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The Limits of Lordly Production: the management of working horses on the Manor of Barnhorn, 1325-1494

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The Limits of Lordly Production: the management of working horses on the Manor of Barnhorn, 1325-1494[1]

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From the Middle Ages through to modernity, England was exceptional in its use of working horses. Nowhere in Europe was horsepower embraced as early or as comprehensively as it was on the British Isles. Before 1200, oxen were the primary draft animals used on farms and roads across the country. However, by the seventeenth century, horses had largely replaced them, particularly in the more economically dynamic southern and eastern regions of the country.[2] This did not happen elsewhere in Europe. At the turn of the 20th century, only France had followed England in transitioning to horses, but they still only provided about three-quarters of animal energy, nearly three centuries after England had converted entirely to horse power. [3] In England, the early phases of this transition from the late eleventh to the early fifteenth century are well documented and recent research has begun to sketch out how medieval England was supplied with the working horses necessary to facilitate the early transition from ox-power in the fourteenth century.[4] However, as Figure 1 demonstrates, horses became the dominant draught animal at some point between the late fifteenth and 1600, a point in time which lies beyond the scope of most current scholarship, due to the lack of source material between the late Middle Ages and the seventeenth century.

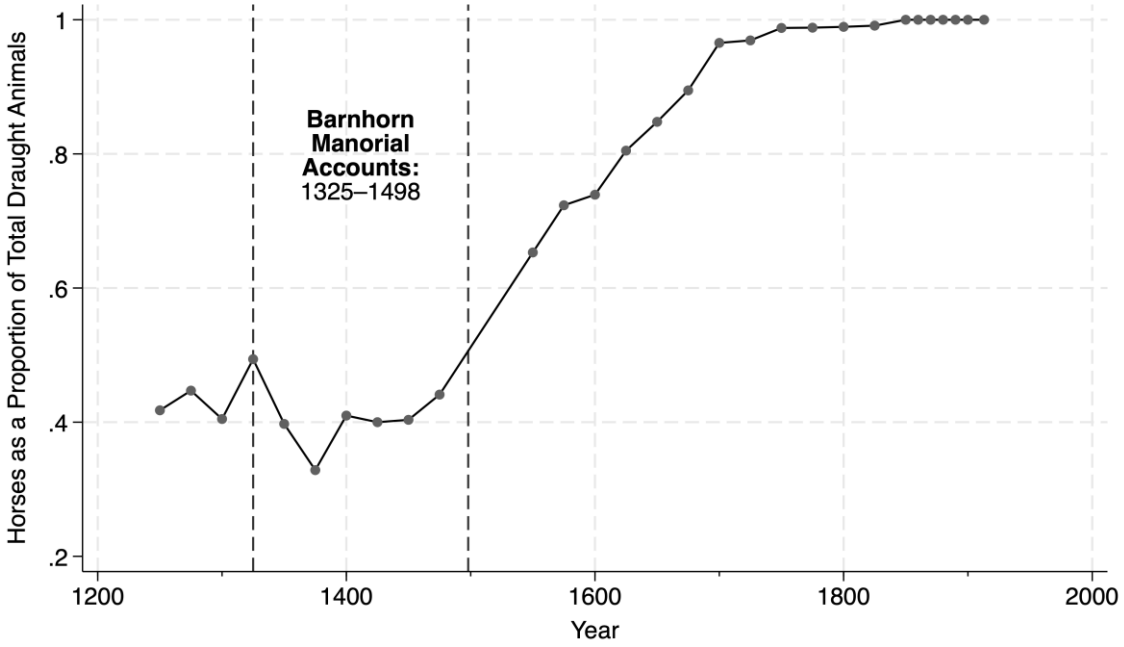
[1] I am grateful for the support of a Huntington Library Mayers Fellowship which facilitated this research both materially and in offering the opportunity to work closely with the Battle Abbey manuscript collection. I also thank Ryan Wicklund for research assistance.

[2] Peter Edwards, *The Horse Trade of Tudor and Stuart England* (Cambridge: Cambridge University Press, 1988); John Langdon, 'Horse Hauling: A Revolution in Vehicle Transport in Twelfth and Thirteenth Century England?', *Past and Present* 103, no. 1 (1984): 37–66; John Langdon, *Horses, Oxen, and Technological Innovation: The Use of Draught Animals in English Farming from 1066 to 1500* (Cambridge: Cambridge University Press, 1986); Joan Thirsk, *Horses in Early Modern England: For Service, for Pleasure, for Power*, The Stenton Lecture 11 (Reading: Univesity of Reading, 1978).

[3] Astrid Kander and Paul Warde, "Number, Size and Energy Consumption of Draught Animals in European Agriculture," *Harvard Economic History Working Papers*, 2009, https://histecon.fas.harvard.edu/energyhistory/data/warde_kander_working_paper_animals-mar09.pdf.

[4] Langdon, *Horses, Oxen* (1986).; Jordan Claridge, 'The Role of Demesnes in the Trade of Agricultural Horses in Late Medieval England', *Agricultural History Review* 65, no. 1 (2017): 1–19.

Figure 1: Proportion of Horses as Draught Animals, England



Source: Broadberry et al. (2015), Kander and Warde, (2009)

At the turn of the fourteenth century, demesnes were net consumers of workhorses who relied chiefly on market purchase supplemented by seigniorial sources.[5] Breeding was generally a secondary, and largely unreliable option. Demesne managers did, however, act as local middlemen. So, from the perspective of demesnes, the horse trade was fundamentally a demand-side story. This begs the question of whether demesnes remained structurally dependent on the market for workhorses beyond c.1300, and how England was able to make a second surge to complete the adoption of horse power by the end of the seventeenth century.

This paper tracks how one demesne, at the Battle Abbey manor of Barnhorn, in coastal Sussex navigated horse procurement across the later Middle Ages, a period which includes the Black Death, the turn from direct management to leasing, and shifting estate policy. Barnhorn and Sussex are deliberately non-frontier contexts for questions of horse power. There were no carthorses employed on the demesne, and it was farmed in a convertible husbandry paradigm rather than open fields.

[5] Claridge, "The Role of Demesnes in the Trade of Agricultural Horses in Late Medieval England."

Indeed, Sussex was a laggard county in terms of the national adoption of horse power. Market density in Sussex was also average at best, which muted perhaps the most important incentive for horse use. Combined, these factors allow us to ask how regions with 'average' conditions nonetheless assembled and sustained horse power. The aim of this paper is to address this gap by leveraging the exceptionally rich body of surviving manorial accounts from the manor of Barnhorn to examine how a single English demesne managed its stock of working horses over a period of almost 170 years. With accounts surviving from 1325 to 1494 (See Appendix A Figure 1), [6] this corpus of material offers an unparalleled opportunity to see how working horses were acquired in seigniorial agriculture from before the Black Death to the end of the fifteenth century, the point at which working horses were on the cusp of becoming the primary beast of burden in England. Such opportunities are exceedingly rare because significantly fewer manorial accounts exist for the decades after 1350, due to the growing trend from the mid-fourteenth century, and especially after the Black Death, for lords to lease their demesne farms for cash rents, rather than manage them directly. The farmers who assumed the management of these lands typically did not have a need to record their agricultural activity in the same way as seigniorial lords had done, and the consequence for historians is that the detailed information about activities such as livestock management disappears from the historical record at the point when demesnes were leased. In this respect, Barnhorn is exceptional for remaining under a direct management regime nearly to the end of the fifteenth century. Within the context of the Battle Abbey estate, twenty of the estate's twenty-eight manors had been rented out by 1383, but Barnhorn was kept mostly in-hand for a further century. [7] The Barnhorn accounts, therefore, provide detailed insight into estate management and manorial decision-making in general, and animal husbandry and demesne horse management, in particular, for a period where evidence is typically scant. By providing a portfolio of indicative figures at the annual level, this paper provides unprecedented insights into the myriad

[6] See: BA 335-430. Battle Abbey Archives, The Huntington Library, San Marino, California.
[7] Eleanor Searle, *Lordship and Community: Battle Abbey and Its Banlieu, 1066-1538* (Pontifical Institute of Mediaeval Studies, 1974), 259.

considerations in managing working horses in the seigniorial context. In so doing, it will provide further insights into demesne horse management and the over-arching market for working horses in late medieval England. Through the examination of an unparalleled series of manorial accounts with data from 1325–1494, this paper demonstrates how a single demesne navigated changes in breeding, market reliance, and mortality to illustrate broader shifts in late medieval English horse power to throw light on the question of how horse power was able to spread so widely and so quickly in England. This single-manor, post-Black Death series shows that demesnes remained structurally dependent on an external supply of working horses well into the fifteenth century, and there are strong suggestions that much of this supply was via local peasant networks. Barnhorn managers only turned (back) to `in-house' breeding late in the fifteenth century.

To date, our understanding of working horses, and how they fit into the larger seigniorial economy has been provided by an array of estate-level studies where horses are treated as only a part of wider agricultural and commercial endeavours, or with a single snap shot of the wider 'equine economy' (at least at the demesne level) around 1300.[8] Those wishing to consider any aspect of the horse economy over the longer term, be it the breeding, trade of animals or even an understanding of their working lives, have been forced to scour the indices of estate studies, or extrapolate from a single point in time. to uncover any insights. This paper, by focusing solely on working horses at one manor, hopes to augment the works discussed above, and others like them, and provide a more comprehensive picture of horsepower in the seigniorial context.

[8] For examples of estate and manor studies, see: Searle, *Lordship and Community*; Christopher Dyer, *Lords and Peasants in a Changing Society: The Estates of the Bishopric of Worcester, 680-1540* (Cambridge University Press, 1980); Kathleen Biddick, *The Other Economy: Pastoral Husbandry on a Medieval Estate* (University of California Press, 1989); David Stone, *Decision-Making in Medieval Agriculture* (Oxford University Press, 2005); Claridge, "The Role of Demesnes in the Trade of Agricultural Horses in Late Medieval England."

Battle Abbey was founded personally by William the Conqueror shortly after his invasion of England to atone for the bloodshed he had caused with his conquest.[9] William initially endowed the abbey with a modest *banlieu* for its sustenance. These were lands, granted to the abbey, that fell within one league (~three miles) from the church's high altar, itself to be placed at the spot where the Saxon king, Harold, had fallen at the battle of Hastings. This land is referred to as the *leuga* in Battle Abbey documents, a reference to the specified diameter of the banlieu. The *leuga* had been endowed to provide for the abbey's material needs, but William's insistence that its epicentre be the *exact* place of Harold's death meant that resources were limited, because the banlieu lay in a relatively inhospitable tract of land.[10] To address this, starting in the early twelfth century, successive abbots went about acquiring additional properties that could augment the abbey's original endowment and provide it with important assets that the initial grant had lacked.[11] Bodiam Meadow, acquired during King William's reign, gave the manor essential meadow as well as access to the river Rother which runs from Rotherfield in the Northern part of Sussex in a South-easterly direction through the county and drains into Rye Bay.[12] Further acquisitions were made closer to the sea: two salt pans were acquired at Rye and the manor of Fruntington, part of the original endowment, was exchanged with the English Crown for Appledram, which itself held a farm called Bosham on the Sussex coast.[13] One of the most important of the abbey's acquisitions was the manor of Barnhorn.[14] Lying around five miles directly South from Battle, along the coast between modern-day Hastings and Eastbourne, it was comprised of both coastal marshes and uplands, theoretically well-suited to both arable agriculture and pastoral grazing. By the early fourteenth century, the Barnhorn demesne comprised some 460 acres of arable, twelve acres of woodland

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[9] Searle, *Lordship and Community*, 21; J.S. Brewer, *Chronicon Monasterii de Bellow, Nunc Primum Typis Mandatum* (Impensis Societatis, 1846), 2. '*ibique coenobium, quo Dei servi congregarentur, pro omnium illorumque nominatum qui in eodem bellow occumberent salute construeret. Qui locus refugii et auxilia omnibus est, quaintus jugi bonorum operum instantia commissa illic effuse cruoris redimerentur*'.

[10] Indeed, the Battle Abbey chronicle records that the original banlieu was "situated on a hill, barren, dry and without any water in the vicinity". Searle, *Lordship and Community*, 45.

[11] Searle, *Lordship and Community*, 38.

[12] Searle, *Lordship and Community*, 39-40.

[13] Searle, *Lordship and Community*, 40.

[14] Searle, *Lordship and Community*, 40.

and thirteen acres of meadow.[15] Within the Battle Abbey ecosystem, The role of Barnhorn was mostly for supplying Battle with grain.[16]

Neither Barnhorn nor the county of Sussex were on the frontier of the use or production of working horses. In the latter half of the fourteenth century, horses comprised just under 20 percent of all draught animals in Sussex, whereas the national average was 29 percent. It was not a horse-averse county, like Somerset (6 percent horses) or Shropshire (7 percent), but it clearly trailed those parts of the country which had embraced horse power most enthusiastically, like Norfolk (73 percent) and Essex (68 percent).[17] The use of horse power in England was highly correlated with market density, probably because the horse's advantages in speed and versatility paid the highest dividends when markets were nearby. Barnhorn stocked oxen and used mixed plough teams for the entirety of the period covered by this study, meaning horses were always augmenting ox-power at the plough as well as being used for auxiliary tasks like harrowing and transport. Barnhorn (and other Battle manors) were an outlier in Sussex in this regard. They were part of a clear minority of demesnes in the county which used mixed plough teams rather than all-ox traction.[18] So, neither Barnhorn nor Sussex are the most obvious place to look for the origins of horse supremacy among working animals in England. Barnhorn was, rather, a somewhat horse-oriented manor in a county that was lukewarm about horse power, likely because market density in Sussex was also very average (see Figure 1). However, for horses to have reached their astonishing levels of superiority among working animals by the seventeenth century, the whole of the country had to embrace them. In this regard it is fortuitous that the best evidence for surveying late fourteenth and fifteenth century horse management survives in a place like Sussex, because it illuminates the strategies necessary for local horse production in an environment where the incentives for their adoption were not overwhelming.

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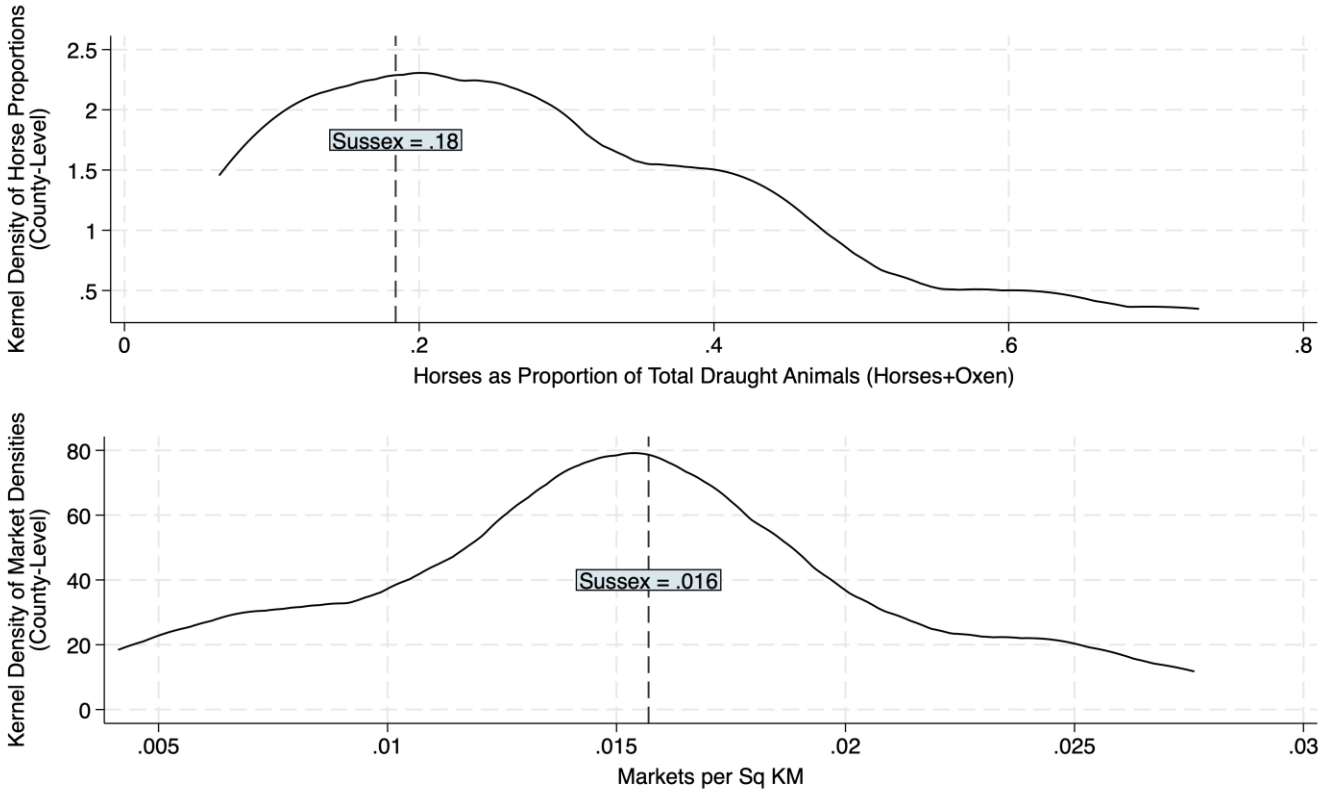
[15] S.R Skargill-Bird, ed., *Custumals of Battle Abbey, in the Reigns of Edward I and Edward II 1283-1312* (Camden Society, 1887), xv; Searle, *Lordship and Community*, 447.
[16] Searle, *Lordship and Community*, 325.
[17] Langdon, *Horses, Oxen* (1986).
[18] John Langdon, "Horses, Oxen and Technological Innovation: The Use of Draught Animals in English Farming from 1066 to 1500" (University of Birmingham, 1983), Appendix C, pp. 416–456.

Figure 2: Sussex in the Context of National County-Level Distributions of Horse Power and Market Density



Source: John Langdon, 'Horses, Oxen and Technological Innovation: The Use of Draught Animals in English Farming from 1066 to 1500' (Birmingham, University of Birmingham, 1983), Appendix C, pp. 416–456; Samantha Letters, *Online Gazetteer of Markets and Fairs in England and Wales to 1516* <http://www.history.ac.uk/cmh/gaz/gazweb2.html

The organization of seigniorial agriculture at Barnhorn, in coastal Sussex, also deviated in some significant ways from the classic 'midlands' open-field system most associated with medieval English agriculture. Barnhorn practiced 'convertible husbandry' or 'ley' farming, where grass pastures were regularly ploughed for conversion into arable fields. These were farmed for a period of consecutive years and then rested. This was a different model than the three-field rotation most frequently employed in open-field manors, where the proportions of arable and pasture land were more fixed.[19] In the paradigm of convertible

[19] P F Brandon, 'Agriculture and the Effects of Floods and Weather at Barnhorne, Sussex, During the Late Middle Ages', n.d., 74–75; For a thorough discussion of convertible husbandry in the early modern context see: Mark Overton, *Agricultural Revolution in England: The Transformation of the Agrarian Economy, 1500-1850*, Cambridge Studies in Historical Geography 23 (Cambridge: Cambridge University Press, 1996), 116–17.

husbandry, demesne lands and tenant farms were not intermingled like they tended to be on open field manors; instead, demesne lands were often separated from peasant holdings, sometimes with a physical barrier.[20] This would have had implications for the management of working horses on the Barnhorn demesne. The soils on the upland portions of the manor were particularly sensitive to weather conditions during ploughing and sowing,[21] so any speed advantage conferred by horses over oxen may have been helpful. Indeed, managers at Barnhorn often employed mixed plough teams of oxen and horses, which leveraged the low-speed 'torque' of oxen while relying on horses to set the pace of ploughing.[22] In addition, the arrangement of ley agriculture, with its clearly divided (and possibly fenced or hedged) fields may have made the breeding of horses and other livestock a more straightforward endeavor than it was on classic open field manors, as animals could be more easily managed. The wealthy owners of higher-end, non-agricultural horses, like the warhorses of the aristocracy and the hunters and palfreys of Battle Abbey abbots, were certainly aware of the requirements for successful selective breeding of their own prized mounts and were keen to not have the work of many generations of managed mating undone by liaisons with lower-quality farm animals. This was likely a factor in the decision of successive abbots of Battle Abbey to pasture their own riding horses at Barnhorn in the summers, as any mares among them could be kept separate from the ungelded working horses of the demesne.[23]

It was possible to extract demesne horse data for a total of ninety-three accounts from a period of 168 years between 1325-6 and 1493-4. The distribution of the sample is discussed in Appendix A. While the series begins near the beginning of the fourteenth century, there are relatively few surviving accounts from the pre-

[20] P F Brandon, *Demesne Arable Farming in Coastal Sussex during the Later Middle Ages*, 19, no. 2 (1971): 121.
[21] Brandon, *Agriculture and the Effects of Floods and Weather at Barnhorne, Sussex, During the Late Middle Ages*, 71.
[22] Searle, *Lordship and Community*, 292.
[23] Working horses were never castrated, or gelded: See: Searle, *Lordship and Community*, 41, 294. The exception that proves this rule is illustrated in the account of 1488-9, when a stray horse that arrived on the demesne was specifically noted as having been castrated by its previous owner: See, BA 415, Battle Abbey Archives, The Huntington Library, San Marino, California.

Black Death period. The coverage is, however, particularly good for the 1370s and beyond. Between 1325 and 1494, the Barnhorn demesne stocked four different kinds of horses: stotts (*stottus*), mares (*jumenta*), young horses (*pullanus/a*), and 'horses' styled as both *equi* and *equae* in the documents. Stotts were 'all purpose' horses, most often associated with use as plough beasts, but also employed on occasion in a variety of other work and better understood as a general-purpose agricultural horse that preformed several duties, especially at a manor like Barnhorn, which never stocked the more specialized and more expensive carthorses (*equus carectarius*). The Barnhorn stotts would likely have taken on any carting duties as well as ploughing, harrowing, and as riding and pack horses as well.[24] On other manors across medieval England, these horses might have been called 'affers'. 'Affer' was used widely across the country, while 'stott' was a term restricted to manors in southern England and especially common near London and in East Anglia.[25] Table 1 gives the sum figures for the horses enumerated in each of these categories at the end of each individual account, which provides us with a rough sense of the proportions of horse types kept on the demesne over the whole period of study.[26] The adult (and mostly male) stotts comprised 75 percent of all horses while young horses and mares accounted for 16 and 6 percent, respectively. A small number of *equi* and *equae* round out the figures, with about twice as many male as female animals. As discussed below, and with the exception of 1387-8 when a single *equus* was purchased, the terms *equi* and *equae* came into use at Barnhorn in 1468 and were likely practically synonymous with 'stott', although the use of this nomenclature, with the distinct Latin gendered endings in

[24] Searle observed a wide variety of tasks performed by stotts at Marley, another of the Battle Abbey manors. See: Searle, *Lordship and Community*, 292. A number of affers and stotts employed on the manors of Norwich Cathedral Priory were also 'all-purpose' draught horses and stotts were often used for harrowing on the Bishop of Ely's manor of Wisbech. Philip Slavin, *Bread and Ale for the Brethren: The Provisioning of Norwich Cathedral Priory, 1260-1536*, Studies in Regional and Local History, volume 11 (University of Hertfordshire Press, 2012), 8; Stone, *Decision-Making in Medieval Agriculture*, 73.

[25] Claridge, "The Role of Demesnes in the Trade of Agricultural Horses in Late Medieval England," 5.

[26] This approach treats each account individually and is therefore most instructive in terms of proportions rather than absolute figures, as individual animals will be counted multiple times in consecutive years.

Equus/Equi and *Equa/Equae* does allow a more precise understanding of the ratio of male to female horses.

Table 1: Summary of Working Horse Proportions, 1325-1493

Type of Horse	Total Number	Total Proportion (%)
Stotts	784	75
Young Horses	167	16
Mares	54	5
Equae	32	3
Equi	10	1
Total	**1047**	**100**

Source: Author's Manorial Account Database

Not only did the size of the horse herd fluctuate over the course of the fourteenth and fifteenth centuries, but its composition changed dramatically as well. This can be seen in Figure 3. The numbers of demesne horses kept at Barnhorn declined steadily throughout the fourteenth century. In the earliest extant account of 1325-6, the demesne herd numbered thirty-six. By 1332, the year of the next surviving account, the numbers had grown to forty horses. This was a height that would not be eclipsed, or even matched, over the next 150 years. By 1352-3 the herd had shrunk to twenty-seven animals and continued to contract from there. While the absolute numbers of horses would decline from 1325-6 to the late 1350s, the relative proportions of the different horse types remained broadly similar. At Barnhorn, the total absence of carthorses is striking, given that, on the national level, specialized horses for carting typically accounted for 15 percent of demesne stocks ca. 1300.[27] Other ecclesiastical estates, like Peterborough Abbey and the Bishopric of Ely stocked carthorses in the fourteenth century.[28] An early fourteenth-century custumal for Barnhorn suggests that some of the demesne's transport needs might have been met in part by the customary labour performed by servile tenants who, at least in some cases, were required to bring their own

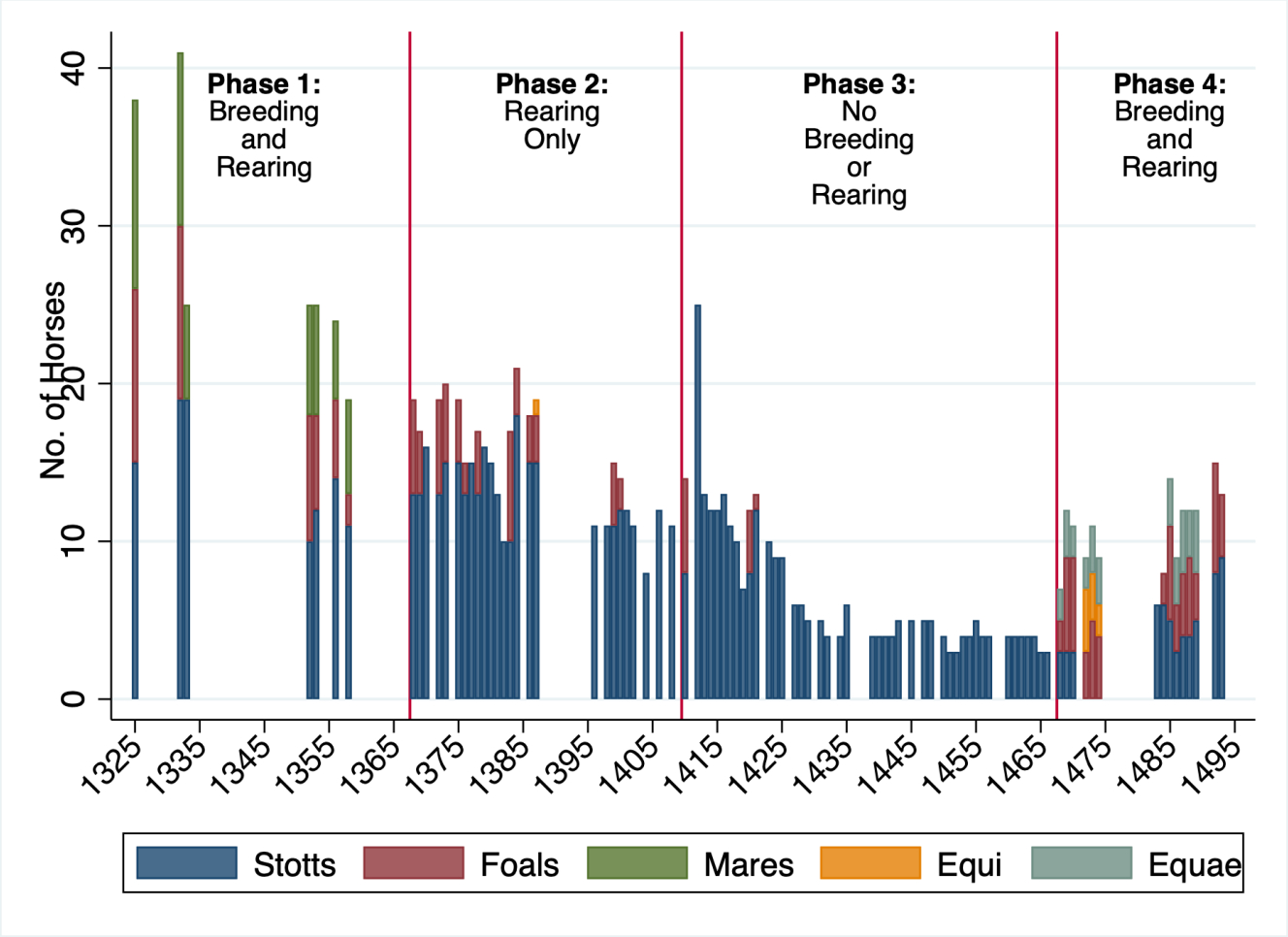
[27] Claridge, "The Role of Demesnes in the Trade of Agricultural Horses in Late Medieval England," 5.
[28] Stone, *Decision-Making in Medieval Agriculture*, 73; Biddick, *The Other Economy*, 116.

draught animals for this work.[29] In cases where customary labour was not available, the demesne would have relied on stotts or mares, or even oxen, for cartage.[30] A reliance upon non-specialized stotts or mares may have been a regional adaptation for a manor on the Sussex coast, where coastal shipping could more cheaply move bulky goods, obviating the need for more expensive carthorses. Of all the horse types kept on the demesne, the population of young horses fluctuated most dramatically in size over the first half of the fourteenth century. With the uncertain success of breeding practices due to high rates of sterility among mares, and significant mortality of both mares and young horses, the numbers of young horses in any given year could change significantly. So, when the relative proportion of stotts rose to near 60 percent in 1333-4, this was not due to an increase in the number of these adult animals, but rather a fall in the numbers of young horses, and to a lesser extent, mares.

[29] One specified service required of servile tenants was 'to carry the lord's hay for one day with a cart and three of the tenant's own beasts…' See: Skargill-Bird, *Custumals of Battle Abbey, in the Reigns of Edward I and Edward II 1283-1312*, xvi.

[30] One specified labour service outlined in a custumal from 1307 was 'to carry manure for two days, with a cart and two oxen... See: Skargill-Bird, *Custumals of Battle Abbey, in the Reigns of Edward I and Edward II 1283-1312*, xvi.

Figure 3: Evolution of Barnhorn Horse Stocks, 1325-1493



Source: Author's Manorial Account Database

By 1368-9 the demesne stocked fewer than twenty horses. The size of the herd would fluctuate between ten and twenty animals, with an average of 16.6 recorded each Michaelmas, for the following two decades. The years between 1396-7 and 1425-6 saw a further reduction; an average of twelve horses, but ranging from seven to twenty-six in 1412, when a bumper crop of young horses came through the demesne stock. A further step change is evident between 1439-40 and 1457-8, by which time the demesne herd entered a 'small and stable' phase, with numbers ranging between three and six horses for a period of almost thirty years. In 1468-9 the size of the demesne herd began to reverse the trend of the previous century and started to grow once again. This growth was driven by the re-stocking of brood mares and the re-introduction of demesne horse breeding. This brought the average number of horses up to 9.3 animals between 1468-9 and 1474-5. There is

a gap in surviving records between 1475 and 1483-4, by which point the numbers of horses had contracted back to an average of six, but, with horse breeding re-instated and a more regular flow of stray and other seigniorially-acquired horses, the herd continued to grow to around fifteen animals by 1493-4, when the demesne was leased in its entirety and the accounts ceased to be recorded.

The management of demesne horses at Barnhorn can be divided into four distinct phases. Phase One, from 1325-6 to 1368-9, saw the demesne engaged in the breeding and rearing of work horses; managers regularly stocked mares and young horses were frequently born on the demesne, reared for three years, and promoted to the adult groups. In this phase, stotts comprised around 40 percent while the mares and all the young horses together accounted for 30 percent each. Demesne managers seemingly had a clear plan in place to breed as many young animals as possible. Phase Two began in 1369-70 and ran to 1410-11. In this phase the demesne ceased to breed young horses but still raised, and presumably trained, young horses that had been purchased on the market or acquired through other channels. This phase is defined by the absence of mares; the horse herd was comprised of ~70 percent stotts and ~30 percent young horses. The numbers of female horses on the demesne had been steadily dwindling up to 1368-9, when the three remaining mares died. The demesne would never stock horses categorized specifically as 'mares' again, and no foal would be born on the demesne for the next one hundred years, until 1469-70. The demesne did still keep modest numbers of young horses in this phase, but they were purchased rather than bred on the demesne. This is significant because it demonstrates that there must have been a reliable source of young horses that demesne managers could reliably purchase from. 1411-12 marks the beginning of Phase Three, in which no breeding or rearing activity was carried out on the demesne. This phase is characterized by an almost total absence of mares *and* young horses. The lone exception to this is 1421-2 when four young horses are recorded at the beginning of the year, with three promoted to the adult stocks over the course of the year and a single male of three years remaining in Autumn of 1422. The presence of young horses in this single year bucks a fifty-five-year trend and the fact that the arrival of the young horses

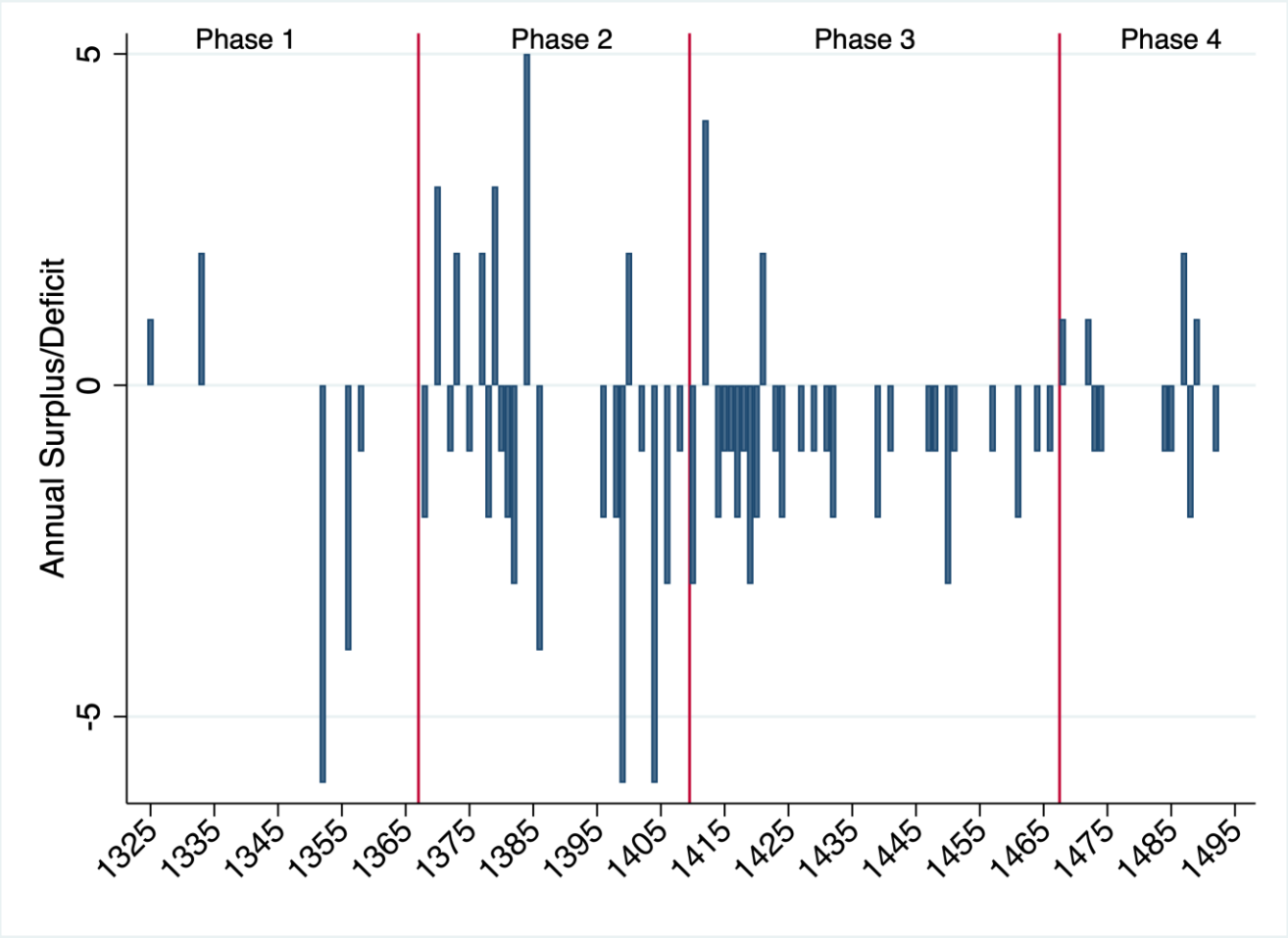
was not recorded in the accounts makes their presence even more conspicuous. Phase Four began 1468-9 when a horse breeding program was reinstated on the demesne. Young horses appear first with three recorded at Michaelmas 1468. Unfortunately, we cannot tell whether these young horses were purchased or bred internally as this likely occurred in 1467-8, a year for which there is no surviving account. However, one young foal was born on the manor in 1468-9. Female horses are explicitly recorded once more in 1472-3, although the accounting nomenclature had again changed; female horses were now called *equae* rather than *jumentae.* It is difficult to know if the difference between the two terms was intentional or significant, or if the use of one term or another was simply a difference in scribal practice with a 100-year gap between accounts. The latter is probably more likely, as, in 1487-8 and 1488-9 adult horses are referred to simply as stotts in the stock account and described with the separate categories of *equus* and *equa* elsewhere.[31] The Barnhorn demesne continued to actively breed horses until at least 1493-4.

In order to contextualize information about how (and how many) horses the Barnhorn demesne acquired, we first need to get an understanding of how many working horses managers *needed* to source. Figure 4 provides this by plotting the surplus or deficit of work horses for every surviving account year. This is determined by first taking the number of workhorses that would need to be replaced in any year. These are the animals that died, those that were sold, and any manors transferred to other parts of the Battle Abbey estate (*Deaths* + *Sales* + *Transfers Out*). From this, we subtract the number of young demesne horses that had been 'graduated' to the adult working stock as well as any horses transferred in from the estate administration (*Young Horses Promoted* + *Transfers In*). A result of zero would indicate that the demesne had produced internally, through the rearing and/or breeding of young horses, a sufficient number of animals to maintain their stocks at current levels. A positive number would indicate a surplus of horses which could be kept on the demesne if the manager desired to increase

[31] At Michaelmas 1487 the account enumerates six stotts/three *equi* and three *equa*. A further foal and filly were promoted over the course of the year, so in Michaelmas 1488 the account records eight stotts or four *equi* and four *equa*. See: BA 422, Battle Abbey Archives, The Huntington Library, San Marino, California.

the size of the horse herd. If not, surplus animals would me moved out, either to other Battle Abbey demesnes or sold on the market. A negative number is indicative of a deficit where more animals had been lost over the course of the year than were produced internally. This would either result in the shrinking of the horse herd or would require that adult horses be found to replenish stocks. In deficit years, the demesne would have had to purchase horses or rely on seigniorial sources of animals like heriots and strays or to maintain its stocks.

Figure 4: Annual Surplus/Deficit of Adult Horses



Source: Author's Manorial Account Database

Over the ninety-two account-years in our sample, forty-seven were deficit years. In practical terms, this meant that the demesne would have had to acquire adult working horses every second year to maintain the size of the horse herd. In twenty-three years internally produced horses were sufficient to replace those that had died or been sold, so stocks could be maintained without any action from the

demesne manager. In twenty-two years, or about one in every four years, a surplus of adult working horses was created. However, these surplus animals would not normally be carried over to the next year. At Barnhorn, like other demesnes, managers were very clear about the number of draught animals needed on the demesne in any given year, so surplus animals were usually sold very quickly.[32] This means that a surplus of horses in one year could not soften the blow of a deficit in a subsequent year. Understandably, surpluses were most regularly created in phases one and four, when the demesne was actively breeding young horses.

So, how did demesne mangers acquire working horses when they needed to? To get an overview of the methods of horse procurement we will initially explore all ninety-three surviving account-years together. This is illustrated in Table 2. Overall, the primary methods of acquisition for horses on the demesne were the purchase of animals and internal breeding. The third most significant source of working horses was Battle Abbey itself; thirty-three horses were transferred from Abbey authorities to the Barnhorn demesne. These animals could be described in the accounts as having arrived *de Bello* or *de dominus*, or on occasion directly from another of the abbey's manors but ultimately came from the estate's central administration in efforts to move draught animals between individual properties as and when necessary. [33] The Barnhorn demesne also acquired horses through a number of seigniorial channels. These were various customary perquisites of lords which facilitated, under certain circumstances, the transfer of animals from individuals in the community. Heriots – a form of death duty where tenants owned their 'best beast' to their lord upon their death – were one such source of horses. The Barnhorn demesne acquired a total of five stotts and one foal in this manner. Rounding out these acquisitions are four stray animals, which would have been impounded by an agent of the lord when discovered on the manor and remained

[32] Stone, *Decision-Making in Medieval Agriculture*, 114.
[33] In 1399-1400 two stotts, described as 'de dominus' were added to the Barnhorn stocks; in 1421-2, 1435-6, 1441-2, 1443-4 small numbers of stotts were added with the notation 'de Bello'. In 1484-5, two young horses and one stott were added 'from the horses of the lord'. In 1398-9, three stotts were added from Marley, one of Battle Abbey's other manors.

unclaimed for a year and a day, ultimately becoming the Abbey's property.[34] A single stott came on to the demesne as forfeited chattel of a felon when Richard Akerman was hanged in 1489-90.[35] These proportions are broadly similar to patterns of acquisition nationally at the turn of the fourteenth century.[36] Barnhorn relied slightly more on the internal breeding and rearing of horses than was typical of demesnes, and was therefore perhaps slightly less dependent on the market, although this was still the single largest source of working horses in most years. Barnhorn received relatively few horses via seigniorial perquisites. Given Barnhorn's more clearly demarcated (and perhaps hedged/fenced) divisions between tenant properties and the demesne, a by-product of its convertible husbandry mode of agriculture, we might expect that fewer stray animals would be found than on a classic open-field manor, where livestock were less encumbered.[37] The numbers of strays, and especially animals funnelled via other seigniorial channels, namely heriots and the forfeited chattel, would also have been a function of the size of the local population. The pool of potential animals for seigniorial transfers like heriots may have also shrunk when persistent flooding in the fourteenth century drove many residents out of the coastal country surrounding the manor.[38]

[34] For a more detailed discussion of the process surrounding the impounding of stray animals see: Jordan Claridge and Spike Gibbs, "Waifs and Strays: Property Rights in Late Medieval England," *Journal of British Studies* 61, no. 1 (2022): 50–82, https://doi.org/10.1017/jbr.2021.125.
[35] BA 420, Battle Abbey Archives, The Huntington Library, San Marino, California.
[36] Jordan Claridge, "The Trade of Agricultural Horses in Late Medieval England" (University of East Anglia, 2016), 51–70.
[37] See: Claridge and Gibbs, "Waifs and Strays," Appendix 2.
[38] Searle, *Lordship and Community*, 254; Brandon, *Demesne Arable Farming in Coastal Sussex during the Later Middle Ages*.

Table 2: Horse Acquisitions at Barnhorn, 1325 – 1498

Horse Type	Purchased	From Young Horses (Adults Only)	Born (Young Horses Only)	Intra-Estate Transfers	Heriot	Stray	Chattel	Other	Total
Stotts	34	52	-	12	5	2	1	4	110
Mares	0	8	-	0	0	0	0	0	8
Equi	1	4	-	1	0	1	0	0	7
Equae	0	4	-	0	0	1	0	0	5
Young horses	37	0	46	3	1	5	0	4	96
Total	**72**	**68**	**46**	**16**	**6**	**9**	**1**	**8**	**226**

Source: Author's Manorial Account Database

When we turn to the annual figures, in order to appreciate how any demesne breeding and rearing functioned alongside other avenues of procurement, we must look at the adult animals and young animals separately. Internally-produced adult horses were added to one of the working categories from the pool of young horses when they were between three and four years old. These were coded in the account database as 'added from young horses'. These animals could have been born on the demesne and reared for the full three years, or they could have been acquired at some point and only raised and trained on the demesne for part of their 'childhood' years. Conversely, for a young horse to be classified as internally produced, it had to be born on the demesne. These animals were coded in the database as 'born'. Because a newly mature adult horse would have impacted immediately on the capacity of the horse herd, we must treat these 'added from young horses' additions separately from foals that had been born that year but would not contribute to work on the demesne for some years.

We will begin by examining the year-to-year acquisitions of adult horses, plotted in Figure 3. In Phases one and two, while acknowledging that the coverage of our sample in the early decades of this period is rather spotty, we can see that animals were almost exclusively acquired via purchase and breeding. The exceptions were few. In 1375-6 one stray horse arrived and in 1398-9, three stotts were transferred to the demesne from Marley, another Battle Abbey manor, and a further two were added 'from the lord' in the following year, along with another stott added via heriot. Given the significant agistment of mares and foals on *leuga* pastures in the mid fourteenth century,[39] these arrivals plausibly reflect Marley-reared stock moving to Barnhorn. In 1408-9, another heriot was rendered as a stott, from one William Giles. In phases three and four the methods of acquisition become more varied. Phase three was a period where no breeding or rearing activity occurred, so we would expect the demesne to have relied more heavily on other sources of horses. The market was the main channel of acquisition in this phase with twelve horses purchased in the eighteen years of surviving accounts. Nine young horses were still promoted to the adult groups; at least three of these had been purchased

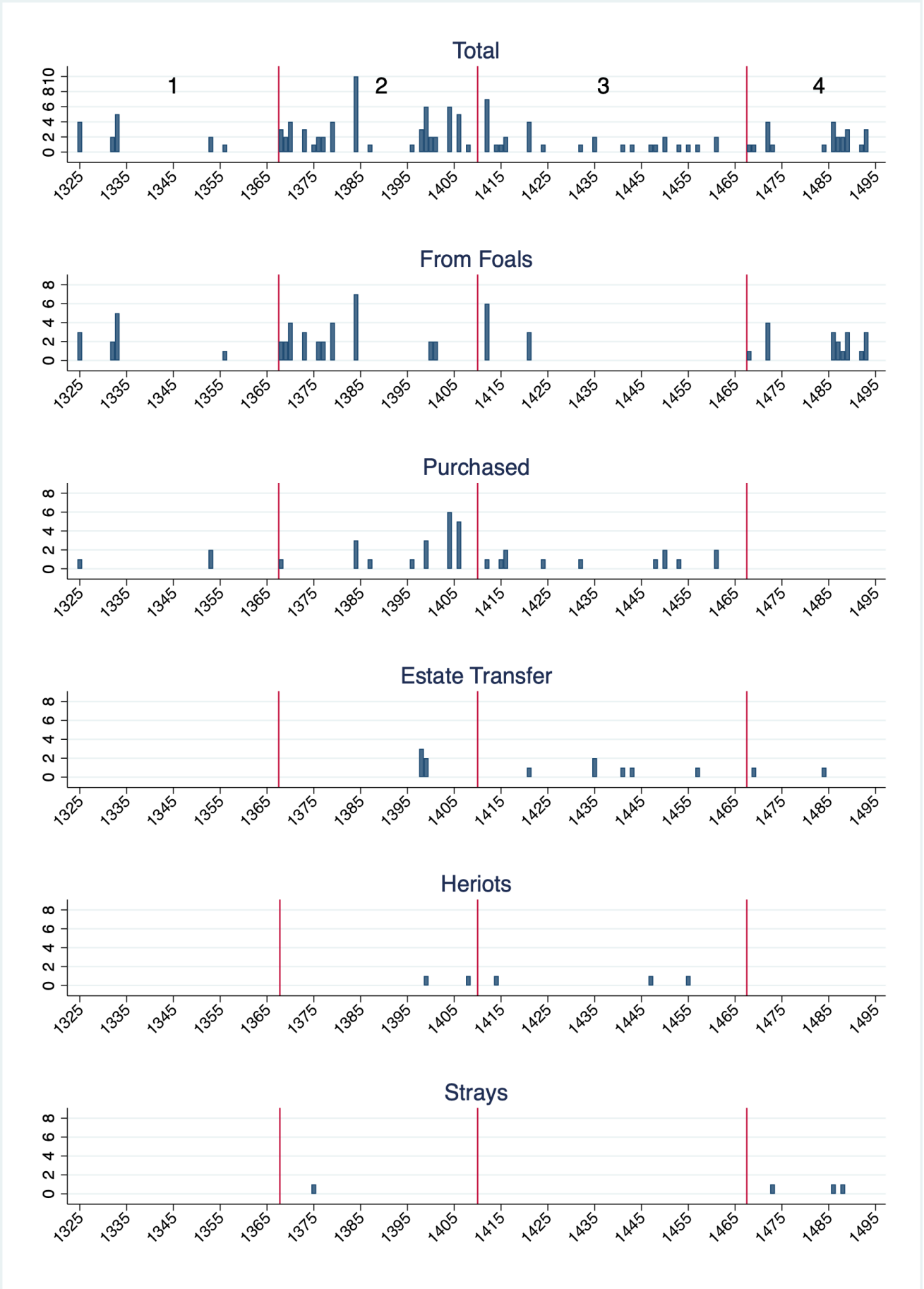
[39] Searle, *Lordship and Community*, 324.

late in Phase two,[40] the others must have been acquired in the years not covered by our data sample. The central administration of Battle Abbey clearly stepped in to support Barnhorn's need for working animals in this period, as transfers in from other parts of the estate, which occurred only rarely in previous decades, became somewhat more regular. Heriots also became a much more regular source of horses in this period, only to seemingly disappear again in Phase Four. The source of some animals could not be determined. For example, in 1420-1, three stotts were added to the demesne stock. In the case of one stott, the manuscript is simply too faded to read the full note concerning where the animal had come from. Others are recorded only with the note that the animals had arrived after the death of the monk who had been in charge of the Barnhorn demesne, Thomas Henxhill. Thomas left a servant in charge of the demesne, at least for the rest of the year, but apparently some details were lost in the transfer. In phase four the demesne returned to its breeding program as its main source of working horses. Eighteen of the twenty-three acquisitions (78 percent) came from the manor's pool of young animals. These were supplemented by three strays and two further transfers in from the Battle Estate. The re-introduction of horse breeding at Barnhorn occurred in 1467-8 or 1468-9 when John Eston took over as bailiff.[41] In 1474-5 a change in bailiffs was underway as most of the stock was transferred in the account to a new bailiff named John Potwell. The account also records a horse received as heriot from one John Alman, who may well have been a previous Barnhorn bailiff who served between 1441 and 1467.[42] There is an unfortunate gap in the survival of accounts between this year and 1483-4, but it is clear that the breeding operation was retained, even when the herd was leased to local lessees. Indeed, at the opening of the 1483-4 account, six stotts are noted explicitly as being 'received from the lord per the hands of the farmer'.[43]

[40] Three young horses were purchased 'in patria' in 1410-11. See: BA 362.
[41] See: Barnhorn Manorial account for 1468-9 (BA 425).
[42] See: Barnhorn Manorial Accounts for 1474-5 (BA 413).
[43] See: Barnhorn Manorial Account 1383-4 (BA 428).

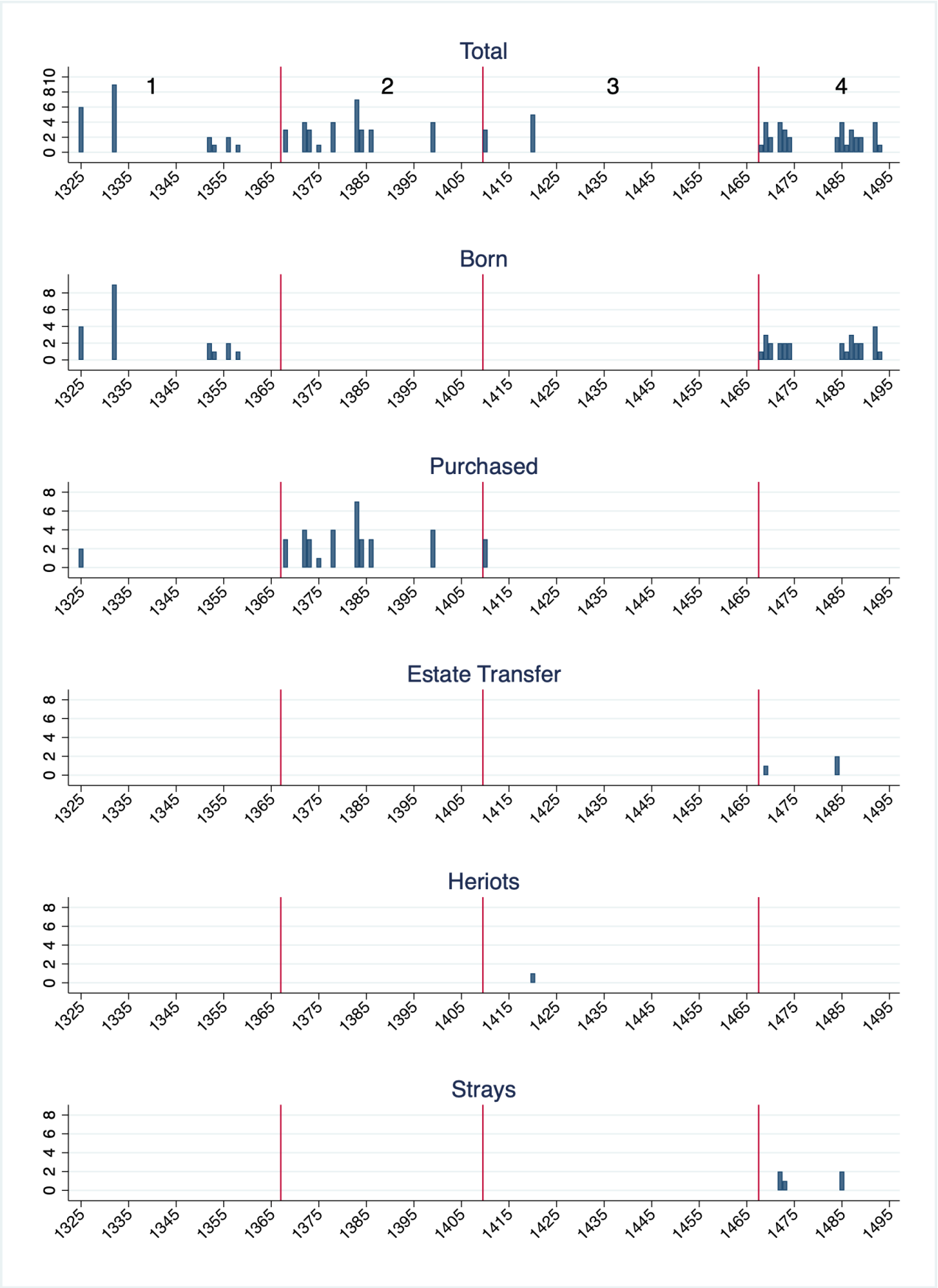
The acquisitions of young horses are much less complicated. In phase one, the demesne's primary source of young animals was its breeding program. Nineteen of a total of twenty-four animals were born on the demesne. Two were purchased in 1325-6 and three more in 1368-9, although these are probably best understood as belonging in phase two. Phase two was characterized by the purchase, rather than breeding of young horses; this was the only method of acquisition between 1369-70 and 1410-11. There were few acquisitions of young horses in phase three, which is not unexpected, given that the demesne opted not to stock young animals at all in these years. In 1420-21, one foal was provided via the heriot of John Cony, and a further four were among the untraceable additions that occurred after the death of Thomas Henxhill, as discussed above. With the return of a breeding program in phase four, foals began to be born in significant numbers by 1468-9. These were supplemented by five strays and three young animals transferred in from the Battle administration.

Figure 5: Adult Horse Acquisitions at Barnhorn, 1325 – 1498



Source: Author's Manorial Account Database

Figure 6: Young Horse Acquisitions at Barnhorn, 1325 - 1498



Source: Author's Manorial Account Database

With an understanding of the various channels used to acquire horses, and their relative importance over time, it is possible to delve deeper into these methods of procurement. Purchases were an important source of horses for the duration of our study. Is there any indication of where these horses were purchased, or from who? In terms of a breeding program, the Barnhorn demesne was actively engaged in breeding work horses at some points and not at all at other points. We might ask, then, how successful the breeding program was. Did it ever reach a point where the horse herd was self-replacing?

Manorial accounts typically record very few details about livestock purchases other than quantities and prices. In many cases it is not even possible to determine individual purchase prices, as multiple animals could be lumped together in a single sum.[44] In these cases, it is only possible to calculate average prices. The entries that describe horse purchases tend to be even less informative than for other types of livestock. Some Barnhorn accounts do contain, however, some more details that might point to the origins of purchased horses. Beginning in the late fourteenth century, some horses begin to be described as having been bought (and sold) '*in patria*'.[45] This was not a term restricted to horses, or even to livestock, as it was applied to purchases of cattle and grain as well. Literally, the term means 'in country', but David Farmer assumed that these referred to purchases made in the locality; in many cases even from the tenants of the manor or an adjacent one.[46] These 'in patria' notations occur frequently enough that they could not have been entirely exceptional. The use of the term becomes even more puzzling when it is used alongside other contextual information about purchases. For example, in 1396-7, a number of cattle were purchased. Some animals are described has having been purchased from a named individual and others are simply described

[44] For example, the 1372-3 account records four young horses were purchased for the total sum of 26 s. See: BA 354.
[45] Between 1383-4 and 1416-17 a number of horses were described as being bought and sold 'in patria': 1383-4 (BA 353): seven young horses purchased; 1384-5 (BA 341): three stotts and three young horses purchased; 1386-7 (BA 351): three young horses purchased; 1387-8 (BA 349): one *equo* purchased; 1410-11 (BA 362): one stott sold; 1412 (BA 384): one stott sold; 1412-13 (BA 363): one *equo* sold; 1415-6 (BA 364): one stott bought; 1416-17 (BA 388): two stotts bought.
[46] D. L. Farmer, "Marketing the Produce of the Countryside, 1200-1500," in *The Agrarian History of England and Wales Volume III, 1348-1500*, ed. Edward Miller (Cambridge University Press, 1991), 385.

as having been bought 'in patria'.[47] The most likely explanation is that purchases from named individuals reflected transactions between demesne managers and people familiar to manorial administrators and the wider community. In many cases these were probably tenants. Alongside these entries, purchases described as 'in patria' could be seen as transactions that occurred outside of a formal market with individuals who lived locally, but who were not known to the administrators, perhaps, as Farmer suggests, the tenants of nearby manors.

Of course, another main source of horses was the demesne's own breeding program. How successful was this? The demesne's policies with respect to mares and young horses are key to understanding the relative importance of raising working horses on the manor versus buying them on the market. Barnhorn only stocked (or at least distinguished in the accounts) brood mares for breeding in thirteen of the ninety-two observable years in our study. Breeding would have been possible in some other years, because it is clear that some female horses were included in the gender ambiguous categories of 'stott' and 'equi' and not explicitly distinguished as mares.[48] Brood mares, called *jumenta* in the accounts, were stocked in Phase 1; by 1368-9 none remained on the demesne. Mares were reintroduced to the demesne in 1472-3 but were styled as 'equae'. When examining young horses, we must distinguish between breeding and rearing as separate activities. We will define 'breeding' as when an adult female horse, owned by the demesne, produced a foal. These are recorded as *de exitu* or 'of issue' in the accounts. These young horses, if they survived, would be classified in the accounts as young horses for three years, and then 'graduated' to one of the adult categories. Young horses of both sexes are recorded in the accounts at four different age 'stages': foals born that year, those, recently separated from their mothers, yearlings older than 1.5 years and colts and fillies older than two years. However, as we have noted above, demesne managers at Barnhorn also purchased a number of young horses of various ages. These were not born on the demesne but were

[47] See: Barnhorn Manorial Account for 136-7 (BA 342).
[48] For example, in 1470-1 some of the *equi* must have been female because foals were born that year and the account notes that some of the horses were sterile. Similar notes can be found in the account for 1485-6. See BA 412 and BA 414.

probably reared and trained on it. Demesne breeding, that is, when foals were born on the demesne, only occurred in Phase 1 and Phase 4. However, the demesne did raise and rear young horses in Phase 2.

We can track the success of the demesne breeding program in these years simply by looking at the number of foals produced relative to the number of mares stocked. This is given in Table 3. The question then becomes how to define 'success' in horse breeding on the demesne? Where should the threshold be set? We might start with the anonymous author of the didactic *Husbandry* text. The text asserts that mares should produce one foal each year, and in cases where this target was not met, demesne managers should provide specific reasons for the shortfall.[49]

Table 3: Breeding Success at Barnhorn, 1325-6 – 1489-90

Year	Phase	Breeding Stock	No. of Females	Foals Born	Foals per Mare	Average Foals per Mare
1325-6	1	Jumenta	10	4	0.40	
1332-3	1	Jumenta	11	9	0.82	
1333-4	1	Jumenta	6	0	0.00	
1352-3	1	Jumenta	8	2	0.25	.29
1353-4	1	Jumenta	7	1	0.14	
1356-7	1	Jumenta	9	2	0.22	
1358-9	1	Jumenta	6	1	0.17	
1468-9	4	Equa	1	1	1.00	
1469-70	4	Equa	3	3	1.00	
1470-1	4	Equa	3	2	0.67	
1472-3	4	Equa	2	2	1.00	
1473-4	4	Equa	2	2	1.00	.82
1474-5	4	Equa	3	2	0.67	
1487-8	4	Equa	3	3	1.00	
1488-9	4	Equa	4	2	0.50	
1489-90	4	Equa	4	2	0.50	
Total			**68**	**28**		

Source: Author's Manorial Account Database

[49] Dorothea Oschinsky, ed., *Walter of Henley: And Other Treatises on Estate Management and Accounting* (Clarendon Press, 1971), 423.

The Barnhorn demesne only met the one-foal-per-mare goal in three of the thirteen years it stocked brood mares. All of these 'successful' years occurred in phase four when breeding we re-instated on the demesne. In the first phase, the breeding operation performed relatively poorly and became less productive over time. In 1332 nine foals were born from eleven mares, for a foaling rate of .82, but this was breeding success at a level not observed again until late in the fifteenth century. Between 1332 and 1333 the demesne almost halved its herd of mares from eleven to six and no foals were born in 1333. In the 1350s, the group of mares had stabilized to between six and nine animals, but breeding success remained poor with only .14 to .25 foals produced per mare. Overall, between 1325 and 1359, the Barnhorn demesne only managed to breed 0.29 foals for every mare, well off the mark set by the *Husbandry*. The manor of Marley – essentially the manor that the original Battle *leuga* became – kept a slightly larger herd than Barnhorn, comprised similarly of stotts, mares and foals. Here breeding was similarly underwhelming, averaging .31 foals per mare between 1309-10 and 1384-5.[50]

There are a number of entries in the Barnhorn accounts that describe poor maternal health and sterility among the mares. As the *husbandry* treatise instructed, demesne managers often offered explanatory notes when demesne mares produced fewer foals than expected. For example, in 1353-4 the account notes that one foal was born 'and no more because of heavy work with the plough and harrow.' In 1470-1, when two foals were born, the account notes 'and no more because the mare was sterile'. The end-of-year reckoning in 1485-6 records that, of two stotts remaining on the demesne, 'one is female, but sterile.'[51] The situation was similar at Marley. In 1353-4, only one foal was born from a group of twelve mares. The account notes that this was due to the fact that eight of the mares were sterile and another three could not provide milk for their foals. Presumably, four foals were born that year on the Marley demesne but only one survived.[52] Rates of sterility were higher among horses relative to other livestock, so female

[50] Marley manorial accounts, Battle Abbey Archives, The Huntington Library, San Marino, California
[51] See: BA 348, BA 412, BA 414.
[52] BA 489.

horses tended to produce fewer young examples than the cow herd produced calves. The high rates of sterility among horses, especially relative to those of cattle, might be attributed to the fact that mares were often used for harrowing in the Spring, at a time when they would have been heavily pregnant.[53] Ultimately, given the dismal track record of demesne breeding in the first half of the fourteenth century, it is not surprising that Barnhorn managers gave up on breeding entirely at this point.

Demesne horse policy changed near the end of the 1460s when breeding mares were re-introduced. This was almost certainly a change effected by a new bailiff John Eston, who took office in either 1467-8 or 1468-9. The breeding operation was much more successful the second time around. Over this period .82 foals were born for every *equa*, meaning that, in this phase, the average success in breeding over many years matched the most successful year from the fourteenth-century attempts. Such success facilitated the expansion of the horse herd in the late 15th century. The demesne incrementally moved from two to four mares while managing to maintain previous success in breeding on a 'per mare' basis. There is a gap in the surviving Barnhorn accounts between 1474-5 and 1483-4. The only horses recorded at Christmas of 1483, when the account opened, were six stotts said to have been 'received from the lord per the hands of the farmer'.[54] A similar note is attached to all entries in the stock account; the livestock of the demesne had very likely been leased for some part of the period of missing accounts. Indeed, if the entire demesne was leased, and account ceased to be drawn up, the leasing might explain the gap in the records.

When we encounter female horses explicitly designated as 'mares' in the accounts (as opposed to the female horses that were lumped in with the stotts or *equi*) we see that these were only ever raised internally and never purchased. This suggests that managers would attempt to breed horses if the composition of the herd in any given year would support an attempt, but breeding stock were never sought on the

[53] Searle, *Lordship and Community*, 293.
[54] Barnhorn Marnorial Account 1483-4 (BA 428)

market. In addition, Barnhorn managers did not generally go to the market for working horses if they had an internally produced horse maturing that same year. The only exceptions to this general policy are in 1368-9, when the demesne promoted two young horses to the stotts category and purchased one further. Similarly, in 1384-5 the manor promoted seven young horses and purchased a further three. This must have been a deliberate re-stocking of adult horses after a few successive years of high mortality, which had seen eight demesne horses perish in five consecutive years. A similar approach is evident among the young horses. Young horses could be acquired by both purchase and breeding, but both sources were rarely tapped in the same year.

Working horses generally only left the demesne when they died, when they were sold or if the central administration of Battle Abbey decided to reallocate them elsewhere, usually to one of the estate's other demesnes or to the stable of the Abbot himself. Demesne losses at Barnhorn are given in Table 4.

Table 4: Horse Losses at Barnhorn

Horse Type	Died	Transferred Out	Sold	Other
Stott	85	11	12	5
Mare	10	2	1	0
Foal	14	8	2	1
Equus	2	0	2	0
Equa	3	0	1	0
Total	**114**	**21**	**18**	**6**

Source: Author's Manorial Account Database

The mortality of working horses was significant. In the 93 account-years in our study, 114 horses perished on the demesne, or 1.2 horses per year. Given the uncertain nature of medieval horse breeding, it might have taken all of the demesne's breeding capacity simply to replace the animals that died. The numbers of horses transferred out is also relatively small. It does not seem like Barnhorn was acting in any way as a breeding 'hub' for the larger Battle Abbey estate. Very few working horses were sold from the demesne to buyers outside the estate. That

significantly more horses died than were sold at Barnhorn is another strong indication that these animals for bred for work and not for the market. Indeed, that horses were so frequently described as 'old' or 'weak' at the time of their sale might be an indication that the sale of horses was outside the demesne's normal scope of economic activity, in that they were not expected to be sold unless they were no longer useful for work on the lord's farm.

The Barnhorn accounts, exceptional in their longevity and detail, allow us to follow the fortunes of a demesne horse herd over nearly two centuries. Four distinct phases of management can be traced. In the early fourteenth century, the demesne attempted breeding, though with poor results: mares were worked as well as bred, pasture was (at least at times) contested with the abbot's riding horses, and fertility rates were low. After 1369 the demesne abandoned breeding altogether, relying instead on purchased young stock, which were cheap and plentiful. By the mid-fourteenth century even this limited engagement in rearing was curtailed, and Barnhorn maintained only a reduced core of adult horses. Not until the final decades of the fifteenth century was breeding revived, and this time with greater success. Mares, now designated as *equae*, were used exclusively for reproduction, and the arrival of strays on the manor hints at peasant horse breeding in the manor's hinterland that fed into the demesne. Barnhorn's four management phases show how different demesne managers balanced the many factors of horse procurement against local prices, pasture availability, and shifting estate strategies.

Why breeding returned in the late fifteenth century is less clear. Shrinking arable, declining *famuli* obligations,[55] and the leasing of demesne resources point to a shift toward pastoralism. The horse herd itself was even let out for a period. I n such a context, renewed breeding may have reflected opportunity as much as necessity. Either an attempt to exploit under-used pasture, or a response to a tightening of

[55] In 1440-1, when John Alman took over as bailiff of Barnhorn, the manorial *famuli* ceased to receive grain payments as part of their salary and saw no corresponding increase in their cash payments. This reduction in pay may well reflect a reduction in workload on the demesne.

the outside supply of working horses. Yet even this late experiment was modest and may have been short-lived. For all the variation across phases, Barnhorn never produced horses on a scale sufficient to supply the wider market. Indeed, horse breeding never seemed to catch on anywhere in Sussex. There is evidence of horses rearing in the county in the Early Modern period, but these animals had been born and bred elsewhere in the country.[56] While we do see a shift in the nomenclature used for horses in the accounts, mainly from stott and *jumenta* to *equus* and *equae,* there is no clear sign of regional specialized breeds that were apparently established by the Early Modern period.[57] Nor do we see any of the hipponyms (proper names for horses) that were common in later centuries.[58] Early modernists have observed that horse breeding activity had become concentrated in pastoral areas by the end of the Middle Ages,[59] and while Barnhorn had moved towards pastoralism itself by the middle of the fifteenth century, perhaps due to new developments in transportation which allowed increased specialization in animal husbandry which was better suited to the marginal soils than arable farming,[60] such a shift materialized in increased numbers of cattle, but not horses.

This study of Barnhorn confirms that the demesne horse economy remained demand-led well into the fifteenth century. Adult workhorses arrived chiefly via purchase and estate transfers, while perquisites mattered but were too uncertain to ensure a stable supply of working animals. Demesne horse breeding at scale never materialized here. Even when the demesne sold horses they were typically of worn-out animals, so Barnhorn acted much more as a consumer than as a producer of agricultural-grade horsepower. The return to breeding in the late fifteenth century was more intentional and targeted, and its timing, together with a burst of local strays, suggests that horse breeding may have been increasing in

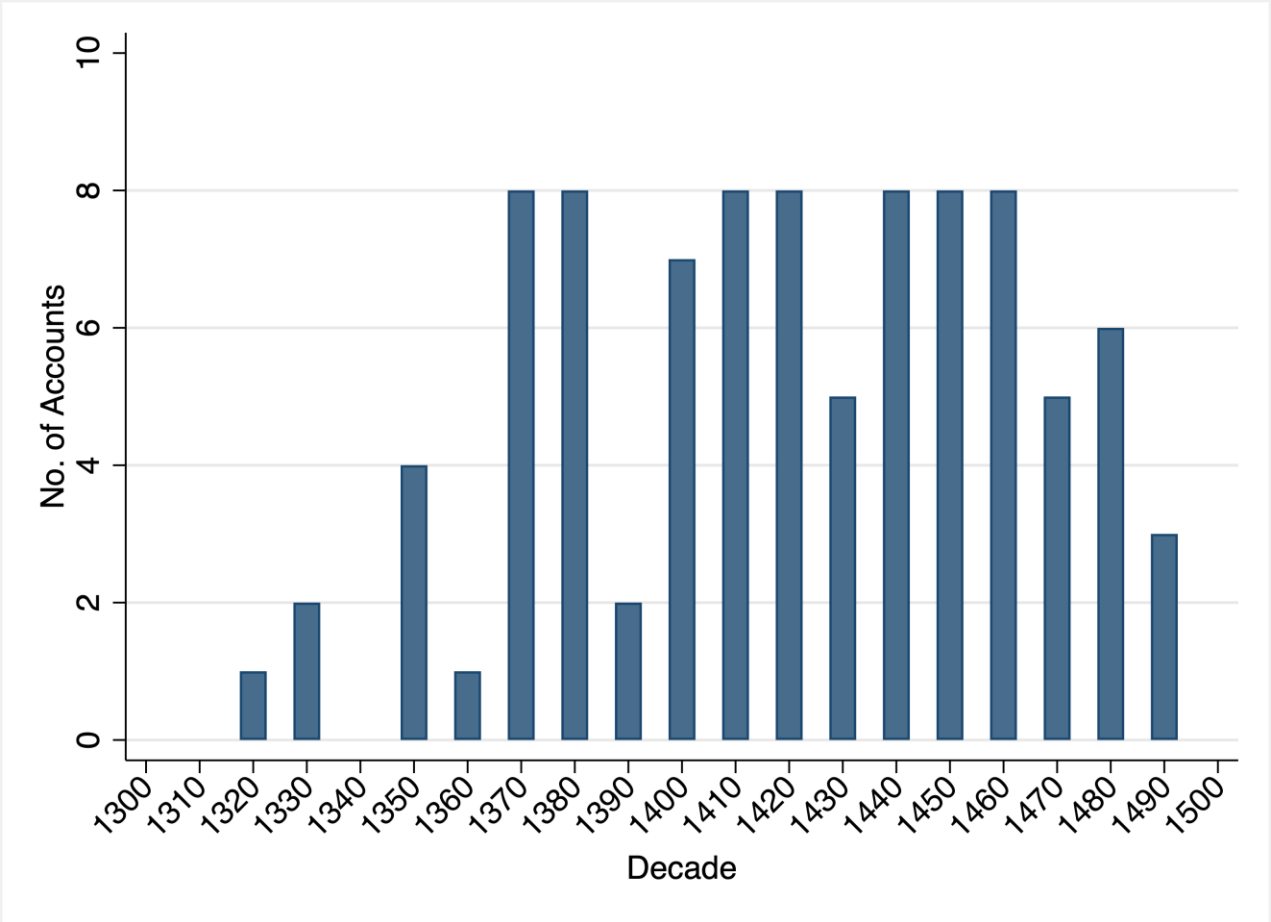
[56] Edwards, *The Horse Trade of Tudor and Stuart England*, 23, esp. Map 1.
[57] Early modern scholars discuss the emergence of a number of horse breeds which were mostly unknown in the Middle Ages. Joan Thirsk, 'Farming Techniques', in *The Agrarian History of England and Wales IV, 1500-1640* (Cambridge: Cambridge University Press, 1967), 191–92.
[58] Kamil Frejlich, "The Radziwiłłs and Their Horses: Hipponyms in 17th- and 18th-Century Inventories of the Magnate Family's Herds," *Acta Linguistica Lithuanica*, no. 92 (2025): 1–23, https://doi.org/10.35321/all92-03.
[59] Thirsk, "Farming Techniques," 192.
[60] Searle, *Lordship and Community*, 275.

scale for both the peasant and seigniorial sectors at this time. The broader implication is that England's eventual horse supremacy seemingly did not seemingly require demesnes to specialize in breeding, although they may have had an important role in stimulating peasant production through their demand for working horses. Instead, commercialization and peasant production are more likely candidates for pushing the diffusion of horse power, even in commercially 'average' counties like Sussex.

Appendix A

The manorial accounts for Barnhorn used in this study are one of, if not the, longest surviving series for a single manor in the post-Black Death period. The series begins in 1325-6, and the coverage is particularly strong after 1370. In this period, accounts survive for at least five years in most decades, and many have a 70 percent survival rate or better. The 1370s and 1380s as well as the 1410s and 1420s, 1440s, 1450s and 1460s all have eight of a possible ten surviving accounts. Appendix Figure 1 illustrates the survival of Barnhorn accounts on a decadal basis. Appendix Table 1 provides a list of each individual account with a corresponding archival reference.

Appendix Figure 1: Distribution of Extant Barnhorn Accounts



Source: Author's Manorial Account Database

Appendix Table 1: Archival References:

Year	BA	Year	BA	Year	BA
1325-6	335a	1404-5	374	1448-9	407
1332	343	1406-7	361	1450-1	393
1333-4	344	1408-9	380	1451-2	408
1352-3	346	1410-11	362	1452-3	406
1353-4	348	1412-13	384, 363	1453-4	394
1356-7	336	1413-14	387	1454-5	404
1358-9	337	1414-15	389	1455-6	402
1368-9	350	1415-16	364	1456-7	395
1369-70	352	1416-17	388	1457-8	400
1370-71	338	1417-18	386	1460-1	396
1372-3	354	1418-19	365	1461-2	409
1373-4	356	1419-20	385	1462-3	417, 419
1375-6	339a, 339b	1420-21	383	1463-4	410
1376-7	358	1421-22	366	1464-5	421
1377-8	357	1423-4	381	1465-6	423
1378-9	357a	1424-5	379	1466-7	411
1379-80	357b	1425-6	367	1468-9	425
1380-81	357c	1427-8	377	1469-70	427
1381-2	340	1428-9	375	1470-1	412
1382-3	355	1429-30	368	1472-3	429
1383-4	353	1431-2	373	1473-4	430
1384-5	341	1432-3	371	1474-5	413
1386-7	351	1434-5	369	1483-4	428
1387-8	349	1435-6	390	1484-5	426
1396-7	342	1439-40	397	1485-6	414
1398-9	347	1440-41	399	1486-7	424
1399-1400	354	1441-2	391	1487-8	422
1400-1	359	1442-3	401	1488-89	415
1401-2	370	1443-4	403	1489-90	420
1402-3	372	1445-6	392	1492-3	418
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Note: All references are: Battle Abbey Archives, The Huntington Library, San Marino, California