Introduction
Pen over Plough

It was the goddess Ceres who first gifted the secrets of agriculture to humankind, according to classical mythology as told by Virgil and Ovid.[1] In one story borrowed from Greek myth, Ceres (originally Demeter) gave Triptolemus her chariot drawn by winged dragons to spread the knowledge of agriculture among men and women, symbolised in art as the handing over of sheaves of corn.[2] This ancient tale of the origins of cultivation was given a striking new twist in the frontispiece to the agricultural treatise *The Compleat Body of Husbandry* in 1756, captioned 'The Goddess Ceres in her Chariot drawn by Dragons, Teaching Mankind the Art of Husbandry' (see Figure 0.1). It depicted Ceres presenting a scroll with the book's title to a ploughman, and thereby symbolised the transfer of knowledge as flowing through the written word. In doing so, the treatise harnessed the potency of classical myth to declare that writing was the primary vehicle for agricultural knowledge. While the engraving was in part self-aggrandisement, it was a rare illustration of the emerging idea that the practical knowledge to grow crops and raise livestock was best acquired from books.

This was a controversial idea in early modern Britain. Consider the following words of a countryman in dialogue with a courtier, imagined by a court poet in 1618.

> What more learning have we need of, but that experience will teach us without booke? We can learne to plough and harrow, sow and reape, plant and prune, thrash and fanne, winnow and grinde, brue and bake, and all without booke, and these are our chiefe businesse in the Country …[3]

The countryman further explains that the only motive he has for 'learning' is to be able to engage in activities directly requiring reading and

[1] 'It was Ceres who first taught to men the use of iron ploughs' (line 148): Virgil, *Georgics*, trans. Peter Fallon (Oxford World Classics; Oxford, 2006), 10. See also Ovid's *Fasti: Book IV* (lines 401–5).
[2] Barbette Stanley Spaeth, *The Roman goddess Ceres* (Austin, 1996), 17, 37.
[3] Nicholas Breton, *The court and country* (London, 1618), fo. 11.

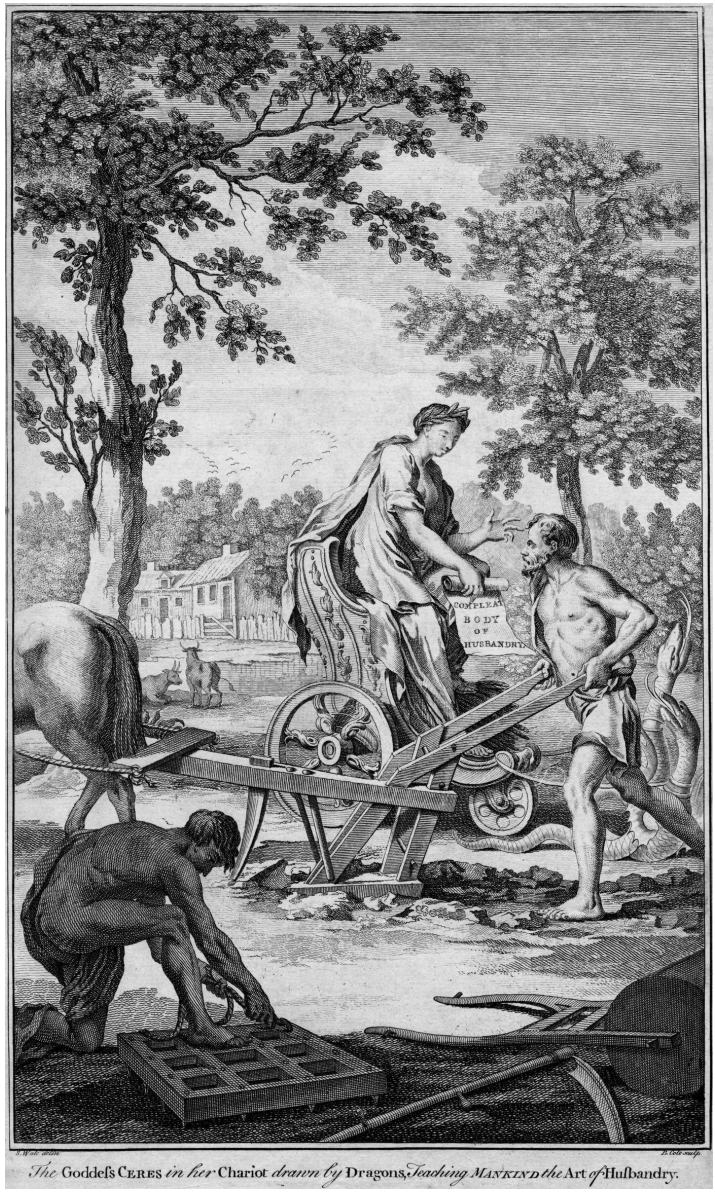

Figure 0.1 'The Goddess Ceres in her Chariot drawn by Dragons, Teaching Mankind the Art of Husbandry', engraving printed as frontispiece in Thomas Hale, *The Compleat Body of Husbandry* (1756), by Samuel Wale (painter/draughtsman) and Benjamin Cole (printmaker).

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writing, such as making wills. The pen and the plough seem to belong to different worlds. Husbandry does not deal in words, so what help is a book? If the labours of husbandry are learned through experience, then an instruction manual is superfluous.

These two fragments, and the gaps in time and perspective between them, prompt a series of questions about agricultural books in the seventeenth and eighteenth centuries. Who valued books as a source of knowledge about farming; when and why did they come to do so; and what historical processes drove such transformations? While agricultural historians have been willing to criticise the value of individual agricultural books, their general value as a medium for transmitting farming knowledge is rarely questioned. This is despite the frequent recognition that for centuries most farmers have been deeply sceptical about what they could learn from farming books. Such scepticism continued even with the expansion of literacy into the nineteenth and twentieth centuries – although it has been suggested that by 1850 all English farmers were 'aware that they could no longer ignore written information on agriculture, whatever their continued misgivings about "book-farming"'.[4] Such misgivings are taken seriously in this book. It offers a new history of why, how and for whom books became a key source of knowledge about farming in Britain over the early modern period.

It is a history that links knowledge, power and capitalism. The formation of agrarian capitalism in Britain is usually told as a story about markets, land and wages, but it was also about knowledge, books and expertise. Up to the sixteenth century, men and women had learned to farm through their labour, acquiring the customary knowledge passed down from generation to generation, mostly without the aid of the written word. Writing and farming were predominantly distinct skills possessed by distinct classes. Yet between the sixteenth and the nineteenth century, agriculture was transformed through a polarisation in landholdings, evolving from a landscape dominated by small family farms to one dominated by large capitalist farms using hired wage labour. This demanded a reorganisation and redistribution of agricultural knowledge among rural society, as the people making decisions about how to farm were less likely to be the same people executing those decisions.

[4] Nicholas Goddard, 'Agricultural literature and societies', in G. E. Mingay (ed.), *AHEW: 1750–1850 Vol 6* (Cambridge, 1989), 370. See also: '[f]ew Scottish farmers in 1700 would have been likely to admit that they could learn anything about their business from books'. G. E. Fussell and H. Fyrth, 'Eighteenth-century Scottish agricultural writings', *History*, 35 (1950), 49.

However, this profound social transformation has been obscured by the dominant historical narratives of agricultural 'improvement', 'revolution' and 'enlightenment', which all present a linear progression of knowledge. In these narratives, agricultural books are understood solely as drivers of technological change by disseminating useful knowledge leading to increases in productivity, with only occasional hints about the social conditions or effects. Yet when we examine these satisfied tales about new flows of knowledge we invariably find they rest upon an implied social hierarchy. This is explicit in one triumphalist account of how the enlightenment stimulated economic growth in agriculture and industry, described as an elite-driven phenomenon: 'what the large majority of workers knew mattered little as long as they did what they were told by those who knew more'.[5] But how were such hierarchies of knowledge established, both practically and ideologically, such that historians could later investigate how knowledge 'trickled-down' the social order? And what if, in the case of early modern agriculture, we tend to find workers who knew more than their social superiors?

To answer these questions, this study adopts a new sociological approach to early modern agricultural knowledge and literature. It examines how books disrupted and reordered the social system of agricultural knowledge – how knowledge was produced, stored, transferred, acquired, exercised and legitimated – subordinating a communal, labour-based system to an individual, book-based system. It argues that the printing of agricultural knowledge was both stimulated by and a contribution to a reorganisation of knowledge aligned with the emerging social relations of agrarian capitalism. Printed agricultural treatises and manuals were in part a tool in the appropriation and codification of the customary art of husbandry possessed by practitioners in the interests of those in managerial positions such as landowners, estate stewards and large tenant farmers. The proliferation of agricultural books, especially in the eighteenth century, facilitated the growing separation of intellectual and manual labour as part of a process by which an educated and mostly landowning elite gained greater control over cultivation. Since women performed around a third of all agricultural work in the sixteenth and seventeenth centuries, the control exercised by male authors necessarily entailed the masculinisation of customary knowledge, which assisted the increasing exclusion and marginalisation of women in farming.[6]

[5] Joel Mokyr, 'The intellectual origins of modern economic growth', *Journal of Economic History*, 65 (2005), 301.

[6] For recent evidence on women's work: Jane Whittle and Mark Hailwood, 'The gender division of labour in early modern England', *EcHR*, 73 (2020).

Together these processes can be characterised metaphorically as the 'enclosure' of customary knowledge. While it is not meant in a strict sense, the choice of metaphor is intended as a serious provocation.[7] It forms the title of this book for three reasons. Firstly, it provides a stimulating analogy. The enclosure of land took many different forms, for different reasons and through different mechanisms, which varied greatly between regions and across centuries.[8] But it typically involved a physical process of creating a boundary around an area of land, and more importantly a legal process of switching from multiple rights of use to exclusive rights of ownership. Enclosure meant the transformation of land from a communally managed resource requiring some collective decision-making to a privately managed resource allowing individual control.[9] Similarly, agricultural books facilitated a shift away from a communal to an individualised system of knowledge, as custom – the accumulated resource of a community – was packaged into a private resource for the individual cultivator. The analogy evoked here is not with the quasi-mythologised version of enclosure as a singular event that severed a past rural idyll from industrialised modernity, but instead as a set of gradual processes through which the management of land was transformed and contested, and as a synecdoche for the structural shifts in landownership, which concentrated land in fewer hands.[10] Similarly, the enclosure of customary knowledge in agricultural books gradually transformed the management of knowledge, and printed books were only the most conspicuous (and inherently best documented) of diverse trends that concentrated knowledge and expertise in fewer heads. Since books are usually presumed to be natural liberators of knowledge, the enclosure analogy purposefully re-frames books as devices that can help to control knowledge.

[7] For a more direct study of the link between enclosure and knowledge, see Elly Robson, 'Improvement and epistemologies of landscape in seventeenth-century English forest enclosure', *Historical Journal,* 60 (2016).

[8] Tom Williamson, 'Understanding enclosure', *Landscapes,* 1 (2000).

[9] For the best holistic account of enclosure, see Jeanette M. Neeson, *Commoners: common right, enclosure and social change in England, 1700–1820* (Cambridge, 1996). For a critique of Neeson, see Leigh Shaw-Taylor, 'Parliamentary enclosure and the emergence of an English agricultural proletariat', *The Journal of Economic History,* 61 (2001); Leigh Shaw-Taylor, 'Labourers, cows, common rights and parliamentary enclosure: The evidence of contemporary comment c.1760–1810', *Past & Present*, (2001). See also J. R. Wordie, 'The chronology of English enclosure, 1500–1914', *EcHR,* 36 (1983); Robert C. Allen, *Enclosure and the yeoman: The agricultural development of the south midlands 1450–1850* (Oxford, 1992).

[10] Briony McDonagh and Stephen Daniels, 'Enclosure stories: Narratives from Northamptonshire', *Cultural Geographies*, 19 (2012).

Secondly, however, these processes are not merely analogous, but linked symbiotically in the formation of a capitalist mode of agriculture. The social reorganisation of the land and the social reorganisation of knowledge were necessary corollaries. The campaigns for 'improvement' encompassed reform of both land and knowledge: its initial sixteenth-century meaning covered ways for landlords to maximise estate revenues, including enclosure, before expanding in the seventeenth century to mean the application of better ideas to intensify farming methods. Improvement, therefore, constituted a twin challenge to both customary rights and customary knowledge. Indeed, a key justification for enclosure was to allow improving landlords and entrepreneurial farmers to implement new farming techniques; cooperative field management using customary methods was to be replaced by private field management using improved methods. The shift from custom to improvement required both land and knowledge to be consolidated and packaged accordingly.[11] Farming books were highly conducive to a competitive system of farming, as individual market-oriented cultivators with full control over their fields could both acquire and apply knowledge independently from custom.

The role of knowledge has been neglected in the old 'transition' debates about the long-term development in Europe from a peasant to a capitalist economy.[12] Yet knowledge can be viewed as a factor of agricultural production alongside land and labour – in fact, this study traces how knowledge was extracted and controlled separately from labour. To exert full control over agricultural production, it is advantageous to control knowledge of cultivation. Knowledge must, therefore, be included in narratives of capitalist development. Rural proletarianisation was a process in which commoners not only lost access to land but in which over generations their knowledge itself was increasingly transferred to and exercised by those for whom they were forced to work for wages – or, perhaps more accurately, in which knowledge was controlled and exercised by a shrinking minority as rural communities became increasingly polarised. In this light, it is only a slight simplification to describe the gathering of knowledge collectively

[11] In a virtuous feedback loop, enclosed fields provided the basis for the rationalisation and experimentation in which new knowledge could be developed: '[f]arms had to be changed to make them knowable'. Simon Schaffer, 'Enlightenment brought down to earth', *History of Science*, 41 (2003), 260.

[12] For a comprehensive discussion of this debate, see Ch. 1 in Jane Whittle, *The development of agrarian capitalism: Land and labour in Norfolk 1440–1580* (Oxford, 2000).

produced by past generations in texts predominantly for large tenant farmers and landowners as a hidden form of 'primitive accumulation'.

Thirdly, the analogy indicates the scale and significance of the historical change described here. The social reorganisation of knowledge was a centuries-long process that fundamentally altered rural relations and merits equal attention to landownership from historians of early modern Britain. It also links to a modern phenomenon subject to fierce debate: the phrase 'enclosure of knowledge' usually refers to the growth of intellectual property rights in the knowledge economy, seen as comparable to earlier enclosures of common land.[13] Specifically, it resonates with debates about the enclosure of indigenous agricultural knowledge around the world by corporations.[14] The story here is not about legal rights over knowledge, but a broader story in which the codification of customary knowledge and its deracination from labour was a preliminary step that made the commodification of agricultural knowledge possible. We do not need to sentimentalise the lost wisdom of past generations to recognise the profound change that occurred.[15]

By explicitly connecting questions of knowledge to questions of economic power, this book contributes to – and challenges – the rapidly growing number of histories that explore the nexus of early modern books, knowledge and expertise. The complex negotiations between theory and practice, between head and hand, are a common theme in studies of early how-to books.[16] However, too often these are abstracted from the material interests of the actors and inattentive to their place in the social and occupational hierarchy. The organisation of knowledge cannot be understood separately from the distribution of power in early modern society. It is not simply that knowledge bestows power, but that power demands knowledge. In this case, those with the greatest power over the land sought to monopolise knowledge of how to use it in order to fully exercise and extend that power.[17] In this way, the history of early modern

[13] For example, Ugo Pagano, 'The crisis of intellectual monopoly capitalism', *Cambridge Journal of Economics,* 38 (2014).

[14] Laurie Anne Whitt, 'Biocolonialism and the commodification of knowledge', *Science as Culture*, 7 (1998).

[15] As cautioned recently in Francis Dolan, *Digging the past: How and why to imagine seventeenth-century agriculture* (Philadelphia, 2019), 2.

[16] For example, Matteo Valleriani (ed.), *The structures of practical knowledge* (Switzerland, 2017).

[17] On how a similar dynamic linking natural knowledge and political authority in colonial expansion, the 'imperialism of "improvement"', see Richard Drayton, *Nature's government: Science, imperial Britain, and the 'improvement' of the world* (London, 2000), xv.

agricultural knowledge parallels histories of early modern medicine. Just as a professionalised and scientific medicine challenged folk medicine and vernacular knowledge, so a professionalised and scientific agriculture challenged 'folk husbandry'.[18]

The intervention made here can be summarised by a small revision to an important essay by Joan Thirsk, titled 'Pen and Plough', which painted a harmonious picture: 'the plough is placed alongside the pen, for, in fact, most writers handled the tools of both trades'. Thirsk cautioned us not to impose our expectation of specialisation and divide the writers from the farmers.[19] While she is correct that these were not exclusive activities, it is a fundamental mischaracterisation to imply that writing and farming were in some way socially equivalent. Writing was not simply added to farming practice; instead, the agricultural author sought to displace and subordinate the common farmer as the acknowledged expert. This book, therefore, tells the story of how the pen mastered the plough.

The rest of this introduction lays the groundwork for a new interpretation of the history of agricultural books and knowledge in early modern Britain. First, it offers a critique of the standard research paradigm, which is termed the *enlightenment model*. It argues that the enlightenment model only evaluates the role of books with respect to technological change and is insensitive to early modern social relations. The model is unable to explain many features of agricultural books in its own terms and thus provides an inadequate theoretical framework. At best it offers a partial account and thus unwittingly distorts our understanding, but at worst it is actively complicit in rehearsing the polemical creations of eighteenth-century propagandists. Hence the need is established for a new approach to explore the cumulative social impact of printed agricultural knowledge. Second, it explains the research method and scope, focused on British agricultural books printed between 1660 and 1800. Since the structure of the book is thematic, it presents a broad survey of agricultural books and authors to serve as a reference for the analysis in specific chapters. Finally, it ends with a summary of how the core argument is developed over seven chapters.

[18] Mary Fissell and Roger Cooter, 'Exploring natural knowledge: Science and the popular', in Roy Porter (ed.), *Cambridge history of science: Vol 4: Eighteenth century science* (Cambridge, 2003), 146–51; Andrew Wear, *Knowledge and practice in English medicine, 1550–1680* (Cambridge, 2000), 65.

[19] Joan Thirsk, 'Plough and pen: Agricultural writers in the seventeenth century', in T. H. Aston et al. (eds), *Social relations and ideas: Essays in honour of R.H. Hilton* (Cambridge, 1983), 299.

Agricultural Enlightenment: A Critique

A full understanding of the history of agricultural literature has been hindered by the broader research paradigm of the 'agricultural revolution'. The classic idea of the agricultural revolution refers to a rapid increase in productivity and output over a few decades, sometime in the seventeenth or eighteenth century, accompanied by sweeping transformations in the organisation of farming.[20] The fundamental question driving almost all studies of agricultural literature has been: what contribution did books make to the 'agricultural revolution', meaning what contribution did books make to the dissemination of knowledge leading to increases in agricultural productivity?

The notion that an increase in agricultural publishing was advancing the art of agriculture was itself claimed by agricultural authors themselves in the eighteenth century, which became widely accepted in the nineteenth century.[21] In 1854, an agricultural bibliography aimed to show how the progress of agriculture was assisted by 'the writings of theoretical and practical men'.[22] A successor bibliography in 1908 declared that 'books and journals promoted the advancement of the art more than any other means'.[23] The assertion of a causal link between the publication of books, the spread of knowledge and technological improvements solidified into a truism. Twentieth- and twenty-first-century studies have offered variations on this theme, producing increasingly critical and sophisticated studies within the same general framework. Historians have been examining the contours of the self-image constructed by agricultural writers in the eighteenth century rather than subjecting that self-image to critical analysis. Our view of agricultural literature has been shaped by the agenda of its advocates, even when some of their specific propositions are challenged, in a similar way that many early histories of enclosure were shaped by the views of the enclosers.[24]

G. E. Fussell, who dominated studies of early modern agricultural literature between the 1930s and 1970s, did not dwell on the wider social impact, but continued to connect 'advance in practice' with the 'large increase in

[20] Mark Overton, *Agricultural revolution in England: The transformation of the agrarian economy, 1500–1850* (Cambridge, 1996).

[21] For example, see John Sinclair, *Code of agriculture* (2nd edn; London, 1819), iii; John Loudon, *An encyclopædia of agriculture* (London, 1825), 41.

[22] John Donaldson, *Agricultural biography* (London, 1854), 1.

[23] Donald McDonald, *Agricultural writers, from Sir Walter of Henley to Arthur Young, 1200–1800* (London, 1908), 4.

[24] Neeson, *Commoners*, 7.

the number of books'.[25] The first extended assessments came in the 1980s.[26] Pamela Horn posed the question of 'how far did [literature] assist the spread of agricultural improvement?'[27] Joan Thirsk's essay on seventeenth-century writers attempted to 'understand the role of books of husbandry in advancing agricultural improvement', while her essay entitled 'Agricultural Innovations and their Diffusion', covering 1640–1750, was largely concerned with the development of agricultural literature.[28] Similarly, Nicholas Goddard's essays assessed how successful literature had been in advancing scientific methods in late eighteenth- and early nineteenth-century farming.[29] The approach was taken to the extreme by Richard Sullivan who used the number of agricultural publications as a measure of technological development.[30] More recently, Heather Holmes' sophisticated analysis of the eighteenth-century circulation of Scottish agricultural books aimed to facilitate the assessment of 'the role of print in spreading innovation and good practice'.[31] Elsewhere, she analysed publications explicitly as one channel for the dissemination of agricultural knowledge in Scotland.[32] All these studies focus on the question of how agricultural books were motivated by, and contributed to, technical 'improvements' in agricultural production, and thus situate books within debates about knowledge diffusion.

This approach has significant theoretical and empirical weaknesses. The theoretical failings will be explored in Chapter 1, but fundamentally

[25] G. E. Fussell, *More Old English farming books from Tull to the Board of Agriculture, 1731 to 1793* (London, 1950), iii. See also G. E. Fussell, *The Old English farming books from Fitzherbert to Tull 1523 to 1730* (London, 1947); G. E. Fussell, *The Old English farming books, Vol III 1793–1839* (London, 1983).

[26] For a study of the diffusion of agricultural knowledge throughout sixteenth-century Europe by surveying the distribution of treatises, see Corinne Beutler, 'Un chapitre de la sensibilité collective: la littérature agricole en Europe continentale au XVIe siècle', *Annales*, 28 (1973).

[27] Pamela Horn, 'The contribution of the propagandist to eighteenth-century agricultural improvement', *Historical Journal*, 25 (1982), 320.

[28] Thirsk, 'Plough and pen', 295. Joan Thirsk, 'Agricultural innovations and their diffusion', in Joan Thirsk (ed.), *AHEW: 1640–1750 Vol 5 / 2. Agrarian change* (Cambridge, 1985). Same framing later in Joan Thirsk, 'The world-wide farming web, 1500–1800', in John Broad (ed.), *A common agricultural heritage? Revising French and British rural divergence* (Exeter, 2009).

[29] Nicholas Goddard, 'The development and influence of agricultural periodicals and newspapers, 1780–1880', *AgHR*, 31 (1983); Goddard, 'Agricultural literature'. See also Nicholas Goddard, '"Not a reading class": The development of the Victorian agricultural textbook', *Paradigm*, 1 (1997).

[30] Richard J. Sullivan, 'Measurement of English farming technological change, 1523–1900', *Explorations in Economic History*, 21 (1984).

[31] Heather Holmes, 'The circulation of Scottish agricultural books during the eighteenth century', *AgHR*, 54 (2006), 45.

[32] Heather Holmes, 'The dissemination of agricultural knowledge 1700–1850', in Alexander Fenton and Kenneth Veitch (eds), *Scottish life and society: A compendium of Scottish ethnology: Vol 2 Farming and the land* (Edinburgh, 2011). Similarly, see T. C. Smout, 'A new look at the Scottish improvers', *Scottish Historical Review*, 91 (2012), 146.

arise from treating both 'knowledge' and 'books' as socially neutral entities that exist in a single form of equal value to all levels of society; as if knowledge naturally diffuses through a homogenous social body unless it meets obstacles, and as if books are inert vehicles that merely increase the efficiency for such knowledge diffusion. Recent histories of knowledge, however, highlight that knowledge exists in multiple forms; that it serves particular social purposes; and that it is transformed when it moves between contexts. Similarly, that writing and print are better at storing certain kinds of knowledge than others; that to articulate knowledge in writing is to transform it; and that as a medium of knowledge books have varying value depending on recipient and context.

The empirical problem is that when subjected to any sustained scrutiny, the books produced during the early modern period appear to have been rather poor transmitters of useful knowledge to practising farmers. Many agricultural books did not contain knowledge that was especially new or useful, but plagiarised earlier texts.[33] Agricultural writers were often amateurs, who lacked practical farming experience and filled their books with speculative theories.[34] Moreover, some publications were clearly produced for short-term commercial gain rather than to disseminate useful knowledge, including what were essentially extended adverts to promote agricultural products for sale.[35]

The increase of publications of agricultural books from the sixteenth to the eighteenth century does at least indicate a demand. Their ownership and use by gentlemen have been easiest to demonstrate.[36] Indeed, it has been argued that sixteenth-century French manuals were explicitly written for nobility and landowners in order to instruct unlettered peasants.[37] Multiple studies have shown that seventeenth-century English gentlemen's

[33] Fussell, *Farming Books 1731–1793*, 152; Fussell, *Farming books 1793–1839*, 110.

[34] Fussell, *Farming books 1523–1730*, 2; Fussell, *Farming books 1793–1839*, 63; Horn, 'Contribution of the propagandist', 319; Goddard, '"Not a reading class"'. Thirsk defended the best authors against the charge of being hacks and plagiarists in Thirsk, 'Plough and pen', 300.

[35] For example, see the case of Gervase Markham in Lynette Hunter, 'Books for daily life: Household, husbandry, behaviour', in John Barnard and D. F. McKenzie (eds), *Cambridge history of the book in Britain vol 4: 1557–1695* (Cambridge, 2002), 517–18. For example, Horn notes the example of Kirkpatrick using his book on the cultivation of potatoes to advertise his own seed potatoes at 5s./lb. See Horn, 'Contribution of the propagandist', 319.

[36] There are numerous individual case studies, such as Elizabeth Griffiths, '"A country life": Sir Hamon Le Strange of Hunstanton in Norfolk, 1583–1654', in R. W. Hoyle (ed.), *Custom, improvement and the landscape in early modern Britain* (Farnham, 2011).

[37] Discussed in Natalie Zemon Davis, 'Printing and the people', *Society and culture in early modern France: Eight essays* (Cambridge, 1975), 206. Supported by Beutler, 'La littérature agricole en Europe'.

libraries were full of well-used agricultural books.[38] Yet there is a lack of evidence that the books penetrated to a substantial readership below gentlemen and professionals. A study of subscription lists for agricultural and horticultural books published in Dublin from 1727 to 1732 found most subscribers were landowners, clergy, or medical and military professionals.[39] Goddard concluded that the circulation of late eighteenth-century books was still mostly restricted to a leisured elite.[40] Even influential publications such as the long-running periodical *Annals of Agriculture* (1784–1804) suffered from poor sales.[41] Indeed, the low rates of literacy among the rural population in the eighteenth century, the high costs of books and the manifestly impractical design of many large multi-volume treatises, would all appear to have been significant barriers to the widespread dissemination of books among small and middling farmers.[42] It has been commonly observed that, in the words of Lord Summerville (president of the Board of Agriculture, 1798–1800), in general farmers were 'not a reading class of people'.[43] Agricultural authors were fully aware of their limited audience. The most prominent author of his age, Arthur Young, introduced an early work with the recognition that he did not 'expect too much from the common farmer's reading this, or indeed any book: I am sensible that not one *farmer* in five thousand reads at all'. Instead, he targeted his book at the small but growing number of gentlemen farmers.[44]

Were some agricultural books owned and read by yeomen and tenant farmers? There are a few clear examples such as Henry Best, a prosperous yeoman well known for his surviving farming memorandum books from the early seventeenth century, who clearly read and applied Thomas Tusser's sixteenth-century husbandry manual.[45] Yet the absence of evidence is equally informative.[46] There is little sign of books of husbandry

[38] Thirsk, 'Agricultural innovations', 572. Survey of private libraries in Mauro Ambrosoli, *The wild and the sown: Botany and agriculture in Western Europe, 1350–1850* (Cambridge, 1997).

[39] Máire Kennedy, 'Botany in print: Books and their readers in eighteenth century Dublin', *Dublin Historical Record,* 68 (2015).

[40] Goddard, 'Agricultural literature', 366.

[41] Horn, 'Contribution of the propagandist', 320–21.

[42] In an Irish context, Adams makes a plausible case that some printed agricultural information *could* have spread to ordinary farmers in the eighteenth century, but mostly in newspaper articles: J. R. R. Adams, 'Agricultural literature for the common reader in eighteenth-century Ulster', *Folk Life,* 26 (1987).

[43] Goddard, 'Agricultural literature', 366; Goddard, '"Not a reading class"'.

[44] Arthur Young, *A six weeks tour, through the southern counties of England and Wales* (2nd edn; London, 1769), viii–ix.

[45] Donald Woodward (ed.), *The farming and memorandum books of Henry Best of Elmswell, 1642* (Oxford, 1984), 10, 16, 23.

[46] A useful sceptical summary: G. E. Fussell, 'Rural reading in old time England', *Library Review,* 19 (1964).

in the libraries of most sixteenth- and seventeenth-century yeomen.[47] A study of three literate, innovative farmers of the late eighteenth and early nineteenth centuries found that they did not have much use for farming books.[48] The detailed accounts and diaries of middling farmers such as Richard Latham (1724–67) and Peter Walkden (1733–34) show no sign that they bought, borrowed or read farming books, although they purchased newspapers and almanacs.[49] A study of literate farming families who valued reading, writing and book-keeping show no indication of an interest in farming books.[50] The most systematic research has been conducted in regard to Scotland, which does find signs of a widening readership, including tenant farmers, but only around the turn of the nineteenth century.[51]

The question of whether ideas in books were applied in practice has been difficult to answer. The annotations found in surviving copies of sixteenth- and seventeenth-century books have been used to suggest that some readers were extracting information for practical purposes.[52] There are some indications in estate accounts about the application of advice from books.[53] Yet after fifty years of scholarship on the topic Fussell was a 'confirmed agnostic' on the question of whether the publications of early agricultural scientists actually reached working farmers.[54] Paul Warde recently expressed similar caution about 'the precise contribution of literature' to higher crop yields.[55] Others have struggled to find signs of the application of scientific theory.[56] Commenting on late eighteenth-century Scotland, Ian Adams judged that 'the publications themselves had little influence in

[47] Mildred Campbell, *The English yeomen under Elizabeth and the Stuarts* (London, 1942), 170.

[48] John Broad, 'Farmers and improvement, 1780–1840', in Richard W. Hoyle (ed.), *The farmer in England, 1650–1980* (Farnham, 2013), 190.

[49] Lorna Weatherill (ed.), *Account book of Richard Latham, 1724–1767* (Oxford, 1990); *A diary, from January 1733 to March 1734, written by the Reverend Peter Walkden* (Smith Settle, Otley, West Yorkshire, 2000).

[50] Susan Whyman, *The pen and the people: English letter writers 1660–1800* (Oxford, 2009), 75–111.

[51] Holmes, 'Circulation', 71; Mark Towsey, '"Store their minds with much valuable knowledge": Agricultural improvement at the Selkirk Subscription Library, 1799–1814', *Journal for Eighteenth-Century Studies*, 38 (2015). For context: R. A. Houston, *Scottish literacy and the Scottish identity: Illiteracy and society in Scotland and Northern England, 1600–1800* (Cambridge, 1985).

[52] A few examples are given in Ambrosoli, *Wild and the Sown*, 235. See also account of book by Gervase Markham in Thirsk, 'Plough and pen', 305.

[53] Thirsk, 'Agricultural innovations', 366.

[54] G. E. Fussell, 'Agricultural science and experiment in the eighteenth century: An attempt at a definition', *AgHR*, 24 (1976), 47.

[55] Paul Warde, *The invention of sustainability: Nature, human action, and destiny, 1500–1870* (Cambridge, 2018), 143.

[56] Sarah Wilmot, *'The business of improvement': Agriculture and scientific culture in Britain, c.1770–c.1870* (Bristol, 1990), 12.

promoting agrarian change'.[57] Even the most optimistic accounts are often forced to speculate about indirect influence, through gentlemen passing on books to their tenants, or instructing or 'bullying' their stewards and bailiffs.[58] With underwhelming evidence for a direct causal link to innovations in methods, books have largely been reduced to a symbolic role, as evidence for an enthusiasm for agricultural progress on the part of a small group of writers and readers. Horn suggested that the influence of eighteenth-century writers on practising farmers lay chiefly in their general encouragement, rather than spreading new methods.[59]

Scholars have, therefore, begun to abandon the effort to demonstrate that books influenced agricultural methods directly and settled for the lesser claim that they at least indicate an increasing desire for knowledge. This reframes the study of agricultural literature as part of a history of 'agricultural enlightenment', a step removed from the 'agricultural revolution', as seen in the ambitious argument of Joel Mokyr about the impact of the Enlightenment on the British economy through the growth and spread of useful knowledge.[60] Mokyr readily admits that the apparent growth in useful farming knowledge had little discernible effect on output and productivity.[61] Therefore, he shifts the argument to claim that the 'true significance of the "Agricultural Enlightenment"' was that there 'was a thirst for this kind of knowledge among many British farmers'.[62]

Peter Jones builds on Mokyr's framework in his comprehensive work titled *Agricultural Enlightenment*.[63] Jones defines the agricultural enlightenment as the period 'characterised by the widespread diffusion and take-up of new farming techniques and technologies', driven by supply-side factors including the production and diffusion of knowledge.[64] He declares that

[57] Ian H. Adams, 'The agents of agricultural change', in M. L. Parry and T. R. Slater (eds), *The making of the Scottish countryside* (London, 1980), 172.
[58] Goddard, 'Agricultural literature', 366; Thirsk, 'Agricultural innovations', 553, 557.
[59] Horn, 'Contribution of the propagandist', 326.
[60] Joel Mokyr, *The enlightened economy: Britain and the industrial revolution 1700–1850* (London, 2009), 9.
[61] Ibid., 171.
[62] Ibid., 186–87.
[63] In a German context, see Marcus Popplow, 'Economizing agricultural resources in the German economic enlightenment', in Ursula Klein and Emma C. Spary (eds), *Materials and expertise in early modern Europe: Between market and laboratory* (Chicago, 2010).
[64] Peter M. Jones, *Agricultural enlightenment: Knowledge, technology, and nature, 1750–1840* (Oxford, 2016), 83. The same approach is found in Janken Myrdal, 'Agricultural literature in Eurasia circa 200 BCE–1500 CE', *Stockholm Papers in Economic History,* 15 (2014); Janken Myrdal, 'Agricultural literature in Scandinavia and Anglo-Saxon countries, 1700–1800 as indicator of changed mentality', University of Leuven, Belgium (27–29 August 2014). In the latter, Myrdal accepts at the outset that agricultural literature had little influence on 'technological change and increased production', and hence focuses on the significance of 'a new mentality' in the countryside (14).

published literature was a key vector of agricultural enlightenment, yet he is sceptical of its impact before 1800.[65] He dismisses treatises of the 1750s and 1760s as a 'branch of belles-lettres', but argues that the end of the eighteenth century saw new efforts to produce practical manuals for farmers.[66] Even then, in his final assessment, he concedes that the evidence indicates 'that the mechanics of innovation and adoption were … unconnected, or only very loosely connected, to the written word'.[67] Jones is ultimately only able to repeat the hopeful speculation that knowledge in printed form trickled down through rural society. In summary, the enlightenment model of agricultural books as disseminators of useful knowledge that spread innovations and increased productivity has encountered a number of challenges, leading to increasingly weak conclusions resting heavily on theoretical assumptions about books as tools of knowledge diffusion.

While the enlightenment model has only recently been explicitly articulated and theorised, the language of enlightenment has been key to shaping perceptions of agricultural books for much longer.[68] However, if we look at how agricultural writers in the eighteenth century used the adjective 'enlightened', we find that the motive to disseminate knowledge was inextricably tied to a wider social project. Consider this oft-quoted passage from the most influential English agricultural writer of the day, Arthur Young, from 1770:

> It is the business of the nobility and gentry who practice agriculture, and of authors, who practice and write on it, to help forward the age… to spread the knowledge of them as much as possible; to endeavour to quicken the motions of the vast but unwieldy body, the common farmers. But to omit this … is to reduce themselves to the level of those whom they ought to instruct; and to submit to that ignorance and backwardness, which left to themselves, cloud any country, in an enlightened age, with the darkness of many preceding centuries. Common farmers love to grope in the dark: it is the business of superior minds … [to] shine forth to dissipate the night that involves them.[69]

The abstract model of knowledge diffusion is incapable of fully explaining such passages, which are fundamentally and irreducibly an articulation of a socio-political programme for rural reform. The notion of spreading knowledge cannot be neatly separated from the notion that it must

[65] Jones, *Agricultural enlightenment*, 60.
[66] Ibid., 6, 62–64.
[67] Ibid., 100.
[68] For example, Thirsk wrote that 'the first enlightenment dawned in the sixteenth century with the publication of an entirely new class of books of husbandry'. Thirsk, 'Agricultural innovations', 534.
[69] Arthur Young, *Rural economy: Or, essays on the practical parts of husbandry* (London, 1770), 20–21.

spread from the nobility and gentry ('superior minds') to common farmers ('the ignorant'). The light of knowledge and the darkness of ignorance are mapped onto a fundamental class division. Hence the notion of an 'enlightened' agriculture was first used in a context that assumed and reaffirmed a social hierarchy of knowledge. For educated gentlemen such as Young, agriculture would be 'enlightened' when it was under the control of the gentry; even if indirectly through various layers of supervision at a local and national level. Agricultural enlightenment cannot be used to describe a purely abstract campaign for the application of reason to cultivation, for it was originally connected to a campaign for self-proclaimed 'men of reason' to manage or supervise cultivation.[70]

Remarkably few attempts have been made to link agricultural writing to socio-economic change. In a rare exception, Thirsk suggested that a 'managerial revolution' around 1200, in which lords began to take lands into their own hands, prompted the compiling of the first English treatises on estate management.[71] This process was repeated in reverse in the sixteenth century, as the printing of classical agricultural treatises inspired gentlemen to turn their attention back to farm management after over a century of leasing land to others.[72] Hence it was claimed that writing could be both stimulated by and contribute to shifts in behaviour of a particular social group, regardless of whether or how the knowledge gleaned from books was applied in practice. Yet this analysis has not been extended to the crucial expansion in publishing in the seventeenth and eighteenth centuries.

By focusing on books as disseminators of knowledge, the enlightenment model ignores two general problems. Firstly, the epistemological problem: the technical difficulties in the development and use of written knowledge, requiring the translation from practice to text, then back into

[70] Schaffer recognises this broad connection between improvement and the social order in two refreshing essays: Simon Schaffer, 'The earth's fertility as a social fact in early modern England', in Mikulas Teich et al. (eds), *Nature and society in historical context* (Cambridge, 1997); Schaffer, 'Enlightenment brought down to earth'. Warde shows some awareness of this point, remarking on the 'association of progress with particular social strata', noting that 'the majority of tillers of the soil were seen as targets for propaganda rather than participants in debate'. Warde, *Invention of sustainability*, 162–63.

[71] See Edward Miller and John Hatcher, *Medieval England: Rural society and economic change 1086–1348* (Abingdon, 1978). Also Christopher Dyer, *Making a living in the middle ages: The people of Britain 850–1520* (New Haven, 2002). Treatises available in Dorothea Oschinsky, *Walter of Henley and other treatises on estate management and accounting* (Oxford, 1971).

[72] Joan Thirsk, 'Making a fresh start: Sixteenth-century agriculture and the classical inspiration', in Michael Leslie and Timothy Raylor (eds), *Culture and cultivation in early modern England: Writing and the land* (Leicester, 1992), 16.

practice; both the codification of a practical art and the decoding of written instructions. Secondly, the social problem: the class division between the majority of those working the land and the majority of those writing and reading about it. This book seeks to address both problems, but focuses on the latter.

We can only fully understand the role of early modern agricultural books by being attentive to the relations between writing, knowledge and power. To do so we need to shift away from concerns with technical innovation and productivity and focus on social change. We can build a new interpretation by reorientating our study away from the grand narrative of the 'agricultural revolution' and towards that of the distinctive social relations that emerged with the rise of agrarian capitalism. The case for this interpretation is made in Chapter 1, which draws together a series of sociological insights into the relation between books, knowledge and labour, and sets out a new theoretical framework for understanding agricultural books in terms of the social structure of knowledge rather than the diffusion of knowledge.

Agricultural Books

The research in this study sits at the intersection of the history of knowledge and the history of the book. Agricultural books are both the primary unit of analysis and chief source base. Book history combines 'textual criticism, bibliography, and cultural history' – the linguistic analysis of texts, the history of the physical objects bearing texts and the study of the practices that produce meanings using these texts or objects.[73] The approach here is rooted in textual criticism rather than bibliography, while maintaining a holistic view of the book as simultaneously written text, material object and cultural transaction.[74] This approach is justified by the rich layers of self-reference within the texts themselves. As books both represent and act within the world, we can gain insights into books as causal agents by fully contextualising how they represent their own cultural role. 'Role' is used as shorthand for all the ways books interacted with their social context, both the factors leading to their production (general trends and motivations of individual authors) and the effects arising from their

[73] Roger Chartier, *The order of books: Readers, authors, and libraries in Europe between the fourteenth and eighteenth centuries* (Cambridge, 1994), 2–3.

[74] For a discussion of different disciplinary approaches, see Leslie Howsam, *Old books and new histories: An orientation to studies in book and print culture* (London, 2006), ch. 1.

circulation (general influences and uses in particular contexts). This focus on books as causal agents distinguishes the approach here from studies of representations within husbandry books, such as Andrew McRae on the preceding period 1500–1660.[75]

The core research is based on a systematic survey of printed agricultural books, pamphlets and periodicals, supplemented by select evidence from book reviews, diaries, correspondence, commonplace notebooks, manuscript drafts, poetry, novels and newspapers. Although a number of new sources are introduced, the primary approach consists of the close re-reading and re-contextualisation of known printed sources. A broad timeframe is adopted to cover the long-term development of agricultural print as a whole. The analysis focuses on agricultural writing rather than reading, partly because evidence for reading habits is still too fragmentary.[76] Similarly, it is limited to the role of agricultural authors in the production of books, rather than the wider set of actors within the book trade.[77] The linguistic analysis is qualitative rather than quantitative. While the online databases Early English Books Online (EEBO) and Eighteenth Century Collections Online (ECCO) enable surveys and comparisons over large volumes of text, they do not enable meaningful quantitative analysis.[78] Beyond print, a few agricultural manuscripts are discussed, although primarily with respect to planned publication.

The questions of terminology and chronology are linked by the argument. During this period, the terms 'husbandry', 'agriculture' and 'farming' were all used to describe the activity of growing crops and keeping livestock, but each with a distinct meaning, scope and set of associations. *Husbandry* was used to mean 'management of the household' from

[75] Andrew McRae, *God speed the plough: The representation of agrarian England, 1500–1660* (Cambridge, 1996).

[76] For an example study on agricultural reading, see Towsey, 'Store their minds'. On methods, see James Raven, 'New reading histories, print culture and the identification of change: The case of eighteenth-century England', *Social History*, 23 (1998); I. A. N. Jackson, 'Approaches to the history of readers and reading in eighteenth-century Britain', *Historical Journal*, 47 (2004); Stephen Colclough, *Consuming texts: Readers and reading communities, 1695–1870* (London, 2007).

[77] James Raven, *The business of books: Booksellers and the English book trade 1450–1850* (London, 2007).

[78] EEBO contains digital facsimiles of over 130,000 titles printed in England, Ireland, Scotland, Wales and British North America (http://eebo.chadwyck.com/home). ECCO contains digital facsimiles of over 180,000 titles from the eighteenth century (http://find.galegroup.com/ecco/). Considering the errors arising from optical character recognition (OCR) and the poor quality of microfilmed texts, as well as the methodological limits of key-word searches in texts with multiple spellings and multiple context-dependent meanings. See Patrick Spedding, '"The new machine": Discovering the limits of ECCO', *Eighteenth-Century Studies*, 44 (2011).

the thirteenth century, including cultivation. *Agriculture* as 'cultivation of the soil' or field was in occasional use from the late sixteenth century. *Farming* in the sixteenth century described the 'action or system of farming (out) or letting out to farm', and only acquired its meaning as 'business of cultivating land' in the eighteenth century.[79] 'Husbandry' was the primary term in the sixteenth century, gradually joined by 'agriculture' in the seventeenth century, which became the more frequent term from the mid-eighteenth century. 'Farmer' gradually replaced 'yeoman' and 'husbandman' as the favoured occupational term over the eighteenth century.[80]

The chosen period from 1660 to 1800 is due to a number of factors, including the striking growth of agricultural literature, the cultural dominance of 'improvement' discourse, and the favoured timing for the emergence of agrarian capitalism.[81] But it links to the above terminology, because in a strict sense the mid-seventeenth century marked the invention of agriculture, as it was only from the 1660s that an explicitly 'agricultural' literature emerged in English, since previous books were on the topic of 'husbandry'. Following the radical shift in the discourse of husbandry manuals in the 1640s and 1650s and the establishment of the language of 'improvement', the first English agricultural treatise was John Worlidge's *Systema Agriculturæ* (1669). This marked the beginning of a conscious effort to establish books as the primary source of knowledge about farming and the creation of a new system of agricultural knowledge. The end of the period is marked by the formation of the Board of Agriculture in 1793, a quasi-state body, once described as the 'culmination' of the agricultural enlightenment.[82] The Board of Agriculture was the first centralised body for collecting and distributing agricultural knowledge in Britain, which introduced a new phase of agricultural literature by initially commissioning and publishing ninety short county reports for England, Scotland and Wales, followed by longer 'revised' or 'corrected' reports

[79] 'agriculture, n.', *OED Online*, www.oed.com/view/Entry/4181 (8 February 2018); 'husbandry, n.', *OED Online*, www.oed.com/view/Entry/89667 (8 February 2018); 'farming, n.', *OED Online*, www.oed.com/view/Entry/68262 (8 February 2018).

[80] Using *Gale Artemis* function to search term frequency (number of documents) in *Eighteenth Century Collections Online* (ECCO).

[81] On chronology of improvement, see Paul Warde, 'The idea of improvement, c.1520–1700', in R. W. Hoyle (ed.), *Custom, improvement and the landscape in early modern Britain* (Farnham, 2011). See chapter 1 for the chronology of agrarian capitalism.

[82] Mokyr, *Enlightened economy*, 184.

until 1817.[83] Therefore, the period from the mid-seventeenth to the end of the eighteenth century, or more precisely 1669–1792, covers the construction and establishment of an agricultural genre and body of knowledge. This genre established a new relationship between writing and farming, as the science of agriculture was abstracted from the household context of the moralised art of husbandry.

The corpus under examination is presented chronologically in Appendix A. It includes all books intended to inform or instruct on the practice of farming, defined as the cultivation of crops (arable husbandry) and keeping of domestic livestock (animal husbandry).[84] It excludes books wholly on gardening or horticulture as they formed a distinct, albeit overlapping, genre.[85] The selected corpus from 1669 to 1792 amounts to 131 distinct books and pamphlets printed in England or Scotland, with an additional 13 periodicals (12 from 1669 to 1700, 34 from 1700 to 1750, 85 from 1750 to 1792).[86] Dublin publications are excluded due to the distinct social and economic conditions of Ireland, although these were mostly reprints of English books first published in London.[87] As only a single agricultural author originated from Wales, it is not given independent attention. Imported foreign books constituted an important part of the agricultural book market in England, especially in the sixteenth and seventeenth centuries.[88] However, as a distinct English and Scottish tradition developed over the long eighteenth

[83] Heather Holmes, 'Sir John Sinclair, the county agricultural surveys, and the collection and dissemination of knowledge 1793–1817, with a bibliography of the surveys: Part 1', *Journal of the Edinburgh Bibliographical Society,* 7 (2012); Heather Holmes, 'Sir John Sinclair, the county agricultural surveys, and the collection and dissemination of knowledge 1793–1817, with a bibliography of the surveys: Part 2', *Journal of the Edinburgh Bibliographical Society*, 8 (2013).

[84] Based on similar criteria to W. Frank Perkins, who simply asked: is this 'a book of instruction in the Practice of Farming?' W. Frank Perkins, *British and Irish writers on agriculture* (3rd edn; Lymington, 1939). Similarly, G. E. Fussell (1947, 1950) included those he considered a 'farming text-book' or 'practical treatise on farming'. Fussell, *Farming Books 1523–1730*, 1–4. It includes specific methods of agricultural improvement and books on estate management, but excludes publications solely on the associated topics of forestry, gardening and plantations; the supplementary topics of land surveying and measurement, farm architecture and veterinary medicine; any general scientific works on natural history, botany or chemistry; the specialist topics of farriery (horses), cider, fruit-trees and bee-keeping; and political or economic topics such as enclosures, tithes or employment for the rural poor.

[85] Blanche Henrey, *British botanical and horticultural literature before 1800*, 3 vols (London, 1975).

[86] Pamphlets have not been explicitly separated. Holmes identified 88 Scottish pamphlets between 1696 and 1800, double the number of books. Heather Holmes, 'Agricultural pamphlets', in Stephen W. Brown and Warren McDougall (eds), *Enlightenment and expansion 1707–1800* (The Edinburgh history of the book in Scotland, 2; Edinburgh, 2012), 399.

[87] The main exception is work by John Wynn Baker, an Englishman who moved to Ireland and published on agriculture in the 1760s and 1770s. G. E. Fussell, 'John Wynn Baker: An "improver" in eighteenth century Ireland', *Agricultural History*, 5 (1931).

[88] See continental books in English private libraries 1500–1640, Ambrosoli, *Wild and the Sown*, 423.

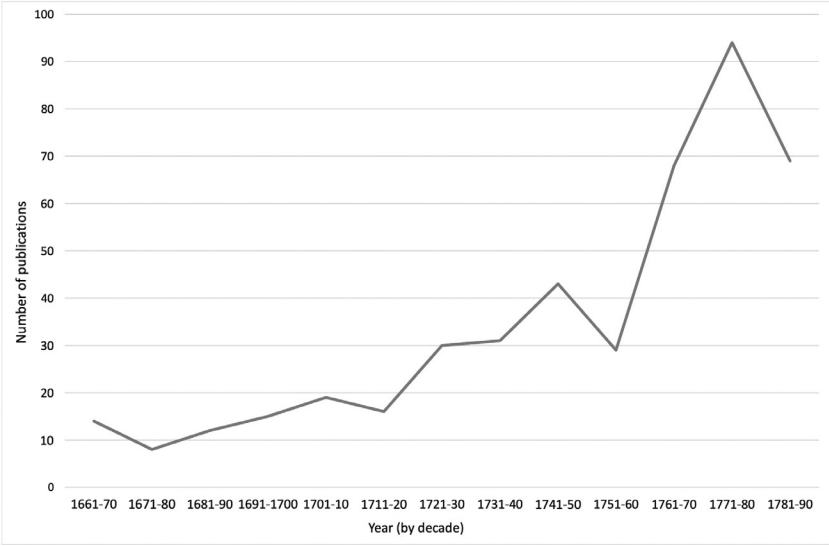

Figure 0.2 A graph of the total number of titles published in England each decade between 1661 and 1790.

century, the influence of non-English texts declined.[89] Over the following chapters, greater attention is given to the more prolific authors and most popular books, partly guided by the numbers of reprints and new editions, but mostly guided by qualitative indications such as references by later authors and anecdotal accounts of ownership or reading.

The rough chronological trend of agricultural publishing is shown in Figures 0.2 and 0.3.[90] In England, there was a steady increase in titles from the 1670s with a significant surge in the decades from 1760 to 1790. In

[89] The lines of influence were reversed, as Britain became an exporter of agricultural literature. For example, Jethro Tull's book inspired a new generation of French writing on agronomy, led by Henri Louis Duhamel du Monceau (1700–1782). Laura B. Sayre, 'The pre-history of soil science: Jethro Tull, the invention of the seed drill, and the foundations of modern agriculture', *Physics and Chemistry of the Earth,* 35 (2010), 854.

[90] The *English Short Title Catalogue* (ESTC) records over 500 titles under the subject 'agriculture' published in England and Scotland between 1669 and 1792, but this includes political and economic commentary, and around of these were reprints or new editions. Including: 445 printed in England, 69 in Scotland, 119 in Ireland, and 41 in North America. Note the ESTC is an unstable and incomplete bibliography: Michael Suarez, 'Towards a bibliometric analysis of the surviving record, 1701–1800', in Michael F. Suarez and Michael L. Turner (eds), *Cambridge history of the book in Britain Vol 5: 1695–1830* (Cambridge, 2014). Heather Holmes has identified a higher figure of 123 Scottish publications between 1683 and 1790 by applying broader criteria and including periodicals: Holmes, 'Agricultural publishing', 503–4.

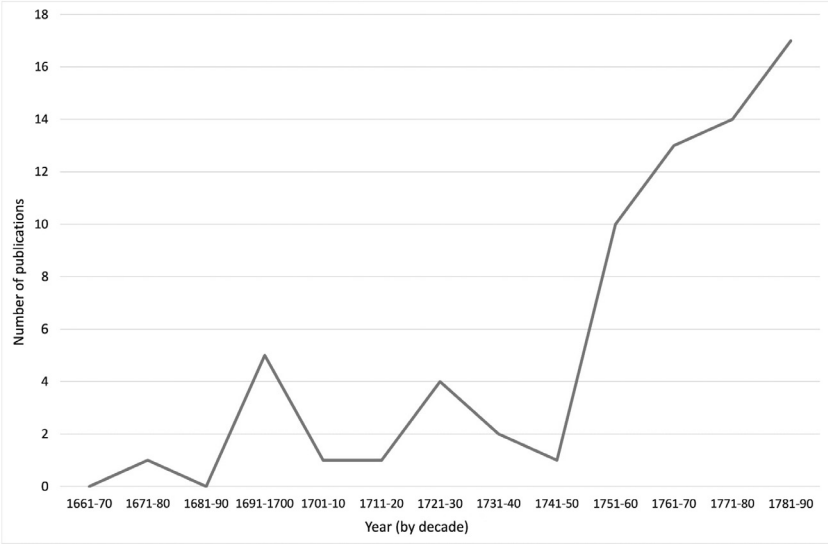

Figure 0.3 A graph of the total number of titles published in Scotland each decade between 1661 and 1790.

Scotland, there were no agricultural publications before 1697, and then only a few before a rapid rise from the 1750s. This broadly mirrors the general trend of increasing publications across all genres as the whole book trade expanded.[91] A previous analysis of eighteenth-century genres suggests that books in the category of 'agriculture, almanacs and other practical matters' remained stable as a proportion of total output, hovering around 2–3 per cent.[92] However, Mokyr estimated that books categorised as 'Science, Technology and Medicine' (using ECCO) increased from 5.5 to 9 per cent of the total over the eighteenth century.[93] A similar analysis for publications on 'agriculture' indicates a proportional as well as a numerical increase, especially in the 1760s, 1770s and 1790s (Table 0.1).[94]

This simple analysis supports the impression of both contemporaries and historians that there was an increase in the range of available agricultural literature in the second half of the eighteenth century, even exceeding the underlying expansion of publishing.

[91] See graph in Raven, *Business of books*, 9.
[92] Suarez, 'Towards a bibliometric analysis', 46.
[93] Mokyr, *Enlightened economy*, 46.
[94] Data from ECCO. The numbers of results for searches for all items under subject 'agriculture' were compared with number of results for total items across all subjects, for each decade.

Table 0.1 *Number and proportion of titles catalogued as subject 'agriculture', based on ECCO searches*

Decade	Number of Titles	Percentages of Total (%)
1701–1710	14	0.1
1711–1720	16	0.1
1721–1730	53	0.4
1731–1740	45	0.3
1741–1750	51	0.3
1751–1760	67	0.4
1761–1770	145	0.7
1771–1780	153	0.6
1781–1790	97	0.3
1791–1800	345	0.9

Periodicals play a central role as vectors of knowledge diffusion in the enlightenment model. However, periodicals did not become a significant form of agricultural publishing until the nineteenth century, when they were stimulated by the proliferation of farmers' clubs and agricultural societies.[95] As such they are not prominent in the following analysis. If we examine the list of twenty-two British periodicals covering agriculture published before 1793, we find that most were extremely short lived (only seven lasted more than three years), only eight primarily concerned agriculture (others covered art, manufacture and commerce generally) and three were essentially single works published in parts.[96] The first English periodical on agriculture was John Houghton's weekly *Collection for the Improvement of Husbandry and Trade* (1681–82, then 1692–1702), but the first successful specialist venture was Arthur Young's *Annals of Agriculture* (1784–1808).[97] The first agricultural newspaper in England was not launched until 1807.[98] Before 1800 there were only three short-lived agricultural journals in Scotland, and the first Scottish newspapers were not founded until the 1840s.[99]

[95] Goddard, 'Agricultural periodicals', 129. See also Goddard, '"Not a reading class"'.

[96] F. A. Buttress, *Agricultural periodicals of the British Isles, 1681–1900, and their location* (Cambridge, 1950). Fussell discussed ten periodicals before 1800 in G. E. Fussell, 'Early farming journals', *EcHR*, 3 (1932).

[97] Goddard, 'Agricultural periodicals', 120. The significance of the *Annals* was less as a means of mass communication among farmers and more as a forum for an elite group of agriculturists.

[98] Goddard, 'Agricultural literature', 372.

[99] Heather Holmes, 'Scottish agricultural newspapers and journals and the industrialisation of agriculture, 1800–1880', *Folk Life*, 40 (2001).

Agricultural Authors

The sociological approach adopted in the following chapters requires a clear sense of the socio-economic profile of agricultural authors. The current consensus is that most of the men who wrote farming books in the seventeenth and eighteenth centuries were not farmers by occupation. The majority of agricultural authors are described as gentlemen, although the degree of their engagement in farming is debated.[100] Fussell's more flexible characterisation is that they were 'men of education', and therefore a social constellation that expanded over time and stretched beyond the gentry.[101] In John Donaldson's 1854 collective biography of agricultural writers, he suggested that the most valuable contributions came from 'persons of alien professions'.[102] This is unsurprising as clergymen and physicians constituted a significant proportion of the rural educated class.[103] This prevalence of professional backgrounds outside agriculture was noted in a survey of Scottish authors from 1697 to 1790.[104] An analysis of the periodical *Annals of Agriculture* (1784–1815) found that country gentlemen or clergymen wrote the majority of articles, although a significant minority were by substantial tenant farmers.[105]

To test and build on these impressions, the available biographical information of eighty-seven British agricultural authors has been systematically collated to approximate a prosopographical study. Appendix B presents all known authors whose first book on agriculture was published in England or Scotland between 1669 and 1792 (see Table B.1). Basic information is available for over half of these authors concerning their social background, education and occupation (there are Oxford DNB entries for forty-seven out of eighty-seven, and a further twenty-two have partial information available elsewhere).[106] A brief survey of

[100] For example, Thirsk emphasises the engagement of gentlemen managing estates and younger sons of gentlemen who were forced to farm for a living. Thirsk, 'Agricultural innovations', 534.
[101] G. E. Fussell, *The classical tradition in West European farming* (Fairleigh, 1972), 138.
[102] Donaldson, *Agricultural biography*, 43. See also Fussell, *Farming Books 1523–1730*, 105.
[103] Fussell, *Classical tradition*, 39. On the role of rural clergy, see Jones, *Agricultural enlightenment*, 74.
[104] Heather Holmes, 'Scottish agricultural writers and the creation of their personal identities between 1697 and 1790', *Folk Life*, 44 (2005), 90–91.
[105] Horn, 'Contribution of the propagandist', 321.
[106] Compiled using Oxford DNB; Donaldson, *Agricultural biography*; McDonald, *Agricultural writers*; Perkins, *British and Irish writers*; Fussell, *Farming Books 1523–1730*; Fussell, *Farming Books 1731–1793*; Holmes, 'Scottish agricultural writers'. Many authors listed by Donaldson (1854) were erroneous, by repetition or mistaken attribution, while others were anonymous or wrote on tangential topics (e.g. highway maintenance). Holmes' survey included anonymous and institutional

this biographical information allows for a broad characterisation of agricultural authorship in the long eighteenth century and the relation between authorship and the practice of farming, from which we can compile a composite portrait (note that all quantities refer to the number of instances an author is linked to the relevant category, such that individuals are often double-counted). It is first worth noting the chronological trend: a handful of new authors in each decade between the 1670s and 1720s, with small increases in the 1730s and 1750s, before a sharp rise in the 1760s and 1770s, dropping slightly in the 1780s.[107] Most of the authors (twenty-nine of the forty) we know least about were first published between 1760 and 1790, often with a single publication, which indicates a widening of the social pool.

The broad characterisation that most authors were not farmers by occupation is accurate; however, we can add greater nuance and identify significant trends that have been previously overlooked. The typical agricultural author was neither a labouring husbandman nor a leisured landowner. The majority of authors came from and moved within that increasingly fluid strata of British society that encompassed the minor gentry and the upper middling sort, where the country gentleman who kept a farm and the prosperous freeholder or tenant overlapped, and which embraced the respectable professions and genteel trades.[108] This was the era in which the 'gentleman farmer' emerged fully in social commentaries and the realms of land, trade and industry were increasingly intertwined.[109] Using a father's occupation or status as an indicator for thirty-six authors, four fathers can be identified as noblemen, six as landowning gentry, ten as farmers (of which at least four were freeholders or yeomen), six as clergymen (some of whom may have kept a farm), six as other professionals and six as tradesmen. For those we know least about, at least nine of the title pages of their books designate the author as 'Gentleman' or 'Esquire'. Using education as a further indicator of status, we find that twenty-one (out of information for thirty-six) went to university, the Inns of Court or a 'private Civil

publications, plus a further ten authors on topics not strictly didactic, based on J. A. S. Watson and G. D. Amery, 'Early Scottish agricultural writers', *Transactions of the Highland and Agricultural Society of Scotland*, 43 (1931).

[107] Trend broadly in line with table by Pamela Horn for the 1730s–1790s, but corrects previous errors and adopts a narrower criterion. Horn, 'Contribution of the propagandist', 318.

[108] On the defining a 'gentleman' in the eighteenth century, see Penelope J. Corfield, 'Class by name and number in eighteenth-century Britain', *History,* 72 (1987), 43, 61; William Stafford, 'Representations of the social order in The Gentleman's Magazine, 1785–1815', *Eighteenth-Century Life*, 33 (2009), 68, 87.

[109] G. E. Mingay, *English landed society in the eighteenth century* (London, 1963), 105–6.

Law College'. Hence agricultural authors came from a wide enough social spectrum that many were required to earn their living and took up writing as a route to prosperity as much as filling their leisure hours, and there are signs that the social base widened over time to include professionals and large tenant farmers.[110]

Our main concern is the prevalence of agricultural occupations and experience. The claim that agricultural authors were completely inexperienced or ignorant of farming is unfair. However, they tended to share *a particular kind* of agricultural experience that was fundamentally different from a youth 'bred to husbandry' (in the common saying) who learned local customs through direct instruction and laborious practice. If an author had farming experience, it was most likely limited to managerial roles as landowner, steward, agent, or large tenant farmer, hence primarily as an observer and organiser rather than a performer of farm labour. We know that forty-one authors were occupied in or held a position directly related to agriculture in some way at some point in their lives, although often tenuous. Only fourteen were occupied as farmers at some point, mostly as tenants, but four as landowners personally engaged in management. Of those who held a farm, most were substantial farmers, managing large tracts of land, often considerably greater than 100 acres.[111] It is also probable that some clergymen had experience cultivating their glebe. Ten authors are known to have been owners of estates or farms, but the extent of their involvement in management is variable and uncertain. Nine were at some point employed in specialist service roles as stewards, agents, surveyors and land valuers, or enclosure commissioners. At least three were engaged in ancillary trades.[112] Various authors were hired as advisors or consultants at certain points, often as a result of their publications. A couple of authors patented new machine designs. Two authors we know little about (George Cooke

[110] A point already made about Scottish agricultural authors. Smout, 'Scottish improvers', 134.

[111] Young divided 'common' and 'gentlemen' farmers as below or above 60–80 acres. Arthur Young, *The farmer's guide in hiring and stocking farms* (London, 1770), 247. Jethro Tull farmed a total of around 200 acres; Robert Maxwell leased an arable farm of 130 acres near Edinburgh in 1723; Arthur Young first took tenancy of 80 acres of farm in Suffolk in 1763, but soon added 300 acres; William Marshall first managed 300 acres near Croydon from 1774 to 1778; James Anderson took a lease of a 1,300-acre farm in Aberdeenshire in the 1770s; Thomas Stone also farmed 1,300 acres in Shropshire around the year 1780; George Culley began on a 200-acre farm with his brother Matthew in 1767, then gradually expanded their holdings to 4,000 acres by 1800. On Tull's farm, Cuthbert William Johnson, *The farmer's encyclopædia, and dictionary of rural affairs* (London, 1842), 1182.

[112] James Small (1740–1793) was a farmer but also a plough- and cartwright; William Ellis (1700–1758) sold implements and seeds; and Josiah Twamley was a cheese factor (dealer).

and Robert Billing) adopted the title of 'Farmer' on their title pages. Besides direct experience in farm management, a few took notes on agricultural methods while travelling through Europe before publishing their books.

Additional geographical information about the place of origin and known areas of residence or location of farms (not shown in the table) reveals little correlation with areas traditionally considered the most progressive in terms of agricultural improvements, such as the eastern counties of Norfolk and Suffolk. Over half the authors were raised in southern England, primarily London, or Scotland.[113] But the recorded residences (for at least some part of their lives) have a much wider and more balanced geographical spread, and a few authors lived in many different counties for at least a short period, often employed in agricultural work as a land steward or landscape gardener, and were, therefore, able to accumulate experience of diverse parts of the country. While regional differences in agriculture were hugely significant, the following analysis does not address them in detail, primarily because agricultural books were generally attempts to transcend local and regional practices in order to establish national or universal agriculture. However, the prevalence of Scottish authors – eighteen out of all forty-eight known origins and almost half (sixteen out of thirty-three) of new authors from 1732 to 92 – is particularly striking.[114] The combination of post-1745 economic reforms and enlightenment thought produced many of the most important agricultural authors of the second half of the eighteenth century who embraced and accelerated the programme of English improvement and land reform.[115] Edinburgh became of equal importance to London as a centre of agricultural publishing, and books circulated between both nations.[116]

[113] Using the 'agricultural departments' defined by William Marshall as natural agricultural units in the early nineteenth century (with Scotland and Wales added for completeness), the origins of forty-eight authors can be divided as follows: eighteen from Scotland; fourteen from the southern department; six from the northern; five from the midland; two from the western; two from the eastern; only one from Wales. No authors came from the south-western peninsula.

[114] For more detail, see Holmes, 'Scottish agricultural writers'.

[115] Schaffer, 'The earth's fertility', 138.

[116] For example, students at Glasgow University were borrowing English authors such as Mortimer, Bradley and Tull in the 1760s. Sangster, Matthew, Karen Baston and Brian Aitken, *Eighteenth-Century Borrowing from the University of Glasgow* (Glasgow, 2020) https://18c-borrowing.glasgow.ac.uk. Similarly, Alexander Hunter's book was borrowed regularly from the Bristol Library in the 1770s. Paul Kaufman, *Borrowings from the Bristol Library, 1773–1784, a unique record of reading vogues* (Charlottesville, 1960).

Beyond the prevalence of managerial experience in agriculture, authors shared considerable (perhaps greater) experience in non-agricultural areas, which meant they brought new perspectives when they turned to farming, especially from commerce, horticulture and the learned professions. Indeed, those with direct agricultural experience usually only turned to farming as an adult after training or experience in another occupation. Aside from attending schools and universities, a significant number of authors (ten) were apprenticed to a trade or were trained for a commercial occupation. It is clear why men who lacked practical training from a young age, who then engaged with farming primarily as a problem of management, would have taken an interest in learning about agriculture from books. When Arthur Young took up farming aged twenty-two on the advice of his mother, after abandoning his apprenticeship to wine merchants, he admitted that he 'had no more idea of farming than of physic or divinity', and so collected books on the subject.[117]

In adulthood, at least fifty-three authors held non-agricultural occupations for a period in their life. While farmers had long gained experience in other trades through by-employments (for example, as a blacksmith, weaver or shoemaker), the eighteenth century saw significant numbers of merchants and tradesmen entering the business of farming.[118] At least twelve authors had experience in a trade (as an apothecary, carpenter, architect, astrologer, printer or thread-hosier) or in the commercial world of insurance, brewing and fishing. For example, John Mortimer was born in London around 1656, received a commercial education and became a wealthy merchant on Tower Hill, before buying an estate in 1693 in Essex, and later authoring *The Whole Art of Husbandry* (1707). When these men applied their minds to agriculture, they inevitably projected the assumptions and values gained by their participation in commerce onto farming.

In a more subtle way, initial or ongoing interest and experience of gardening influenced the way many writers approached and re-imagined agriculture. Nine authors were for a time occupied in the closely related area of horticulture, as gardeners, landscape designers, market-gardeners or nurserymen. While gardening and agriculture overlapped, books on growing fruits, flowers and vegetables were framed in terms of beauty and

[117] Matilda Betham-Edwards (ed.), *The autobiography of Arthur Young with selections from his correspondence* (London, 1898), 29.

[118] The extent of by-employments has been the subject of debate, see S. A. J. Keibek and Leigh Shaw-Taylor, 'Early modern rural by-employments: A re-examination of the probate inventory evidence', *AgHR*, 61 (2013).

pleasure, rather than food production.[119] The influence was a conscious one: in 1776, Richard Weston contrasted agriculture by 'the mere peasant' with gardening by 'a skillful artist' and argued that the advance of agriculture would only be achieved by 'uniting the garden-culture with farming'.[120]

The prevalence of the professions among author occupations is especially striking: not only the three great learned professions of law, physic and divinity but also occupations in the armed forces or education, and others that could broadly be termed 'skilled tertiary-sector occupations'.[121] Eleven authors were clergymen; seven were engaged in educational professions and services, including as a university professor, a private tutor, a public lecturer and a schoolmaster; six were trained or practising physicians; four had experience in the legal profession; five had experience in politics or diplomatic service; and three had military experience.[122] In some cases, these roles could be combined with agricultural interests with relative ease: a vicar tending his garden, an out-of-favour politician attending to his estate, or an educated farmer who found employment as a tutor. The unique occupational culture of professionals – built upon the mastery of specialist knowledge and increasingly formalised processes of training and qualification – was consequently a significant influence upon agricultural writing.

We can also consider the theme of professionalisation from the reverse perspective, as many writers were employed in the role of professional agricultural service, as land stewards, agents, surveyors and valuers – part of the 'pseudo gentry' of late-eighteenth-century rural society.[123] In many cases, they were employed on the basis of their publications.[124] A series of mutually reinforcing processes were at play linking books with the professionalisation of agriculture: members of the learned professions wrote books about agriculture; some writers acquired professional roles

[119] On this point, see Rebecca Bushnell, *Green desire: Imagining early modern English gardens* (London, 2003).

[120] Richard Weston, *Tracts on practical agriculture and gardening. Particularly addressed to the gentlemen-farmers in Great-Britain* (2nd edn; London, 1773), 2 & iii.

[121] Penelope J. Corfield, *Power and the professions in Britain 1700–1850* (London, 1995), 25.

[122] These last two categories include the Scottish noblemen John Hamilton, second Lord Belhaven and Stenton (1656–1708), Sir Archibald Grant of Monymusk, second baronet (1696–1778), and Sir John Dalrymple, the second earl of Stair (1673–1747).

[123] J. H. Porter, 'The development of rural society', in G. E. Mingay (ed.), *AHEW: 1750–1850 Vol 6* (Cambridge, 1989), 844.

[124] In 1783, William Marshall was offered the role of estate steward by Samuel Pipe-Wolferstan (1751–1820) in Staffordshire after the latter had read his earlier books about managing a farm in Surrey. Pamela Horn, *William Marshall (1745–1818) and the Georgian countryside* (Abingdon, 1982), 20.

in agriculture by virtue of their literary repute; while those (often lawyers) employed as stewards acquired specialist agricultural knowledge which could form the basis of further books.

Finally, an authorial identity often preceded an agricultural one; many were writers first and farmers second. At least thirty-nine are known to have also published books on non-agricultural topics. Ten authors published on the associated topics of gardening or botany; six on medicine; five on political economy or trade; five on religion; four on natural philosophy or mathematics; three on the law; and three published poetry or fiction; with some further writings on history, architecture and education. Indeed, some writers are better known for their contributions to other subjects: Giles Jacob (1686–1744) and Lord Kames (1696–1782) on the law, and the Rev. John Trusler (1735–1820) is notorious for his diverse publications on medicine, history, law, theology, travel and gardening. Hence agriculture was only one of many topics that engaged the pen of these authors; even Arthur Young wrote novels in the 1760s before writing on agriculture.[125]

Were any agricultural writers bred to husbandry? Only a handful could claim to have gained practical experience of farming from a young age, but even these often combined a rural upbringing with other experiences. James Small (1740–93) was the son of a farmer in Berwickshire and apprenticed to a carpenter and plough-maker. William Marshall (1745–1818), the son of a yeomen farmer in North Riding, Yorkshire, declared he was '*born a Farmer*' and could 'trace his blood through the veins of AGRICULTURALISTS, for upwards of four hundred years'.[126] But he was apprenticed in the linen trade at fifteen and then tried his luck for a number of years in insurance and commercial activities in the West Indies, before returning to London and taking up farming due to illness. If we trust the autobiographical sketch of Charles Varlo (or Varley) (c.1725–95), he spent his childhood helping out on his father's farm, in between brief periods at school, before gaining experience as a servant for neighbouring farmers and learning all the labours on a farm.[127] George Culley (1735–1813) was born in County Durham, the youngest son of a freehold farmer, and

[125] Ruth Perry, *Novel relations: The transformation of kinship in English literature and culture, 1748–1818* (Cambridge, 2009), 290–91.

[126] William Marshall, *Experiments and observations concerning agriculture* (London, 1779), 1.

[127] Reprinted with commentary: Desmond Clarke and Charles Varlo, *The unfortunate husbandman: An account of the life and travels of a real farmer in Ireland, Scotland, England and America* (London, 1964); G. E. Fussell, '"A real farmer" of eighteenth-century England and his book, "The modern farmers guide"', *Agricultural History*, 17 (1943), 211.

perhaps worked on his father's farm until he was sent to learn from the famous sheep-breeder Robert Bakewell in Leicestershire.

In summary, it is clear that collectively agricultural authors had a set of perspectives that were rather alien to the majority of husbandmen, housewives, servants and labourers who learned about farming from a young age from their elders and through their own labour – even if there were some who could more successfully bridge the divide. It was precisely this situation that led a pamphleteer in 1785 to lament that it was 'unfortunate for agriculture, that lawyers, physicians, private gentlemen, clergymen … should write and publish in abundance; yet very few, if any… who have been regularly brought up from their youth in the employment'.[128]

Argument

This book has two overall aims. The first is a general theoretical intervention, seeking to demonstrate both the necessity and usefulness of a sociological approach to agricultural knowledge and books. It does so partly by showing how it can better explain the known, and illuminate the unknown, features of early modern agricultural books, and partly by highlighting broader changes in the social history of agricultural knowledge. The second is to advance specific historical arguments about the social role of agricultural books in Britain 1660–1800, in particular their contribution to the development of agrarian capitalism. These historical arguments form the substance of the book, but reinforce the underlying theoretical and methodological claims.

The central argument is that the printing of agricultural instructions over the long eighteenth century was both stimulated by and a contribution to significant changes in the social system of agricultural knowledge. The structure is thematic, but the chapters have a logical sequence that approximates a loose narrative. Chapter 1 sets out a new theoretical model, building on the critique (above) of the standard interpretive framework, the enlightenment model. It argues that early modern agriculture saw a concentration in managerial control over the land and therefore required a reorganisation of knowledge. It then explores recent sociological approaches to books, knowledge and labour in order to identify alternative theoretical tools to analyse and interpret the role of printed books in

[128] *A political enquiry into the consequences of enclosing waste lands, and the causes of the present high price of butchers meat* (London, 1785), vi.

this process. This sets up the key research question: how did book knowledge relate to changes in the division of labour? Chapter 2 establishes the context usually neglected by histories of agricultural literature: how farming was learned without books in the prevailing system of knowledge in the sixteenth and seventeenth centuries. It examines the discourse on the 'mystery of husbandry', a term denoting the knowledge and skill acquired by experienced practitioners that was inaccessible to amateurs, to both elucidate contemporary beliefs about learning through labour and to indicate the ways in which the publication of husbandry manuals disrupted existing notions of expertise. Chapter 3 sets out the book's core argument and consciously inverts existing historiography. It argues that agricultural books were in part used as a tool to appropriate the practical art of husbandry by learned culture, enabling a 'bottom-up' transfer of knowledge as much as a 'top-down' diffusion of knowledge from expert to practitioner. It shows how from the 1660s educated gentlemen collected into writing the knowledge of husbandry stored in customary practice and oral tradition, with the aim of transforming a low practical art into a high literary science. This was simultaneously a process of the masculinisation of farming knowledge, accompanying the progressive marginalisation of women in farming practice. Chapter 4 examines this process of transforming practical knowledge into written knowledge. It argues that the art of husbandry was codified in accordance with the cultural preferences and managerial interests of landowners, professionals and large farmers. Crucially, codification was shaped by the need to establish the supremacy of written knowledge and subordinate customary knowledge and labour. While agricultural authors embraced a new empiricism, it was an empiricism in which the recorded observations and experiments made by managers had primacy over the experience and customs of their workers.

The final three chapters shift to consider the social effects of the appropriation and codification of the art of husbandry by examining the impact on new divisions of labour. Chapter 5 argues that agricultural books facilitated the increasing separation between intellectual and manual labour and used codified knowledge to create a new model of managerial expertise in agriculture. This was manifested in the figure of the gentleman farmer who farmed with a pen, but further developed by the appearance of the 'agriculturist' at the end of the eighteenth century, whose contribution to farming was primarily theoretical. Chapter 6 explores the efforts to institutionalise the new book-based expertise by establishing agriculture as a profession analogous to medicine, seen most clearly in the increasing professionalisation of estate stewards who claimed to possess superior

theoretical knowledge to common farmers. It charts the various educational schemes that did not come to fruition until the following century, but which nonetheless reveal the scope of ambition of agricultural authors seeking to establish a new system of knowledge. Finally, Chapter 7 details both the internal problems generated by this reorganisation of agricultural knowledge and the signs of resistance by those who sought to defend the customary, labour-based system of knowledge. It re-examines the 'book-farming' controversy of the late eighteenth century, identifying the social problems arising from the codification of agricultural knowledge, including struggles over expertise between master and servant, and landowner and tenant.

The chronological focus shifts between the chapters. Chapter 2 takes a broad look at the seventeenth and eighteenth century; the arguments of Chapter 3, 4, 5 and 6 cover the period 1660–1800; Chapter 7 is a more focused study of the decades from 1760s to 1790s. Over these chapters, a chronological pattern emerges, such that agricultural literature can be roughly divided before and after 1750, which maps onto the pattern of economic and social change: from the 1650s to the 1740s there was a depression in agricultural prices and falling rents, but from the 1750s, prices and rents soared. Between the 1650s and 1740s, the landowning gentry were the driving force behind improvement and agricultural literature, but from 1750 onwards the improvers included increasing numbers of professionals (especially physicians), land stewards and capitalist farmers. This loosely maps onto the pattern of enclosure; the state was explicitly anti-enclosure before 1660; almost all authors after 1660 were strong proponents; but the distinctive phase of widespread enclosure by Act of Parliament began around 1760.

The analysis is less about farming knowledge itself and more about the social conditions in which it exists. The intention is to re-balance our account and correct the mischaracterisations resulting from a focus solely on technological progress. Hence, it does not directly address the role of books in disseminating useful knowledge and spreading innovations, as this has already been considered at length elsewhere. Nor does this study attempt the additional and immensely complex task of weaving together how books contributed to both technological and social changes. Nonetheless, it does address a question neglected in the enlightenment model: how and why did books become an important form of knowledge for a minority of cultivators in England and Scotland by the nineteenth century? Previous interpretations usually proceed as if the growth of books was simply a matter of removing obstacles to the natural flow of written

knowledge. Yet sixteenth-century conditions were manifestly unsuited for printed books to function as the primary tool of knowledge transmission between practitioners in agriculture. This only changed gradually. The decline of small owner-occupiers and the emergence of large tenants, gentlemen farmers and a cohort of agricultural professionals, created a substantial stratum of educated men who were directly involved in farm management. Whereas peasant farmers had minimal use for written instructions, this managerial class found print a highly useful technology. Books were poor tools for teaching the whole practical art of husbandry, but highly effective for constructing a managerial knowledge to be applied to expanding estates, projects of improvement and large-scale commercial farming. In particular, the master of enclosed fields operating in a competitive market was an ideal reader, as they had the motive and scope to implement new methods that deviated from local custom. At the same time, wider trends all encouraged the use of books for transferring knowledge, as increases in literacy, education and income transformed books from elite luxuries to popular commodities. The sudden burst of Scottish agricultural writers from the 1750s, when the imposition of English landholding structures stimulated commercial farming, shows the close association between social reform and agricultural publishing. While new channels of information such as the growth in agricultural societies have been credited with creating the necessary infrastructure for books to be a vector of useful knowledge among a section of the agricultural community, this was only possible due to the long-term social reorganisation of agricultural production.[129] However, books were not simply a response to the demands of a changing economy, but causal agents themselves that assisted these social changes by creating new ways for agricultural knowledge to be produced, acquired, stored, transferred, legitimated and exercised.

Overall, this book presents a new perspective on the development of agrarian capitalism. The capitalist structure of landlord, tenant and labourer required a corresponding structure of knowledge, whereby mental labour was largely extracted from those performing manual labour and concentrated in managerial positions. Printed books were a key part of this transition. This study, therefore, overturns the existing historiography on the impact of printed agricultural literature and opens up new paths

[129] Smout, 'Scottish improvers', 145; Holmes, 'Dissemination', 874.

for research into the social history of agricultural knowledge. While the long-term trend from self-organising peasants to supervised labourers is a familiar narrative, we are yet to fully investigate what happened to the knowledge and skills of husbandry during this transformation. We can begin by examining why and how customary knowledge was enclosed within books.