Landscape history and archaeology of open fields in Europe

Landschaftsgeschichte und Archäologie der offenen Feldfluren in Europa

Histoire et archéologie du paysage de champs ouverts en Europe

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Introduction

The landscape of open fields is one of the main types of historic landscape in Europe. The term 'open fields' refers to the large arable fields that have an open character because the individual parcels of the owners were not surrounded by hedges, woodbanks, drystone walls or other visible boundaries. The simplest definition of open-field agriculture is: 'the means by which land was cultivated by the inhabitants of a township who worked their holdings in unenclosed parcels' (*Taylor 1981*, 13). It is a landscape many people remember from their youth, partly because so many people worked in it during harvest times (*Lemaire 2013*).

The basis of the open fields is the use of the same arable field year after year for growing grain. In fact, the distribution of medieval open fields reflects the geography of large-scale grain production in Europe during that period. The growing importance of grain cultivation during the High Middle Ages, sometimes referred to as *cerealization* (*Bartlett 1994*, 152; in German: *Vergetreidung*) was related to the substantial population growth during that period.

Since the end of the 19th century, these landscapes have been studied by geographers, historians and archaeologists. Interesting differences exist between British and continental research traditions, which make international comparative research difficult. In Britain the emphasis is on landscape archaeological traces of former open fields and, hence, on medieval agrarian techniques. Continental, particularly German, research has focused on the origins and development of the complex field patterns and on the development of landownership. The term 'open field', which acts as an umbrella term in English-language literature (*Orwin – Orwin 1954*; *Rowley 1981*), is known in French (*champs ouverts*), but is rarely used in German-language literature. Elsewhere I have discussed how the different research traditions are connected to the different landscape histories (*Renes 2010*).

In this paper, I focus on the traces of open fields in different parts of Europe. I will distinguish two periods. The first period, up to the early 14th century, covers the period of origin and growth. The heyday of the open fields ended during the first half of the 14th century due to population decline, which was followed by a series of reorganisations of the European landscape.

Types and terminology

Much attention has been given to the origins of open fields (see, for example, *Rowley 1981*). It is, however, most probable that open fields come into existence everywhere where different adjacent landowners use their fields year after year for grain growing. In such circumstances it is logical to remove the hedges or woodbanks between their fields, as these boundaries are unnecessary and have disadvantages such as taking up space and casting shadow. Therefore, we may assume that open fields can be – and have been – invented separately in different regions and in different periods.

In the case of more specific types of open fields that developed during the Middle Ages, such as the *common fields* (see below), diffusion from a single region of origin is more likely, although even these seem to have been invented independently from each other in continental Europe and on the British Isles. The heavy mouldboard plough, responsible for the development of ridge and furrow and often seen as an explanation for the occurrence of strip fields in general, was probably invented in north-western Europe and gradually moved eastward through Europe (*Bartlett 1994*, 152).

The most well-known subtype of open field is the *common field* (known in German-language literature as the *Gewannflursystem; Egli 1985*). The common field system was defined by Thirsk (*1964*) as having the following characteristics:

[1] arable and meadow are divided into strips among the cultivators, each of whom may occupy a number of strips scattered about the fields;

[2] both arable and meadow are thrown open for common pasturing by the stock of all the commoners after harvest and in fallow seasons. During the fallow

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periods, the arable in fact becomes part of the common grazing;

[3] there is common pasturage and waste, where the cultivators of strips enjoy the right to graze stock and gather timber, peat and other commodities;

[4] the order of these activities is regulated by an assembly of cultivators (the manorial court or a village meeting).

An even more rigorous definition mentioned by Gray (*1915*) is the *Midland system* (in German literature sometimes referred to as *Zelgensystem*; *Egli 1985*), which is a two- or three-field system in which the furlongs were grouped into two or three 'fields', crop rotations were organised on a village basis and the individual farmers had to adapt to an obligatory communal management of the fields, a system of enforced biennial or triennial crop rotations (German: *Flurzwang*). In fact the whole village was run like one big farm. This system implies not only that the two or three fields were more or less the same size, but also that the strips of an individual farmer were more or less evenly distributed over the

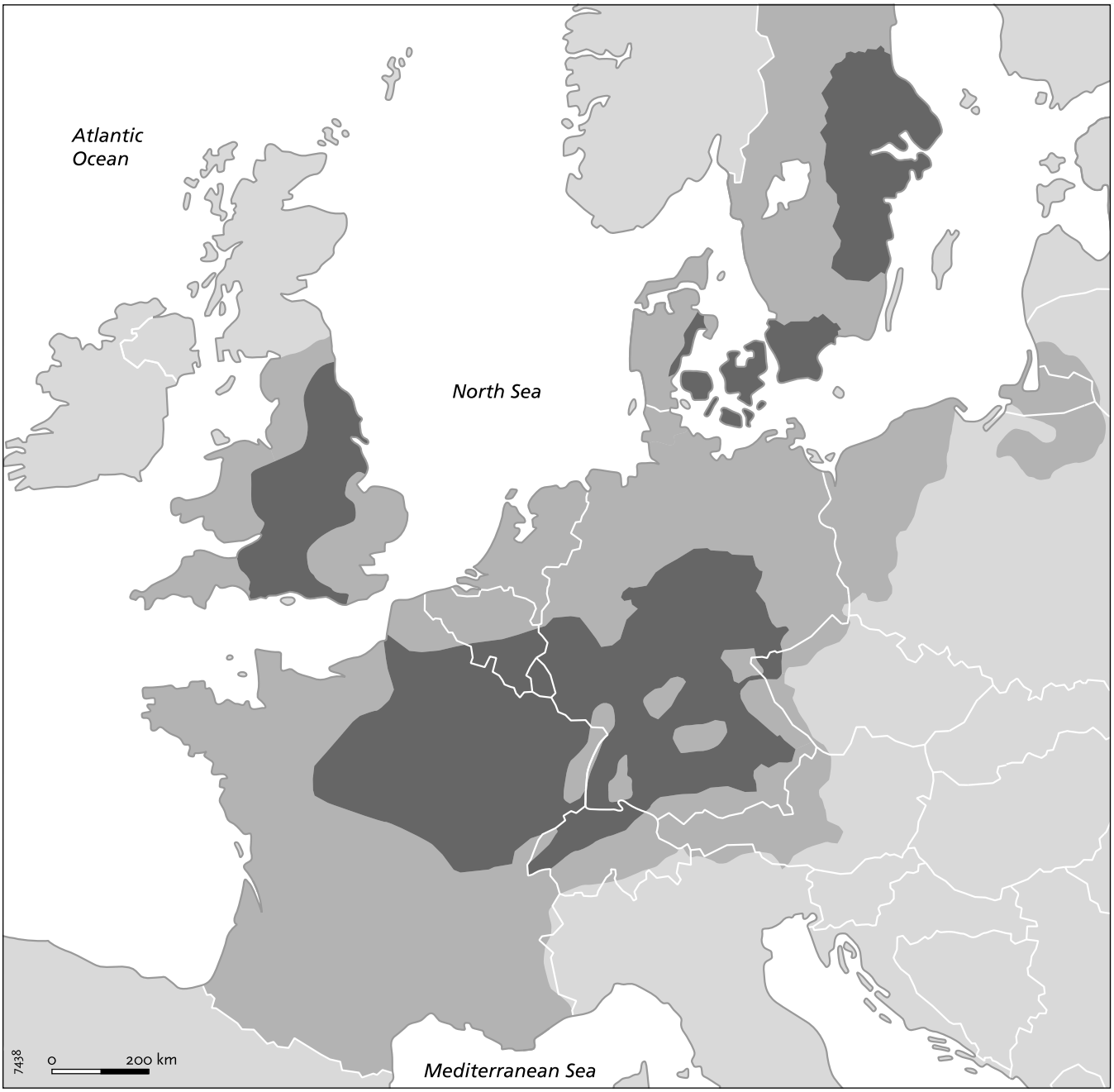

Fig. 1. *Field systems in pre-industrial Europe, according to Hopcroft (1999, 21); with additions after Frandsen 1988). She distinguishes a core region with 'communal open fields' (comparable to what other authors call 'regular open fields') surrounded by zones with 'less communal' or more individually managed open fields.*

fields (*Krenzlin 1961b*, 23; *Fox 1981*, 66). The introduction of such a system must have implied a reorganisation and a further fragmentation of landownership.

The different varieties of common fields are often called 'regular' open-field systems as against the 'irregular', more individual systems. Regular systems could mainly be found in the core regions of medieval open field agriculture, as they were mapped by the American sociologist *Rosemary Hopcroft* (*1999*; fig. 1). But even there, systems that operated on an individual basis could be found, as in the large open fields in the southernmost part of the Netherlands and the neighbouring part of Belgium. In some cases, manors seem to have followed an enforced crop rotation on their own land (*Hackeng 2006*). A comparable situation is known from 16th-century Hessen (Germany), but here, as in some other parts of Germany, three-field systems with forced crop rotations seem to have gained ground during the 17th and 18th centuries (*Scharlau 1961,* 271)

Phase 1: Origins and growth (9th – early 14th centuries)

Written sources mention arable with unenclosed strips around the 10th century (*Banham 2010*, 189). This seems to have been a period of transformation. In many regions, a period lasting several centuries in which settlements were often relocated, came to an end. From this period, most settlements and their arable lands kept the same location for centuries. Most of the arable lands during that period must have been small and were surrounded by extensive forests and rough pastures.

Following that period, development took different directions. Some regions developed into the grain baskets of high-medieval Europe. In these regions, during the 12th and 13th centuries, and in some instances even earlier (*Dyer 2003*, 15), the open arable fields came to occupy entire village territories. In other regions, the arable was concentrated in small open fields or in individual enclosures, as part of systems of mixed farming, combining arable with animal husbandry (*Spek 2004*). These different developments suggest a growing regional specialisation.

The early origins of open fields still pose a number of questions, that may be the subject of further study.

Older landscape features

One of these questions concerns the relation to the earlier landscape from Iron Age, Roman and Dark Age periods. While the spread of open fields meant a transformation of the landscape, the local development was often gradual and could take place within existing landscape structures. Landscape archaeologists find a growing number of older field boundaries that have survived as boundaries in the later open fields (*Taylor – Fowler 1978; Oosthuizen 2006; Chadwick 2013; Rippon et al. 2013*; *Williamson 1988,* 6). Further insights may be derived from archaeological excavations of fossil fields under later fields (*Astill 1988,* 69).

Open fields and settlement nucleation

An intriguing question concerns the often-suggested relationship between open fields and settlement nucleation. This relationship is certainly not as simple as has often been suggested in the past (*Rippon 2008:* 13*; Oosthuizen 2013*). In the first place, open fields occur in combination with very different settlement types. In many regions, small – and sometimes also larger – open fields are combined with hamlets and dispersed farms (see for example *Flatrès 1957*, 420; *Roberts – Wrathmell 2002*, who also show the nuances and complexities). Still, in the medieval core regions of the open-field landscapes, the large common fields are almost everywhere combined with nucleated villages. One reason for this must have been functional: with continuing fragmentation it became ever less useful to live amidst one's property. The village, with its central position in the pattern of field ways, became the best place to build a farm. This must be one of the explanations for the change from a pattern of dispersed settlement to one of concentrated villages and the desertion of older dispersed hamlets and farms. Such developments have been described in Britain as well as on the Continent (*Williamson 2003*, 13–14; *Lewis et al. 1997; Schreg 2006,* 153, 158).

The medieval nucleated villages must have had a relatively open structure, often with farms situated around a village green. The very large, densely built settlements that are known in German literature as *Haufendörfer* mainly date from Early Modern population growth, when the houses of cottagers and labourers filled the gaps between the old established farms as well as, in many cases, the village green (for examples: *Vits* 1999, 104; *Williamson* 2013, Plate 27).

In the oldest development of villages and open fields, there are still questions of chronology. The dating of the process of settlement concentration is still not completely clear; estimations vary between the 8th and 12th centuries and, in a very interesting contribution, Tony Brown and Glenn Foard even concluded that the concentration of villages preceded the development of the common fields, making the connection between the two still more complex (*Brown – Foard 1998; Higham 2010*, 11). Moreover, the connection with the agrarian system is not always obvious.

Landownership and field patterns

Another challenge is the connection between different data and sources. Whereas in many deserted open fields the evidence comes from the landscape archaeological study of, particularly, ridge and furrow (see below), on the Continent a very different tradition exists of research into the historical development of the patterns of landownership. This tradition started with the great pioneering work of the German researcher August Meitzen, who mapped different field patterns on the basis of 19th-century cadastral maps, explaining the differences according to the ethnic origins of the local population (*Meitzen 1895*; fig. 2). Meitzen's work was later transferred to the English landscape by *Howard Levi Gray* (*1915*).

During the 1950s and 1960s German geographers in particular have used these data as a starting point for research into the earlier development of the field patterns. From the oldest cadastral maps, they struggled through enormous amounts of archival data on land transactions to arrive at the medieval ownership patterns. With this method, a much less fragmented late medieval landscape was reconstructed, particularly by *Anneliese Krenzlin* (*1961a; Krenzlin – Reusch 1961*).

The fragmentation of landownership is usually attributed to population pressure. Particularly in periods of population growth, the fragmentation of landownership intensified. In the core regions of the open-field landscapes, extremely fragmented strip-field patterns already existed during the 13th century, while in other regions the fragmentation process was concentrated in the 16th and 18th centuries (*Krenzlin 1961b*). In most of the open fields the smallest units of ownership were narrow strips, although open fields with block-shaped fields did exist.

The narrow strips that characterised most open fields can partly be explained by the practice of subdivision: when a field is subdivided, the easiest way is to draw parallel lines from one of the sides. However, there were also agrarian-technical reasons, in particular the influence of the heavy, poorly manoeuvrable

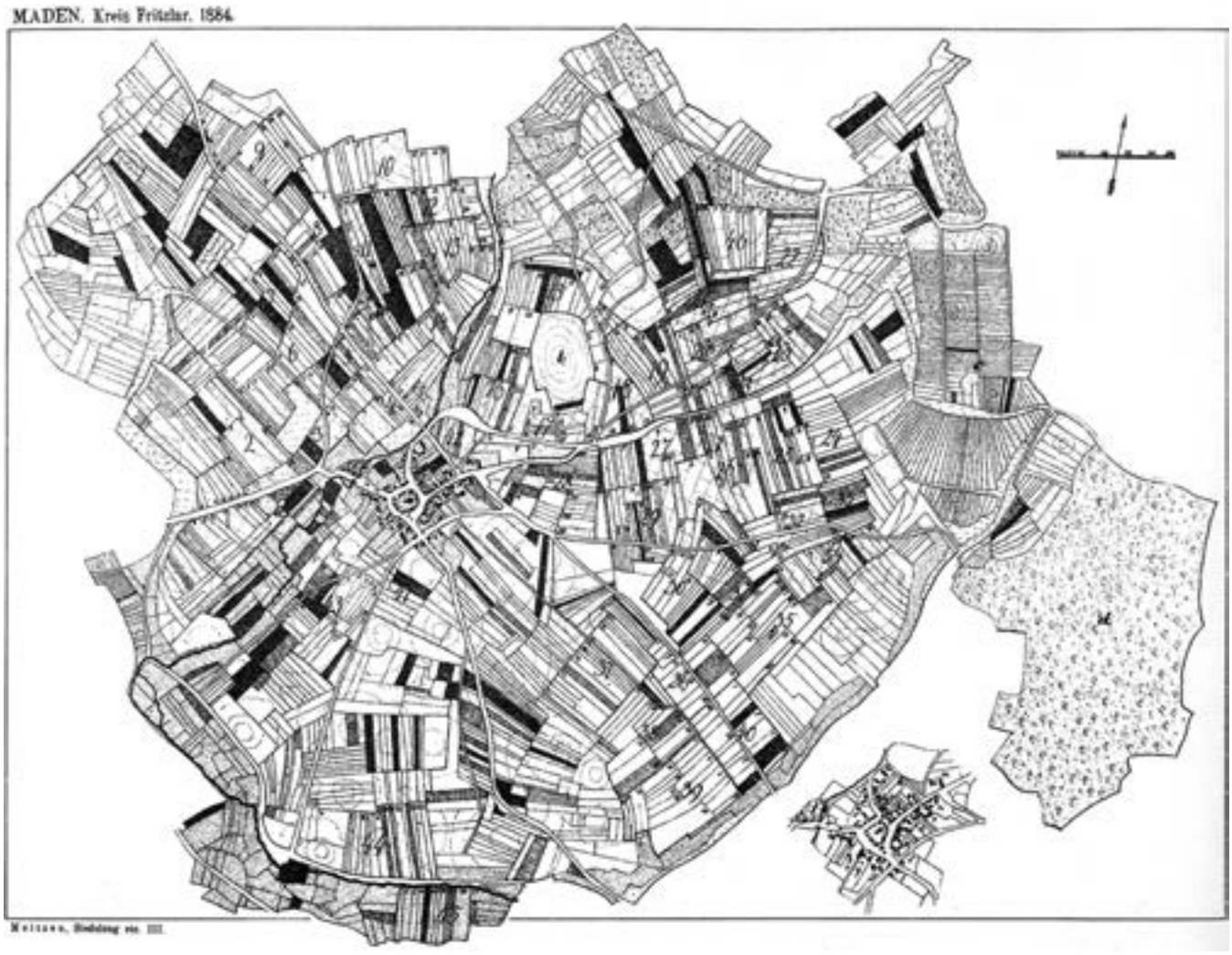

Fig. 2. *A map from Meitzen's book on settlement, showing a densely built village surrounded by an open field.*

plough that during the Middle Ages was drawn by a team of oxen, further diminishing its manoeuvrability. This made strip fields easier to manage. This ploughing practice also explains the reversed S-shape of many medieval strips, which made the turning at the end of the field easier, with ploughs that usually had the mouldboard on the right-hand side (*Eyre 1955*).

However, patterns of landownership, as reconstructed through archival study and cadastral or estate maps, differ from the agrarian technical strips that are mapped by landscape archaeologists in deserted open fields.

Field boundaries

A characteristic of open fields is that the boundaries between the individually owned sections were not marked by hedges or other visible elements. In open fields that were ploughed in ridge and furrow it was easy to recognise the individual parcels. Elsewhere, this must have been difficult, especially when large open fields were ploughed or sown at the same time.

There has been some discussion on the question of whether balks have been used as strip boundaries. Beecham found no reliable evidence in written sources (*Beecham 1956*), but recent publications present some proof (*Hall 2014*). A method that has certainly been used is the placing of boundary stones or wooden stakes (*Rackham 1986*, 173–174) at the corners of the strips. Such boundary markers are still in use (fig. 3) and corner stones have been found in archaeological research (*Verspay 2011*, 141–143; see also his paper in this volume).

Grain trade and grain milling

When we connect the growth of open fields to the development of large-scale grain production, there is yet another source that can give indirect access to the chronology. This source is the growth of the number of large corn mills, especially watermills with vertical water wheels and, in flat landscapes, windmills. In general, there is insufficient research into the larger picture of the diffusion of these mills, as most of the archaeological as well as molinological research seems mainly interested in individual mills. Only a few historians have shown interest in the quantitative aspects. In Poland, for example, the number of grain mills grew substantially around 1200 (*Hoffmann 1989,* 53). For England, Darby estimated 6,082 mills in 1086 (*Darby 1977*, 361), a number that may have risen to an all-time high of 10,000 or even 12,000 corn mills around 1300 (*Holt 1988*, 116). Between 1300 and the 1370s, the number of grain mills dropped by 15% (*Langdon 2004*, 28, 41). This reflects a downward tendency that probably started in the middle of the 14th century, related to population decline (the Black Death). Later, numbers continued to fall, with changes in land use. As far as we know, such systematic studies are unknown in continental Europe.

Fig. 3. *A boundary stone marking the fieldstrips of two farmers on the small open field of the hamlet of Emmikhuizen in the central Netherlands. Location: 52°02'41" N / 1°31'33" W*

Phase 2: Crisis and transformations (early 14th century – present)

This brings us to the second important period in the development of open fields. The open fields reached their heyday in the early 14th century (*Renes 2010*; Fig. 4). The late medieval demographic and economic crisis brought about a restructuring of European agriculture. The demand for grain diminished dramatically, whereas the demand for animal products and wine held up better. As always in such circumstances, different regions reacted in different ways. In many regions, the open-field systems kept on functioning; in other regions they gave way to pasture, vineyards or

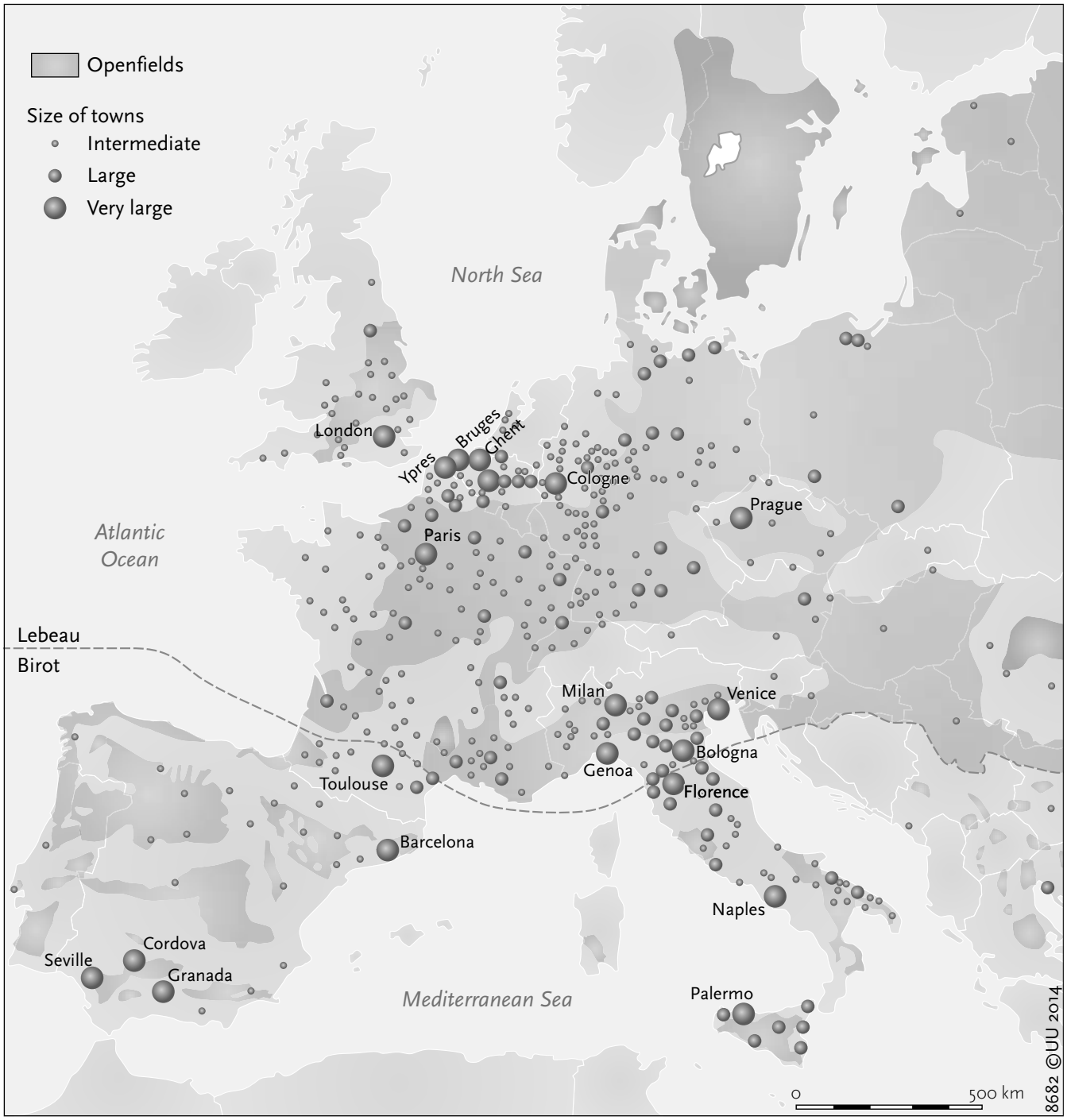

Fig. 4. *Open fields and towns in Europe. The open fields in the Mediterranean are based on Birot (Birot – Gabert 1964), for the remaining parts of Europe on Lebeau (1969), for England changed after Rackham (1986). The towns are based on Pounds' map of European towns in the fourteenth century (Pounds 1990, 164).*

(in parts of Central Europe and in regions with poor sandy soils in France) fishponds. In a number of 'peripheral' regions the open fields were laid waste, together with the settlements to which they belonged. A fundamental change took place in the British Isles and particularly in the old core region of open-field agriculture in Central England ('the Central Province'; *Roberts – Wrathmell 2002*). Here, a centuries-long process of conversion began, turning open fields to sheep pastures, leading to the gradual disappearance of open fields in the British Isles (*Hooke 2010*).

Together with demographic and economic recovery, the Early Modern period brought further changes in the geography of the open fields. Regional markets gave way to a European market for grain, resulting in another reorganisation of the agrarian landscapes of Europe. We might summarise this as an eastward shift of

the open fields. On the one hand, their slow disappearance from the British Isles continued through a number of processes: [1] the spread of sheep farming in the 'Central Province'; [2] a second stage of the enclosure movement when arable lands were consolidated and enclosed; and [3] the disappearance of peasant arable from the hills and, from the end of the 18th century onwards, from the Scottish Highlands and Islands.

But these processes were not limited to the British Isles. On the Continent, large parts of western France (particularly Normandy) underwent a process towards specialisation in animal husbandry, which was connected to the growth of Paris in particular. Also in some other urban regions, open fields gave way to enclosed pasture, as, for example, in the present border region of Belgium, Germany and the Netherlands, around the cities of Liège and Aix-la-Chapelle.

At the same time, new open-field landscapes with regular three-field systems were laid out in parts of Eastern Europe, particularly in the present border regions of Poland, Belorussia and Lithuania (*French 1983*).

Many of the older open-field landscapes of continental Europe survived. To face increasing competition, most of these landscapes were modernised during the Early Modern and Modern periods. For example, the open fields in Denmark and Sweden were enclosed in the decades around 1800 to make them more compatible in the international competition for arable products. In parts of Germany during the 19th century, a number of open fields were reconstructed in order to improve the road system. While the fragmentation of land continued, it did not appear to be problematic.

Where open fields disappeared, they sometimes left traces in the landscape, which can provide important information on the medieval landscape.

Ridge and furrow and headlands

One of the main relics of the medieval open fields are the remains of ridge and furrow (German: *Wölbäcker*; *Fig. 5*). Ridge and furrow is the outcome of ploughing along the same lines, turning the furrow inwards, for many years. The ridges must have been appreciated by the farmers (*Astill 1988*, 70): with the same ploughing equipment, flat ploughing was possible cutting one season's furrow through the previous season's ridge (*O'Keeffe 2000*, 64). The ridges could be very high and steep-sided, hence the references to 'high-backs' in some parts of England (*Eyre 1955*, 87). However, we have to realise that ridge and furrow only partly overlaps with open fields. It occurs also in other landscape types and many open fields have never known ridge and furrow, which seems to have been particularly useful on heavy soils that were difficult to drain. However, the medieval distribution is still unclear. In many regions that remained arable during the Early Modern period and in the 19th century, ridge and furrow disappeared with agricultural modernisation that included cross-ploughing and underdrainage after enclosure (*Liddiard 1999*).

The age of ridge and furrow varies. Parts are certainly medieval: traces have been found under – or have been dissected by – certainly younger landscape features that date from the 11th or 12th century (*Taylor 1981*). Other examples date from the Early Modern

Fig. 5. *Medieval ridge and furrow above Wood Stanway. Location: 51°58'57" N / 1°54'15" W*

Fig. 6. *A headland west of Moreton-in-Marsh (Cotswolds, England). The footpath follows a headland that divides fields with different directions of ridge and furrow. Location: c. 51°59' N / 1°44' W*

period or even from the early 19th century (*Eyre 1955*, 80). Many have been used for a long time and even reflect adaptations to technological or other developments (*Wilson 1989*).

Until the middle of the 20th century (and partly even today) large regions in the English Midlands were still characterised by ridge and furrow topography. Ridges and furrows were mapped by fieldwork and from air photographs, and in a number of regions they have made it possible to map the former (open) arable. Smaller traces have been found on the Continent, mainly in regions that were under forest. There they are difficult to map; only recently have detailed LIDAR techniques made a more systematic mapping possible (see, for example, *Ewald – Klaus 2010*, 87).

In areas that were used as arable during the 19th and 20th centuries, the traces of ridge and furrow have disappeared with ploughing, although the former headlands (German: *Ackerbergen*; *Fig. 6*) on the boundaries of furlongs may survive much longer (*Taylor 1975*, 84).

Fossilised strips

The enclosure of open fields has in many cases been drastic, for example in many parts of England and in most of Denmark and South Sweden. In many other cases, however, enclosure was piecemeal and left traces in the new field pattern. Former open-field strips that have been fossilised in the later enclosed landscape can be seen on modern air photographs on the British Isles, in Normandy and in the North of Germany, to mention only the most obvious examples.

Epilogue

The landscapes of open fields were the agrarian core regions of medieval Europe. In considering open fields, two things stand out.

First, the large and intensively organised open fields, especially, must be seen as a specialised agrarian landscape that functioned within a context of regionalised markets. The open fields can therefore not be studied without taking into account their connections to urbanised regions and the enclosed and mountainous regions that specialised in animal husbandry and in forestry.

Second, the geography of open fields changed during the Late Middle Ages and the Early Modern period, first through population decline and crisis, but later also with the emergence of a pan-European market for grain and the growing (urban) demand for a varied food supply.

Research on this topic has come from different disciplines. On the Continent, since the late 19th century, geographers have focused on reconstructing settlement types and field patterns. Most (but not all) geographers lost their interest in this type of research during the 1970s, but medieval historians have shown increasing interest.

Another type of research came from the interest in deserted settlements and fields, also started by geographers but gradually taken over on the Continent by landscape archaeologists and in the British Isles by interdisciplinary groups of landscape archaeologists, landscape historians and a few geographers.

However, results from different disciplines have to

be combined to make any further progress in this type of study. Therefore, historiographic knowledge of the older research and research traditions is, in my opinion, extremely important.

Summary

The landscapes of open fields were the grain baskets of medieval Europe. The term 'open fields' refers to the large arable fields that have an open character because the individual parcels of the owners were not surrounded by hedges, woodbanks, drystone walls or other visible boundaries. In this paper, I focus on the traces of open fields in different parts of Europe, distinguishing two periods. The first period, up to the early 14th century, covers the period of origin and growth. The heyday of the open fields ended during the first half of the 14th century due to population decline, which was followed by a series of reorganisations of the European landscape (the second period, until the present day). Both these periods have left traces in the European landscape.

Zusammenfassung

Die Landschaften der offenen Feldfluren waren die Kornkammern des mittelalterlichen Europas. Der Begriff "offene Feldflur" bezieht sich auf großen Ackerflächen, die einen offenen Charakter haben, da die einzelnen Parzellen von den Eigentümern nicht von Hecken, Baumreihen, Trockenmauern oder anderen sichtbaren Grenzen umgeben wurden. In diesem Beitrag konzentriere ich mich auf die Spuren von offenen Feldern in verschiedenen Teilen Europas in zwei Zeiträumen. Die erste Zeitspanne reicht bis zum frühen 14. Jahrhundert und umfasst den Zeitraum der Entstehung und Entwicklung der offenen Feldfluren. Die Blütezeit endete in der ersten Hälfte des 14. Jahrhunderts aufgrund eines Bevölkerungsrückgangs, es folgte eine Reihe von Veränderungen in Europa in der folgenden zweiten Periode, die bis heute andauert. Beide Phasen haben Spuren in der europäischen Landschaft hinterlassen.

Résumé

Les paysages de champs ouverts furent le grenier à grains de l'Europe médiévale. Le terme « champ ouvert » fait référence aux larges champs labourables qui ont un caractère « ouvert » parce que les parcelles individuelles ne sont pas entourées de haies, palissades ou murs ni autres limites. Dans cet article, je me concentre sur les traces de champs ouverts dans les différentes régions d'Europe, distinguant deux périodes. La première, jusqu'au 14e siècle couvre la période des débuts et de la croissance. L'apogée des champs ouverts se termine dans la première moitié du 14e siècle, liée au déclin de la population et fut suivi par une série de réorganisations du paysage en Europe (la seconde période, jusqu'à nos jours). Ces deux périodes ont laissé des traces dans le paysage européen.

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