Indeed, perhaps the supply of charcoal and wood to the urban center of Thessalonike had truly become valuable, reflecting difficulty of access, if not supply.

Of course, as argued in chapter 4, trees had probably not become scarce in the eleventh-century context and one should be hesitant to argue that a drastic reduction in the extent of woodland was responsible for these disputes described in the testimonies of monastic texts. Indeed there are Athonite documents that still gave the impression that woodland was available at this later date and that its boundaries were unclear to the monastic landlords. Outside of the Chalkidike with its abundant textual data, the Lakonia survey shows that even in the twelfth century marginal land was still not being worked.[699] Interpretations from the Boiotia survey echo these sentiments too, with the project's archaeologists believing that medieval populations were not near "maximum carrying-capacity" in the survey area.[700]

But one must bear in mind that a lack of access to woodland does not perfectly overlap with a shortage of woodland. In fact, it is possible to argue that the elite appropriation of woodland in Byzantium occurred before any sort of substantial decline in the amount of trees.[701] After all, appropriation of a resource can cause just as much social pressure as resource depletion. Both cases were probably at play in the eleventh-century Aegean Basin, a situation that would have been much more acute with the significant expansion in human population, settlement, and agricultural surpluses that occurred during the Komnenian period. Thus, while the textual evidence supplied by the Athonite monasteries is small in quantity, the handful of documents discussed above provide a picture of increasingly competitive interactions between

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[699] Armstrong, "the Survey Area in the Byzantine and Ottoman Periods," 368.
[700] J. L. Bintliff, "Explorations in Boeotian Population History," *The Ancient World* 36, no.1 (2005): 5-17.
[701] For an extended treatment of this historical theme, see Peter Linebaugh, *The Magna Carta Manifesto: Liberties and Commons for All* (Berkeley and Los Angeles: University of California Press, 2008).

monasteries, villages, and even Byzantine state officials over the woods on the northern shores of the Aegean Sea. Such competition makes sense given the economic context of the eleventh and twelfth centuries, and it finds supporting testimony in two examples of provincial Byzantine hagiography from the western and eastern sides of the Aegean littoral, to which I shall now turn.

Hagiography and Conflict in the Landscape

A comparison between Byzantine hagiography situated in the Aegean Basin in the ninth and tenth centuries (a period for which the monastic archival documents are less numerous) and that from the eleventh and twelfth centuries reveals some important shifts regarding both the depiction of local landscapes and the economic activity situated within them. In addition, this provincial hagiography is useful because it provides snapshots of parts of the Aegean littoral beyond that of the Chalkidike peninsula. Essentially, while the earlier hagiography is largely silent on the matter, the later hagiography shows an increase in social conflict at the same time that it provides more description of the environment and people interacting within it. I suggest that these two developments in the texts are linked. As the countryside became more competitive, monasteries' tense situations with their neighbours called for more specific descriptions of what they owned and a need to establish a local Saint's legitimacy and perhaps even ability to protect their foundation. While monastic archives addressed the former issue, hagiography was particularly valuable with regards to the latter.

The earlier examples of hagiography from the Aegean Basin are, for the most part, lacking in any description of landscape or people clashing over resources within it. The *Life of Luke of Steiris*, a later tenth-century text from Boiotia, mentions cereals and fish, but says nothing about people in conflict over woodland, livestock, fields, or anything else for that matter,

the only conflict being Bulgar raids on the Byzantine population of Hellas.[702] While such intrusions were violent, they reflect external threats to Byzantines, not tensions within their society. In addition, Luke's hagiographer, while depicting various locales as unpleasant on account of water shortages or being far removed from people, does not portray a particularly dangerous countryside.[703] Similar to the Boiotian example, the tenth-century *vita* of Paul of Latros, while mentioning herding, water shortages, dangerous beasts such as a lion wandering around the countryside, and Arab raiders as threats, does not provide stories of people clashing over pasturage or livestock.[704] Nor does the *Life of Peter of Argos*, a text that has a reference to a famine and barbarians, but no significant discussion of resources or the landscape.[705]

The *Life of Nikon* constitutes the best example of the transition between the earlier and later periods regarding portrayals of economy and landscape in the Aegean context. Nikon was a tenth-century figure that came from Pontos (modern northern Turkey) where he lived for a brief period as a monk before going to Crete in the immediate aftermath of the Byzantine re-conquest of that island. After evangelizing there for a brief period, Nikon proceeded to the Peloponnese where he eventually settled. He built a monastic foundation in Sparta along with some churches or monasteries (scholars are not sure what to call them) elsewhere in the valley of the Evrotas River before dying in 998.[706]

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[702] *Life of Luke*.
[703] *Life of Luke*. For water shortages see, 80-81; for unpleasant and isolated locales, see 78-79.
[704] *Life of Paul of Latros*. For herding, see chs. 3, 9, 13, 16; for water shortages, see chs. 13, 16, 18; for the lion, see ch. 14; for Arab raiders, see ch. 2.
[705] *Life of Peter of Argos*. For famine, see ch. 13; for barbarian attacks, see 14.
[706] See Pamela Armstrong, "The Monasteries of Saint Nikon: The Amyklaion, Sparta and Lakonia," in *Dioskouroi: Studies Presented to W.G. Cavanagh and C.B. Mee on the Anniversary of their 30-Year Joint Contribution to Aegean Archaeology*, ed. C. Gallou, M. Georgiadis, and G.M. Muskett, BAR International Series 1889 (Oxford: Archaeopress, 2008), 352-369. Especially, page 353, which says that the *strategos* of the Peloponnese gave a village called Perisou to Nikon to fund his monastery. Nikon's main monastery was the one in Sparta and the other two (Sklavochoroi (which was near the Amyklaion) and Parori (which is 5 km from Sparta), which were also in Lakonia, were to become dependencies.

As one scholar has persuasively argued, Nikon's *vita* was written in three distinct installments.[707] The first segment was written in 1025; the second sometime shortly after 1025 (probably around 1042) by the superior of Nikon's foundation (and this superior probably knew Nikon); and the last section, which consists of several posthumous miracles performed by the saint, was probably written around 1148. Not surprisingly, this final portion is believed to depict Lakonian society in the twelfth rather than the tenth or early eleventh century. Indeed, the later section appears very different with respect to the local society, economy, and landscape than the older sections.

Similar to the tenth-century *vitae* discussed above, the eleventh-century portion of the *Life of Nikon* is remarkably silent regarding the countryside. Its key feature is the city of Sparta; in fact, the role of Sparta looms so large in this earlier portion of the *vita* that there appears to be very little outside of it. The exception to this urban focus is the attempt on the eleventh-century hagiographer's part to establish the saint's presence in the landscape in a historical sense, by attributing the existence of two springs to his miracles.[708] The *vita*'s silence regarding the eleventh-century countryside is quite possibly reflective of the historical situation. Its depiction of a landscape based almost entirely on Sparta with the odd reference to a "rustic" outside of it, meshes well with the previously discussed archaeological record that shows a very small number of nucleated settlements in tenth-century Lakonia with a considerable amount of "empty" land between those few sites of habitation. In addition, this earlier portion of the *vita* is highly formulaic. For example, mountains play a prominent role in that portion of the text (as they often played in Byzantine literature that pertained to holy men), yet they play no role in the later

[707] Armstrong, "Merchants of Venice at Sparta in the 12th Century," 317.
[708] *Life of Nikon*, 148-149 claims that Nikon created a spring (which supposedly still bore water in the time in which the text was written) as a miracle. Pages 110-111 claims that Nikon was responsible for the creation of another spring.

segments that take place in Lakonia. Such an absence is odd: Sparti is sandwiched between the steep and lofty Taygetos range and the high, albeit more gently rolling, Parnon mountains. These mountains dominate any view taken from the city. Thus the lack of mountains in the later portion of the *vita* indicates a disregard for the genre's formula.

One finds much more description of conflict in the landscape in the *vitae*, or sections of *vitae*, that treated the Aegean littoral in the eleventh and twelfth centuries. The portion of the *Life of Nikon* that was composed in the mid twelfth century, while lacking direct references to woodland, contains plenty of examples of the protagonist's monastery and its *metochia* struggling with local people. There is an incident treated at length in which a figure named Michael Choirosphaktes, a local notable, contended with the monastery on account of its animals harming his fields. Choirosphaktes and a band of men destroyed the fences that held the *metochion*'s animals back from his property, supposedly because it would allow predators and even "evil men" to harm the *metochion*'s livestock. A scary vision of Nikon and a fever convinced Choirosphaktes to repair the monastery's fences and to even make their replacements out of iron, but apparently he was not adequately contrite and thus the hapless notable died shortly thereafter in excruciating pain amidst further visions of the reproachful Saint.[709]

An important detail in this passage is the explicit reference to fences bounding fields. While this is a sole reference and from a provincial vita, it provides a very different image of the countryside than one finds in the *Farmer's Law* (discussed in chapter 2) with its lack of fences as noted by the Byzantine agrarian historian Paul Lemerle. Fences indicate a more concerted effort to cordon off and mark property, a symptom of a more populous and competitive agrarian world.

In another incident, the same *metochion* was attacked by a group of men (operating under the direction of demons) who carried away its sheep. The hagiographer terms these acquisitive

[709] *Life of Nikon*, 194-201.

neighbours "Myrmidons" or "Milengoi," referring to a group of Slavic people who inhabited Mount Taygetos and overlooked Sparti's hinterland.[710] Once again, Nikon appeared in the dreams of the culprits, only this time he sent dogs to attack the robbers thereby causing them to wake with bruises and other injuries. The rustlers realized they had made a poor decision regarding which monastery to steal livestock from and, upon returning the sheep to the *metochion*, were once again healthy.

There is a further, if rather oblique, reference to the landscape in another instance of social conflict as relayed by the *vita*. In this example, a horse tamer by the name of Ioannes stole bread from an old woman that lived in one of the monastery's *metochia* and who obtained her income by selling bread.[711] Ioannes promptly suffered a seizure and was only cured when he came to Nikon's tomb. In this example, the landscape is not invoked, but there is a continuing connection between antagonists and livestock that is intriguing. Essentially, a figure that specialized in a pastoral economic activity bullied a woman who worked with the product of the fields.

The fact that Nikon figures as a protector of the monastery's holdings in all of these stories indicates that there was a need to deter people from stealing from the monastery. The *vita*'s message is clear: challenging the monastery will result in punishment at the hands of the vengeful Saint.

As discussed in previous chapters, the archaeology strongly indicates that by the twelfth century the Lakonian countryside had become a busy place, and thus the *vita*'s accounts of different parties jostling into one another in the countryside makes sense. Further, the physical and textual evidence for an important role for horses in the Lakonian economy was strong in that

[710] *Life of Nikon*, 206-209.
[711] *Life of Nikon*, 242-245.

period.[712] Thus, the hagiographer who wrote that later portion of Nikon's *vita* was writing in a world in which his monastery's land and livestock were under threat, and powerful neighbours alternatively involved in rustling, landowning, and horse-taming, were presenting challenges to this particular community of monks.

Another notable example of a *vita* that reflects the more competitive countryside of the eleventh-century Aegean littoral is the *Life of Lazaros of Galesion*, a text that illustrates the countryside of western Anatolia in this period at greater length than any other single document. This *vita*'s protagonist, Lazaros the Galesiote, was probably born around 966 and grew up in the Maiandros valley, travelled through Asia Minor, spent a lengthy period as a monk in Jerusalem before returning to Mount Galesion near Ephesos and in the Kaystros watershed (just north of the watershed in which he was born), where he founded his own monasteries several years before his death in 1053.[713] Gregory the cellarer, a monk who knew Lazaros and lived at his foundation the Monastery of the Resurrection on Galesion, wrote the *vita* after 1057 (given that he references Isaakios Komnenos' rebellion of that year) but otherwise one cannot be more precise regarding the date of composition.[714]

Like Nikon's *vita*, Lazaros' includes evidence of tensions in the countryside that involved livestock and space for the animals. Apparently, a monk from Lazaros' monastery by the name of Matthew (at least the hagiographer credits that particular monk with relaying this story), expressed a concern to Lazaros that the monastery's neighbours from the village of Galesion

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[712] For a discussion of evidence pointing to significant horse raising culture in Middle Byzantine Lakonia, see Curta, 217. For the greater proportions of horse bones associated with the medieval layers of the settlement of Agios Stephanos, which is also in Lakonia and a short distance south of Sparti, see W. D. Taylour and R. Janko, *Agios Stephanos: Excavations at a Bronze Age and Medieval Settlement in Southern Laconia* (London: the British School at Athens, 2008), 507. Chapter 4 of this dissertation also discusses the likely prevalence of livestock in Lakonia during the Middle Byzantine period.

[713] See Greenfield's comments in Richard P. H. Greenfield, trans., *Life of Lazaros of Mt. Galesion: An Eleventh-Century Pillar Saint*, Byzantine Saints' Lives in Translation 3 (Washington, D.C.: Dumbarton Oaks Research Library and Collection, 2000). For the year of Lazaros' birth, see page 5. For the date of his death, see page 1.

[714] *Life of Lazaros*, 52.

would, after Lazaros' death, drive the monks away and use the emptied monastery as a space to shelter their livestock.[715] Maybe such a comment represented Matthew's or Lazaros' clairvoyance, or perhaps it reflected Gregory the Cellarer's fears as he wrote in the context of the more competitive and populous later eleventh century. Regardless of attribution, whether it was Lazaros, or Gregory the Cellarer, or the monk Matthew who was afraid of this potentiality, this concern was reflective of social conflict in the landscape.

Livestock seems to have been a crucial element of the problems in Lazaros' *vita*, like in Nikon's. For example, a horse was stolen at night, leading Lazaros' followers to forcefully suggest that the monastery build a wall to prevent further theft. According to Gregory the cellarer's account, Lazaros correctly foretold that if the monks asked Saint George for this horse to return, it would. In this case, thanks to the knowledge of Lazaros and the intercession of Saint George, the beast of burden came back into the monks' possession. However, the monastery could not count on being so lucky in the future, and clearly livestock was something that they had to worry about retaining in a landscape frequented by horse thieves.[716]

Lazaros' hagiographer depicts the swineherds and shepherds who were encountering him and his fellow monks in the wilderness as sinister figures who exerted a negative influence on monks' ability to survive. These menacing individuals included swineherds who murdered a monk called Methodios. While the *vita* explicitly claimed that this particular monk was an evil man that had deserted the monastery, and slandered Lazaros in the presence of a bishop from a nearby see, it is telling that rough herders were the instruments of divine wrath.[717] Another example of the danger inherent in inhabiting this countryside alongside herders was the story of the hermit Paphnoutios, who supposedly inhabited a cave near which one of Lazaros'

[715] *Life of Lazaros*, 201-202.
[716] *Life of Lazaros*, 231-232.
[717] *Life of Lazaros*, 296. The bishop who allegedly heard the slander was the bishop of Magnesia.

foundations was subsequently built. One day a shepherd shot this solitary monk with an arrow, killing the holy man.[718]

In Gregory the Cellarer's depiction of the countryside around the monastery as a dangerous place full of demons, accidents, and untimely deaths, the devil receives a role specific to the economic activity that routinely occurred within woodland contexts. In this example, Lazaros endured a sleepless night as the devil made a point of chopping a log near the Saint's pillar. The repetitive blows of the axe on the wood prevented Lazaros from getting any rest and drove him to make the sensible request that his monastic disciples remove the log, thereby depriving the devil of his opportunity for noisemaking.[719]

One has to consider that the countryside and its woodland was indeed a scary place to the monks that wrote these *vitae*. Gregory the Cellarer attributes a story to the monastery's steward's father, who allegedly went to a nearby cave at night and saw it "glowing" like "coals," and realized that demons inhabited it.[720] The fact that shepherds often made use of caves as temporary shelters at night and would have lit fires in them is relevant: demons and shepherds overlapped in the physical locations that they frequented. The connections between demons and the devil on the one hand, and woodcutting and herding on the other, indicate that monks were apprehensive about the scrub and wooded areas that surrounded them, a space in which their spiritual and economic challenges overlapped.

The comparison between earlier and later hagiography in the Aegean littoral reveals important shifts. The earlier materials said little, if anything, about the landscape and peoples' interaction with it. The later materials, while not providing in-depth description of what the countryside looked like, reflect a lot more day-to-day problems revolving around livestock,

[718] *Life of Lazaros*, 125-126.
[719] *Life of Lazaros*, 156.
[720] *Life of Lazaros*, 135.

trespassing, and the hazards of the "wild" that lay outside monasteries' boundaries. These changes reflect a more contested landscape than that which had existed before. Certainly, the examples of provincial *vitae* that reflect rural contexts are few and far between in the Byzantine Aegean between the ninth and twelfth centuries. However, it is intriguing that a shift in the text's treatment of landscapes and local economies does take place, a shift that overlaps with the economic transformation of the tenth through twelfth centuries.

Hagiographical Strategies for a Contested Landscape

A closer reading of the later hagiographical descriptions of the landscape (both the natural and built environments) and its inhabitants reveals several literary strategies that hagiographers employed to defend their interests and claims in this increasingly contended countryside. Such methods could include implying that difficult neighbours and rivals of monasteries were pagans or ancient inhabitants who had to be displaced, or that they were somehow "animal-like." Other methods included portraying the local landscape as shaped by the monks or as a place with which they were intimately familiar. All of these strategies typify different ways to legitimate or solidify the monasteries' position in these local landscapes.

A notable method for hagiographers to claim a locality for their patron saint was to demonstrate a familiarity with the terrain by discussing local landmarks in their texts. Gregory the Cellarer mentioned several landmarks in his composition. One example was a carved cross that was mentioned as a distinctive feature that was still there when the text was written and that those familiar with the area would supposedly recognize.[721] Other examples included "the"

[721] *Life of Lazaros*, 128.

narrow place, and "the" gorge, all with which the people reading the *Life of Lazaros* would allegedly be familiar.[722]

Another method for hagiographers to defend their interests in this more contested landscape was to claim or explain features in the local topography as products of a Saint's intervention. For example, the *Life of Nikon* includes a story in which a group of "rustics" who were "robbers" obeyed a local demon and went about plundering people who passed by their abode.[723] Nikon commanded these "rustics" to stop robbing travellers, but the admonition failed and the violent brigands proceeded to physically assault the Saint. Nikon responded in brutal fashion, accordingly punishing his assailants by drawing their homes and fields into a chasm and then flooding it. While this story is a stock one, including classicizing references to Dathan and Hades,[724] the hagiographer explicitly uses the narrative as a means to explain a physical feature of the landscape: a marsh that has a church roof protruding through it. Thus, the author of Nikon's *vita* was explaining, in the present tense (*oratai* or ὁρᾶται), to a local audience how a feature of their countryside was a product of the Saint's actions.

Place names and direct references to local landmarks abound in the *Life of Lazaros*. Examples include the hagiographer's references to a hill called "Hypselos," a village called Legos, and a local monastery bearing the name "Hilarion."[725] The *Life of Lazaros* also mentions the cave named after the previously discussed monk Paphnoutios who was killed by a shepherd's arrow.[726] In addition, the text frequently mentions an area called Chalkos Halonios, which

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[722] *Life of Lazaros*, 128 and 144 respectively.
[723] For this story, see the *Life of Nikon*, pages 180-183. The text refers to these figures as "ἀγρόται" or "rustics" and "ληστείαις" or "robbers."
[724] *Life of Nikon*, 182-183.
[725] *Life of Lazaros*, 119. As Greenfield notes, there has been confusion amongst scholars over the reason why this monastery was named "Hilarion." However, the reasoning is irrelevant to this work, which is simply trying to point out the use of local place names.
[726] *Life of Lazaros*, 125.

allegedly lies between the mountain and the village of Galesion.[727] This specific space was purportedly a home for demons, and thus was viewed as a particularly dangerous spot for the spiritual wellbeing of the monastery's monks, even when the *vita* was written.[728] In addition, The *Life of Lazaros* mentions a named wood (the "woods of Levedion").[729] By naming parts of the local topography the monastery highlighted its familiarity with, and claim to, the local landscape. Such naming does not appear to be common in the older *vitae* that were set around the Aegean littoral.

Hagiographers could also strengthen their monastic foundations' claims to the local landscape by depicting an area's previous inhabitants as pagans or semi-pagans. For example, the "rustics" that Nikon allegedly drowned were described as having lived there for a long time (palai oikountes, πάλαι οἰκοῦντες) and that they had been obeying a demon.[730] The author also calls them "oi agrotai," which can be translated as "rustics," "hunters," or "countrymen."[731] "Palai" does give an idea of ancientness, and their association with a demon makes the drowned inhabitants appear thoroughly un-Christianized and thus a task for Nikon to conquer. Historicity aside, such attributions of ancientness certainly are useful when defending the current interests of the monastery, which was clashing with neighbours and in need of legitimating its use of local land.

Gregory the Cellarer adopted a literary strategy that was similar to that employed by the later hagiographer of Nikon. For example, his text recounts a young Lazaros ascending a mountain with difficulty only to find a "worn path" that led him to a group of local villagers who

[727] For the discussion of this place-name, see footnote 350 on page 166 of Greenfield's translation.
[728] *Life of Lazaros*, 245.
[729] *Life of Lazaros*, 266-267.
[730] *Life of Nikon*, 180-183.
[731] *Life of Nikon*, 180.

were, according to the *vita*, heretics that followed their "ancestral sect."[732] Thus we get an image of Lazaros going into an inaccessible place with an old worn path (by implication very old but rarely used) and local inhabitants who followed ancient religious customs as opposed to Christian ones.

Indeed, in the *vita* of Nikon there is a repeated use of "animal-like" terminology when describing barbarians and brigands. The hagiographer who wrote the later sections of the text compares brigands to "rapacious wolves" and to "wild animals."[733] The Greek word for the latter term, "Theres" can also be translated as "centaurs" or "lions," with the former intriguingly emphasizing the border between human and "animal." The text attributes to the Melingoi a "natural wildness."[734] Indeed it mentions these Milengoi as "acting like animals," in a pejorative sense, specifically in the context of stealing sheep from the monastery.[735] The *vita* also compares a group of brigands to wolves.[736] Even the magnate already discussed, Choirosphaktes, who engaged in setting animals and "evil men" on the monastery's fields, was explicitly compared to a lion, a negative metaphor employed to highlight his bellicose behaviour against Nikon's foundation.[737]

It is fitting to end this chapter with the following chronological comparison. The attitude towards the human-nature divide in the twelfth-century section of Nikon's *vita* is a complete inversion of that which one finds in the tenth-century *Life of Luke*. The Boiotian Saint appears to adopt an almost Dr. Doolittle-esque persona vis-à-vis the animals around him. Luke fed sparrows in a field and he kept a pair of snakes that he regularly fed too.[738] In one example, the devil made

[732] *Life of Lazaros*, 86-88.
[733] *Life of Nikon*, 238-239.
[734] *Life of Nikon*, 212-213.
[735] *Life of Nikon*, 209.
[736] *Life of Nikon*, 239.
[737] *Life of Nikon*, 199.
[738] *Life of Luke*, 39-41.

a viper bite Luke, but Luke spoke to the viper, emphasizing that they were both made by God, and thus the viper proceeded to leave the holy man alone.[739] Indeed, at the very end of his life, Luke allegedly asked the nearby inhabitants that they throw his corpse into a ravine so that animals could feed off of it, a very surprising request given the strong Christian preference for burial.[740] Interestingly, according to the hagiographer of this older *vita*, Luke depicts himself as a "rustic."[741] Such a label is in remarkable contrast to the pejorative use of similar terms such as "countrymen," "rustic," or "animal-like" in Nikon's *vita.* Whether this change in the use of the term reflects the metropole-origins of Saint Nikon or the twelfth-century sensibilities of his hagiographer versus the peripheral origins of Luke or the tenth-century context of his *vita*'s composition, an important change in attitudes regarding whether one was a rustic or whether one possessed "animal-like" characteristics is evident. Given the fact that the hagiographer of Nikon's *vita* modeled the text closely on that of Luke, the choice of words can hardly be happenstance.[742]

Perhaps this shift between the respective saint's lives' treatment of the natural world represents a Byzantine parallel to an argument that the medievalist Vito Fumagalli posited for the Western European perception of woodland. He suggested that the lack of popular fear of forests in early medieval western texts reflected a world in which forests were extremely common and utilized by people on a regular basis. It was in the increasingly deforested world of the central middle ages that forests became more unusual, alien, demarcated, and thus an abode for

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[739] *Life of Luke*, 64-65.
[740] *Life of Luke*, 106-107.
[741] *Life of Luke*, pages 62-63. Calls himself "agroikos/agroikon (ἄγροικον)" which means "rustic."
[742] Neville, *Authority in Byzantine Provincial Society*, 179. For further discussion of this connection, see Sullivan's comments on pages 9-17 of the introduction to his translation of Nikon's *vita*.

whatever frightened people.[743] While lacking further materials to pursue such a possibility, one can suggest that this phenomenon was also occurring in the changing environment of Byzantium.

Both monastic archival documents and hagiography from the eleventh- and twelfth-century Aegean Basin indicates that the landscape was contested more and more as people struggled over control of its space, with monastic landowners typically getting the upper hand over peasant communities, although even they appeared to have had to deal with rustlers and landlords. Archival sources, often written by imperial judges, discuss disputes between peasant communities who wanted to pasture sheep in and gather chestnuts from woodland, while monasteries claimed the same land as their own and attempted to prevent peasants gaining access to it. These examples of local hagiography, written in provincial contexts and for local audiences, which had entirely neglected to describe the landscape in the tenth century, were providing much more detailed accounts of it in the twelfth century. This chapter has argued that a possible reason for this change was in order to solidify various Saints' and monasteries' claims to the local landscape as they jostled with peasant communities, nearby landlords, and, probably in many cases, other monasteries over it. These struggles did not necessarily have to do with land ownership, but with land use, and with attempts to take livestock or occupy one's property. At the same time, biographies of Saints came to depict this wooded world more and more harshly, finding demons and evil shepherds in the hills and woods, and even the devil among the oak trees. It is possible that a shift occurred in this period regarding how people viewed the environment around them, and even its animals, with Luke's hagiography portraying his protagonist as affable towards animals, whereas Nikon's later biographer freely used associations with animals in a negative capacity. The evidence, while limited, bears an interesting correlation

[743] Vito Fumagalli, *Landscapes of Fear: Perceptions of Nature and the City in the Middle Ages*, translated by Shayne Mitchell (Cambridge: Polity Press, 1994), 9-10.

with what other chapters have argued using the archaeological, palynological, and archival evidence.

Conclusion

This dissertation's analysis diverges from previous understandings of Byzantine social and economic history by making use of oak and olive as sources that illuminate aspects of Byzantine actors' economic choices, material culture, and landscape, aspects of Byzantine history that are hard to access with a strictly text-based approach. But *Olea* and *Quercus* are not solely components of human economies. They are elements of the natural world too, and can exert their own influence on an environment. Oak possessed its own abilities to further its presence in the landscape, thus creating an environment different from the one in which the Aegean Basin's previous inhabitants had lived. The olive, while less capable of spreading without human assistance, was able to transform itself and revert into a feral form, in a sense leaving human culture and returning to nature. These characteristics made species such as *Olea* and *Quercus* valuable focal points for both the history of Byzantium, and for the environmental history of the Aegean littoral and the broader Mediterranean world.

The changing profiles of *Quercus* and *Olea* between the seventh and twelfth centuries bring forth the first set of this dissertation's conclusions, namely, diachronic ones. The coastal locales surrounding the Aegean Sea looked very different in the eighth century than they had in Late Antiquity, largely because the environment adapted to the diminished presence of people and the consequent reduction in agriculture. Thus, certain species, such as oaks, pines, and other woodland trees that managed to thrive without concerted human interference, became more plentiful. In contrast, others that are more reliant on consistent human aid, such as the olive and walnut, retreated into the background. An observer viewing this landscape around 850 would probably have seen a patchwork of untended olive groves situated on dry soils filled in with young mastic trees, pines, and evergreen oaks, and many deserted fields and vacated groves of

tree crops that were now home to recently established deciduous oak saplings. Humans were still there though, frequently exiting their nucleated settlements in order to visit their far-flung fields of cereal and woodlots of pollarded oaks. Our observer might even notice the odd peasant chopping down an olive tree to supply some firewood. Land was plentiful, and these Byzantines did not bother to mark the trees that they owned or to establish fences around their fields. Combining cereal culture and herding, they met the needs of their households, and thus they made considerable use of dairy, paid minimal taxes, and produced little surplus for exchange.

In the few decades before 1000, as Byzantium re-established its hegemony around the littoral, new arrivals departing from northwestern Anatolia and Armenia arrived on the western shores of the Aegean, often establishing new sites on defensible hilltops and maintaining a closer material and fiscal link with Constantinople than had been the norm in the area since the early seventh century. At this point, our observer would see a new set of changes occurring in this landscape. In some locales, they would witness peasants clearing out some trees but leaving deciduous oaks, perhaps even in the middle of newly cleared fields, in order to maintain supplies of acorns and leaf fodder. Other times they would see people deliberately cut down these oaks because they were the new primary source of wood for trade ships. They would also see people continue to venture out into the hills and wooded lowlands to graze animals and gather firewood, and perhaps even chestnuts and acorns too. Turning to view drier locales, our observer would witness peasants clearing out scrub, maybe evergreen oaks, and pruning old feral bushy olive trees in order to eventually obtain some olive oil. The clearings around villages were larger now, and some figures, alternatively antisocial or enterprising, or simply older children who had received a piece of land in a will, were now living in smaller clearings outside of these villages.

As these processes continued through the eleventh- and twelfth-century, social changes became apparent. People encountered each other and their animals more and more often in the countryside, and they went about marking their trees, building fences, and competing over access to pasturage. By the late 1000's, this process was well underway, and it accelerated during the Komnenian epoch as tax and rent collectors demanded more coins. Thus the twelfth-century Aegean littoral's various local landscapes appear to have been relatively populous, with significant landowners and herds, and many rural sites. This process continued into the mid-fourteenth century when a new demographic transition occurred (one of decline), but that is another story.

In addition to an enriched appreciation for changes over time, the focus on *Olea* and *Quercus* enable some synchronic observations of Middle Byzantine history too. Perhaps the most obvious of these synchronic conclusions that this dissertation can draw is that the Byzantines state's decisions, such as transferring populations across the Aegean or demanding more taxes, had significant consequences for the physical environment of the Aegean Basin. While the imperial apparatus might not have sought to directly change the vegetative cover of local landscapes, it indirectly did just that.

Beyond a specifically arboreal focus, this dissertation has yielded a set of observations on which future scholarship can hopefully expand. First, there is very little from the interaction between Byzantines and their environment to indicate that ideas or practices derived from Christian Orthodoxy had any real impact on how people worked in their landscape. Nor does it appear that the average Byzantine person had a negative perception of the wood and scrub that surrounded him or her. Nor did they habitually "degrade" this environment. Clearance certainly occurred, but the narrative was not one of simple decline.

The interplay between woodland and Byzantines sheds light on this work's final conclusion. The changing landscapes around the Aegean littoral were often the products of peasants' decisions. While monasteries made a significant environmental impact where they were built, a recurring theme in this work has been a relative lack of direct impact on the landscape on the part of large landowners. Rather, the establishment of a pollarded oak lot described in the *Farmer's Law*, the decision to neglect an olive grove in the hills to the east of Athens during the seventh-century, the clearance of woodland that accompanied the creation of an *agridion* in tenth-century Chalkidike, or the choice to bring a pair of feral olive trees back into cultivation in the eastern hinterland of Sparti, all mainly appear to have been small-scale actions on the parts of peasants. Combined, these piecemeal decisions had major consequences for the make-up of the Aegean littoral's woodland, both in its area and composition, and for how Byzantines lived their daily lives. Thus, the majority of Byzantines negotiated between satisfying their stomachs and maintaining security before their tax collector or landowner, a negotiation that they carried out in their physical environment. They worked and re-worked their own daily lives and landscape, making choices and productive relationships at the same time. They lived between the oak and the olive.

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