

Secondary Publication



Schreg, Rainer

Late medieval deserted settlements in Southern Germany as a consequence of long-term landscape transformations

Date of secondary publication: 27.02.2023

Version of Record (Published Version), Bookpart

Persistent identifier: urn:nbn:de:bvb:473-irb-585165

Primary publication

Schreg, Rainer: Late medieval deserted settlements in Southern Germany as a consequence of long-term landscape transformations. In: Settlement change across Medieval Europe Old paradigms and new vistas. Brady, Nial; Theune, Claudia (Hg). Leiden : Sidestone Press, 2019. S. 161-170.

Legal Notice

This work is protected by copyright and/or the indication of a licence. You are free to use this work in any way permitted by the copyright and/or the licence that applies to your usage. For other uses, you must obtain permission from the rights-holder(s).

This document is made available under a Creative Commons license.



The license information is available online:

<https://creativecommons.org/licenses/by/4.0/legalcode>

Late medieval deserted settlements in southern Germany as a consequence of long-term landscape transformations

*Rainer Schreg**

Abstract

The huge number of deserted late medieval settlements in southern Germany has been explained by the consequences of epidemics, feuds, and economic crisis. However, based on an ecological perspective, we need to ask how the late medieval crisis was embedded in long-term landscape transformations. Looking back to the early medieval settlement landscape, we recognize fundamental changes in land-use practices, which were hardly visible in the written record. It can be considered a fact that the formation of the medieval village and the related introduction of an open-field system had a major impact on the medieval landscape and the interaction between men and nature. This paper demonstrates the possible lines between high medieval village formation and the late medieval crisis several generations later. Even if the resulting interpretation is necessarily very hypothetical in many points, it refers to some fundamental issues in the understanding of long-term transformations of rural landscapes and challenges the current practice of rescue excavations in Germany.

Keywords: *Deserted settlements, human ecology, open-field system, village formation, Black Death.*

Resumé

Villages désertés en Allemagne du Sud comme conséquence des transformations du paysage à long-terme

Le grand nombre des villages du Bas Moyen âge désertés en Allemagne méridionale a souvent été justifié par l'histoire, par exemple au travers d'événements tels épidémies, guerres ou crises économiques. Mais d'un point de vue écologique, nous pouvons nous demander si et en quoi ce phénomène a pu être le résultat d'une transformation à long-terme du paysage. Depuis le Haut Moyen Âge, on constate des changements fondamentaux dans les pratiques agricoles qui ne sont pas forcément cités clairement dans les sources manuscrites. On est alors en droit de penser que la genèse des villages

* Otto-Friedrich-Universität
Bamberg
Archäologie des Mittelalters und
der Neuzeit
Am Kranen 14
96047 Bamberg
Deutschland
rainer.schreg@uni-bamberg.de

médiévaux et l'établissement de la rotation triennale des cultures qui y est lié ont fortement changé le paysage et les relations entre l'homme et l'environnement.

Cet article vise à montrer les liens possibles entre la genèse des villages du Haut Moyen Âge et la crise du Bas Moyen Âge. Même si l'interprétation qui en résulte est sur de nombreux points très hypothétique, elle renvoie à des questions fondamentales pour la compréhension des transformations à long terme des paysages ruraux et confronte la pratique des fouilles de sauvetage en Allemagne à de nouveaux et urgents défis.

Mots clés: *Villages désertés, écologie, assolement triennal, morphogénèse du village, peste noire.*

Zusammenfassung

Spätmittelalterliche Wüstungen in Süddeutschland als Folge eines langfristigen Wandels der Kulturlandschaft

Die große Zahl an Wüstungen in Süddeutschland wurde meist historisch, das heisst aus Einzelereignissen wie Epidemien, Kriegen oder auch wirtschaftlichen

Deserted medieval settlements in southern Germany

As in other European landscapes, there are a huge number of deserted late medieval settlements in southern Germany (Fig. 1). They attracted scientific interest in the 19th century, but even today, the state of research is unsatisfactory. There is a lack of adequate inventories and many sites lack archaeological data. Consequently, it is hard to understand the process of desertion and its chronological dynamics.

The state of research: Excavations and surveys

Whereas for some regions in the northern periphery of the German Middle Range Mountains there are modern studies on deserted settlements (*Stephan 1979; Bergmann 1989; 2015; Gerking 1995*), comparable studies are missing for vast parts of southern Germany. In Württemberg for example, the baseline study dates back to the 1920s (*Weber 1927*), only having been updated by an unpublished doctoral thesis in the 1950s (*Veith 1957*). Ever since, there have been overviews for some small regions (*e.g. Grees 1982; Hildebrandt 1997*). Even the inventory of archaeological and historical monuments of the State Department of Cultural Heritage in Baden-Württemberg (Listenerfassung/ADAB) is far from being complete, and for reasons of data privacy and site protection it is not available publicly. The registration,

Konjunkturen erklärt. Aus einer ökologischen Perspektive stellt sich aber die Frage, inwiefern das Wüstungsphänomen nicht auch Folge langfristigen Landschaftswandels sein kann. Seit dem frühen Mittelalter lässt sich ein grundlegender Wandel erschließen, wenn dieser auch in den schriftlichen Quellen nicht immer klar zutage tritt. Es muss davon ausgegangen werden, dass die Genese des mittelalterlichen Dorfes und die mit ihr verbundene Etablierung der Dreizegenwirtschaft die Kulturlandschaft und die Mensch-Umwelt-Interaktion stark verändert hat.

Der Beitrag skizziert mögliche Verbindungen zwischen der hochmittelalterlichen Dorfgenese und der Krise des späten Mittelalters. Wenn hier auch Vieles hypothetisch bleiben muss, so lassen sich doch einige grundlegende Themen identifizieren, die für das Verständnis des Kulturlandschaftswandels von zentraler Bedeutung sind – und die die aktuelle Praxis der denkmalpflegerischen Notgrabungen vor dringende Herausforderungen stellen.

Schlagwörter: *Wüstungen, Humanökologie, Dreizegenwirtschaft, Dorfgenese, Krise des 14. Jahrhunderts.*

which originally did not list medieval sites, does not include field surveys or in-depth archival research, being based only on previous published sources. In Bavaria the situation is quite similar, as there is also a more recent inventory of abandoned settlements in only a few regions (*e.g. Jakob 1984; Becker – Ericsson 2004*). The online database (Bayerischer Denkmaltatlas) does not have sufficient information to be of scientific use.

Some research progress comes from cultural heritage management, due to an increasing number of rescue excavations. The archaeological record is therefore biased. Excavations during the development of new settlement and industrial areas mainly revealed settlement remains related to earlier phases of still-existing villages. Early and high medieval sites in the periphery of existing villages represent a process of settlement concentration of the 12th/13th centuries (*Schreg 2006; 2009b*). These settlements were characterized by houses constructed with posts dug into the earth and pit houses that lack substantial stone architecture (*Schreg 2012a*).

In general, late medieval sites are situated at larger distances from modern villages and are rarely affected by construction sites. Sometimes late medieval abandoned settlements have been affected by linear projects such as pipelines, railways, or motorways. In the past, most of these projects were related to infrastructure projects after the German reunification, which is why more deserted medieval settlements have been carried out in the last decades, for example in Sachsen-Anhalt or Brandenburg

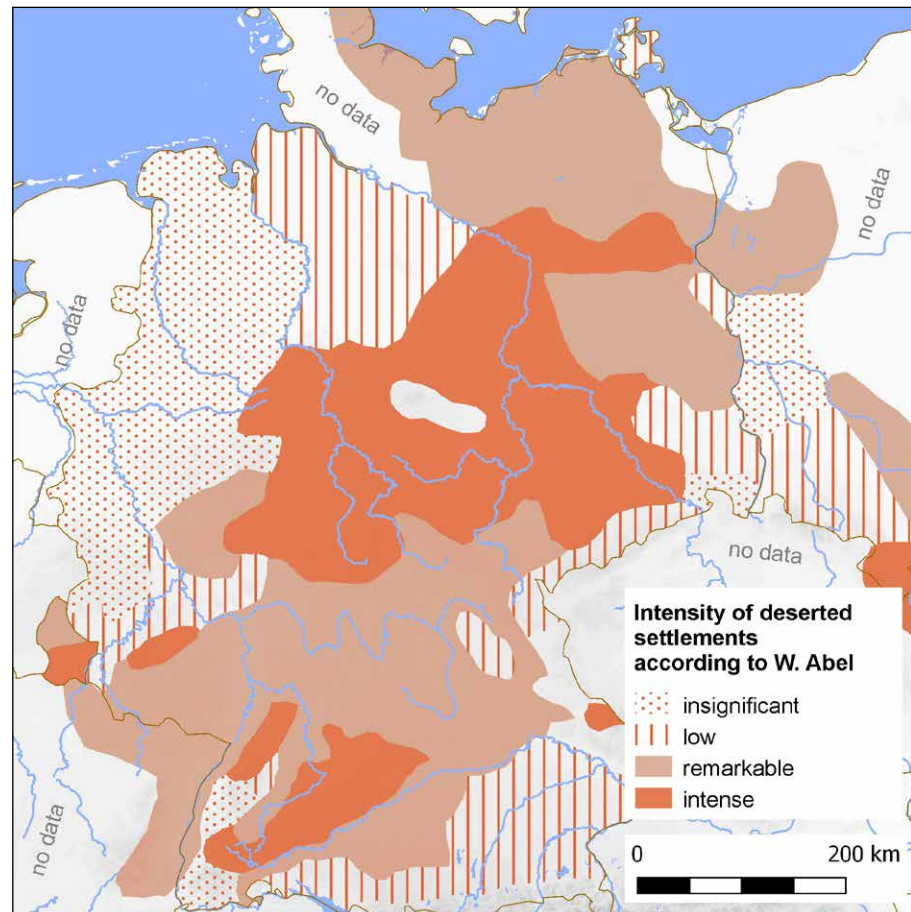


Fig. 1: Deserted settlements in Germany (© Rainer Schreg, redrawn after Abel 1976).

(Grothe – Kobbe 2006; Meller 2006; Eickhoff 2006; Biermann 2010). In southern Germany, there have been some rescue excavations since the 1970s, with the results of most only being published in preliminary reports (comp. Schreg 2009c). With the exception of churches, only very few buildings were constructed in stone. At most sites, pit houses and postholes predominate, but rural architecture as it is manifest in still-existing villages is missing. Due to a lack of excavations and buildings archaeology in rural villages, we only have very few insights into this change (Uhl 2001; Schreg 2002).

Outside of the intensively cultivated agrarian and rather forested landscapes, there has been little need for preventive archaeology. Important information comes from research projects, such as Hohenrode in the Harz Mountains (Grimm 1939), Pfaffenschlag in Moravia (Nekuda 1975), or Hard in Lower Austria (Felgenhauer-Schmiedt 2008). Intensive work has also been conducted in Lower Saxony and Westphalia (e.g. Hesse 2003; Janssen 1965; Stephan – Tönsmeier 2010), but again, there is little comparable work in southern Germany. Recent research has mainly used non-invasive methods and small-scale excavations, as at Lindelach (Michl 2017) or Oberwüzbach in the northern Black Forest (Schreg 2009a; 2013; Thode 2014).

As a result of archaeological research during the last decades, it has become clear that rural settlement changes have been more intensive and more complex than previously thought. Many ideas and opinions held dear for quite a long time have been challenged, as, for example, the idea of constant settlement locations going back to the migration period, or the medieval colonisation of an unsettled wilderness and the overestimated role of the aristocracy and monasteries (Schreg 2006; 2014; 2018a; 2018b).

Previous hypotheses on desertion

Thinking about the reasons behind late medieval settlement desertion, we also need to be aware of some little reflected paradigms that affected previous hypotheses. The dominating narrative about the Middle Ages is still that of continuity. As do many other national states, Germany traces its origins back to the Early Middle Ages, but also at a local level many villages are proud of their histories going back to the so-called Germanic *landnam* ('Landnahme'). Moreover, there is the idea that peasants did not have a history (Spengler 1923, 668), except for some progress in agrarian techniques and land expansion by clearance and

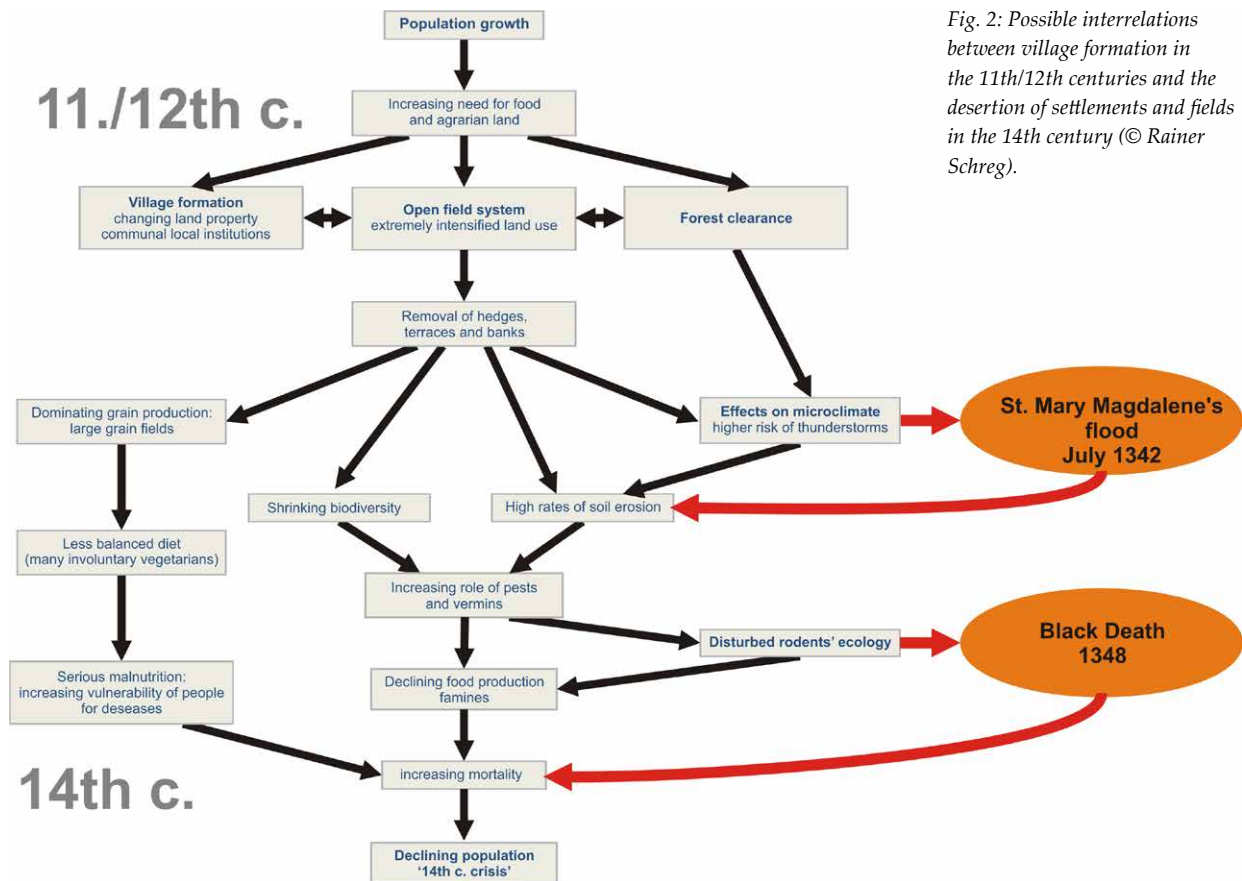


Fig. 2: Possible interrelations between village formation in the 11th/12th centuries and the desertion of settlements and fields in the 14th century (© Rainer Schreg).

colonisation. Because deserted settlements did not fit into this picture, they have been explained by extraordinary historical reasons, as the Black Death in the 14th century, the 30 Years' War in the 17th century, or some regional wars and feuds. Also, there is the idea of mistaken settlement locations – *this Fehlsiedlungstheorie* did not recognise settlement abandonment as a phenomenon of structural changes, but takes them rather as an exceptional aberration within an ongoing settlement expansion (Abel 1976, 98). Geographer Otto Schlüter, well aware of deserted settlement, talked about 'negative settlement development' (Schlüter 1903, 202), but neglected them when he created a map of settlement history in Germany (Schlüter 1952).

In contrast, the theory of a late medieval agrarian crisis by economic historian Wilhelm Abel, developed in the 1930s and 40s, explained settlement desertion by a long-term economic process (Abel 1976, 103-119). He suggested that after a period of increasing demand for grain, declining yields during the 14th century caused poverty and a higher vulnerability against diseases. As a consequence, various plagues including the Black Death hit the population, the demand for agrarian products declined, and prices for agrarian products fell and made farming unviable. Peasants closed down their farms and migrated into the towns.

It is only recently that environmental factors have been taken into account. There are some oral traditions of settlements abandoned due to heavy weather events or floods, not only at the Northern Sea but also in southern Germany (e.g. Bollenweiler close to Hofstett-Emerbuch [Alb-Donau-Kreis] destroyed by a thunderstorm: *Schaal et al. ca 1920, 62* or Weil am Bach near Tübingen destroyed by fire and hail: *Königlich Statistisches Landesamt 1867, 390*). Whereas earlier research understood these events as occasional natural events (*'Zufallereignisse': Weber 1927, 202*) today they raise the question of possible ecological settings. Recent research has investigated the role of climate change (Rösener 2010) and the meaning of soil erosion (Bork et al. 1998). The modern interest in human-environment interaction has resulted in a perspective focussing much more on long-term processes, complex relations between causes and effects, and the specific role of various factors and agents.

A long-term scenario of human-environment interaction

In the framework of this article, it is not possible to start with huge data series, which still need to be compiled according to modern scientific standards and methods.

Instead, an empirical argumentation based on previous research will be used, in order to sketch a possible long-term scenario of human-environment interaction causing the late medieval crisis and settlement desertion (Fig. 2). This scenario has to consider a huge variety of factors and agents, should integrate the present state of research, and has to be sceptical of common narratives, as there are many myths, unproven paradigms, and misleading concepts about medieval agrarian history.

The formation of the medieval village and the end of the shifting farmsteads system

Between the 11th and the 13th century remarkable reorganisations of the rural settlement pattern took place. It is possible to trace similar processes in many European landscapes. There were some differences from region to region, but in general it was the most crucial phase of the formation of the late medieval and early modern village. Only then were closed villages established around the most often already existing churches. In many cases it is possible to observe earlier settlement areas on the periphery of the late medieval/early modern village, as it is still visible in preserved architecture, rentals, and maps. However, this formation of the village was not only a clustering of farmsteads around a church, but was connected with changes in the rural communities, the architecture, and land management. The written record refers to the increasing importance of local communities, which form their own institutions, such as village mayors (Schreg 2006).

Of some significance for the long-term development was the fact that settlements became constant in one place. Since then, most of the villages show continuity in terms of their location for around 700 years. The settlement system of the earlier Middle Ages, however, was characterized by the relocations of farmsteads. Even if in some cases settlements stayed in the same spot over a long time period, only showing minor changes within the farmstead itself, there are surprisingly many cases where the whole settlement slowly moved over small distances (Schreg 2012b).

From shifting fields to an open regulated field system

This restructuring was probably not limited to the settlement itself, but was closely connected with a reorganisation of the fields. The introduction of the regulated open field system was strongly connected with the formation of the late medieval village, which clustered the farms at a central location. Historical sources do not distinguish explicitly between a simple three-field crop rotation (*'Dreifelderwirtschaft'*) and the regulated unenclosed three-field system (*'Dreizelgenwirtschaft'*). This is, however, an important distinction. Crop rotation

with spring grain, winter grain, and a fallow period had been practiced since antiquity. This rotation could be done individually on single fields, given that they were probably enclosed by hedges to prevent crop damage by livestock. These enclosures prevented efficient ploughing, as the hedges were an inconvenient barrier. A regulated open field system in which adjoining fields were subject to coordinated crop and pastoral regimes (*'Dreizelgenwirtschaft'*) reduced the need for enclosures and allowed turning the plough team on neighbouring ground. This relied on organized, compulsory crop rotation (*'Flurzwang'*). Roughly 10% of land was gained within the densely settled landscapes. This reorganisation had consequences for land property. On the one hand, land had to be reallocated to give all farmsteads equal land in each of the three field complexes. On the other hand, the regulated open field system stimulated distinct land property (Schreg 2016, 358). Several historical studies have argued toward the development of private land property since the 9th/10th centuries (Bois 1999; Rosenwein 1989).

It is remarkable that there are no written documents related to either the formation of the late medieval village or the exchange of fields among local peasants. Obviously, land transfers were agreed upon between non-literate farmers and did not conflict with manorial property rights for feuds or taxes. Despite this lack of written evidence, the archaeological record of settlement relocations clearly shows that shifting settlements and subsequent village nucleation were nothing extraordinary or influenced by authorities, but seemingly embedded in communal socio-economic practice (Schreg 2012b; Romankiewicz et al. in prep.).

In order to understand the meaning of these changes, we need to take a closer look at the agrarian landscape before the village formation. Shifting farmsteads and fields were probably an integral part of the early and high medieval land-use systems, which probably comprised crop rotation on individual fields, but also midterm changes between fields, gardens, farmsteads, and maybe even shrubbery. Excavations in the Netherlands confirm that settlements were ploughed after abandonment (Heidinga 1987). The farm buildings, enriched with nutrients, thus facilitated the turning of houses into fertile fields. There is little evidence of the physical outline of fields in the Early Middle Ages, as there are no systematic studies on preserved fossil fields. Former geographical research, however, has pointed to a development from block-shaped parcels into furlong complexes (Schreg 2016).

More-vulnerable open field landscapes

Although the new open fields system was much more effective in the exploitation of space, the removal of

hedges in the open field system created an open landscape with several ecological consequences. In the short term, the open field system helped to overcome challenges deriving from increasing population by freeing more land for cultivation. In the long term, however, there may have been some negative consequences.

The transition from shifting settlements to permanent villages associated with open fields was a break with the old practice. When settlements and fields became fixed, in the time between the 11th and 13th centuries, this had consequences for manuring practice. Now the fields were permanently used for grain cultivation only, with a fallow period every three years but without the possibility for a longer regeneration period of the soil.

In the shifting settlement system, fields were brought to the nutrients accumulated in the settlements, but now nutrients had to be brought to the fields. However, archaeological field data of pottery scatters on fields suggest that there was a manuring gap between the end of the shifting settlement system in the 11th/13th centuries and the 14th/15th centuries. Only then – at least, in several regions of southwest Germany – can we identify pottery sherds that probably were distributed with the dung. At least in southwest Germany we need to think of a 100-200 years' manuring gap, between 2-6 generations, with probably declining yields.

Hedges are important factors within the microclimate of a region. They mitigate the effects of winds, reduce superficial water runoff, and raise the groundwater level. Furthermore, they create a mosaic of various small plots with different land cover, different heat emission, and evaporation. They prevent heavy winds; create biotopes for many animals and plants.

Removing the hedges brought a higher risk of soil erosion, increased evaporation, heat emission, and changes of groundwater levels. It also brought a higher risk of animal diseases. Germs could spread more easily, because the husbandry formerly held in small herds on different plots formed bigger communal herds in the large fallow spaces of the new open field system. Perhaps the transformation of the cultural landscape also changed the biotopes of small rodents, who now lived closer to humans.

The 14th-century – extreme weather, plague, and desertion

Given this proposed scenario of long-term changes of the cultural landscape, most of the catastrophic events of the 14th century appear in a new light. They were not just occasional natural events – they have a strong anthropogenic moment.

We learn from written sources about several animal diseases in the early 14th century. Zooarchaeological

studies from Britain show that they had important effects on the livestock (*Hamilton – Thomas 2012*). Similar studies from southern Germany are rare (*Paxinos 2017*), because the usual find-oriented analysis of bone assemblages of single excavations has just missed this important question. Maybe also the locust invasion of 1338, present in the Schalkenmehren maar in the Eifel, was favoured by the open landscapes (*Sirocko et al. 2009*).

We also learn from written sources about some heavy weather events during the 14th century (*Bork et al. 2011; Bauch 2014*). The most prominent one was the St Mary Magdalene flood in July 1342. The reconstruction of the track of the weather front refers to a meteorological situation known as Vb-track. In this situation, a low pressure area crosses the Mediterranean and reaches Central Europe from the Adriatic in the southeast, bringing huge amounts of rain. Several floods in recent years, such as the flood of the Elbe and Danube in 2002, also came from this Vb weather situation. In 1342, recorded water levels of the Danube, Main, Weser and Rhine were higher than at any other time. Some of the consequences of this heavy weather are mentioned in written sources, some are present in the geo-archaeological record and others can be assumed by later analogies. First, we learn from the written record that people fled from their homes and that they lost their food supply. As the flood took place just a very short time before the harvest, there were probably severe losses of germinable grain.

Geo-archaeological research shows evidence at various sites for heavy soil erosion in the mid- 14th century. Even if methodologically the accuracy of the dating is insufficient to assign these traces to the St Magdalen flood in the summer of 1342, this is most likely. In the Spessart Mountains big, heavy rocks moved by the water during the 14th century give an impression of the high energy of the water runoff (*Bork et al. 2011*).

The Black Death as a consequence of landscape change?

With the effect of village formation and the changes of the landscape on the one hand, and the reported evidence for epidemics among animals and humans, heavy weather extremes, and soil erosion on the other hand, the idea of a human ecosystem helps to trace some possible relations. Landscape changes increased the vulnerability to extreme weather as well as to epidemics. With the loss of terraces and hedges, soil erosion was not stopped by barriers. Erosion gullies developed due to higher water run-off. But even precipitation could be affected by the clearance of forests and hedges. In general, we may expect higher evaporation, lower groundwater, and drier soils. But at the same time, larger fields probably resulted in an increased tendency for thunder cells to develop.

Eventually the intensity of extreme weather as in 1342 had an anthropogenic component. The outbreak of diseases may also have been triggered by landscape changes. The formation of bigger herds in the open field system increased the risk of infection. The cutting of hedges as well as the weather effects most probably affected the biosphere of rodents. Floods often result in a murine plague in adjacent settlements and heighten the risk for an outbreak of an epidemic.

In 1342, rains and flood affected the landscape in mid-July, when the grain harvest had not started, but the seed was already germinable. For humans, this meant the loss of yields, but for rodents there was plenty of food washed away and distributed over the landscape.

It would not be surprising if the Black Death started in 1342. However, it only reached southern Germany 5 to 7 years later. It spread from the Black Sea over the Mediterranean and reached Germany in a first stroke from the south and via the sea route over the Atlantic and the North Sea from the north. It is interesting to notice that genetic studies from mass graves at London's Smithfield imply that there was a mutation in *Yersinia pestis* only a short time before the Black Death (Bos *et al.* 2011). There is evidence for *Yersinia pestis* in Central Europe since the late Neolithic and especially in 6th-century graves in southern Bavaria (Harbeck *et al.* 2013). It will be interesting to identify the *Yersinia pestis* bacteria from the time immediately before the Black Death in order to see when and where the mutation took place. The possibility that the mutation was related to the floods of 1342 in Central Europe should be taken into account (comp. Campbell 2016).

There is a high probability that the late medieval settlement desertion, at least in southern Germany, has a strong background in environmental history. The ecological consequences of the changes in land-use practices and village formation caused not only an increasing vulnerability in the landscape, but also a high risk for the agricultural economy. The crisis of the 14th century – including deserted settlements and possibly also the Black Death – may have been the result of complex long-term changes to the socio-ecological system involving the peasants' local society, climate and weather, water and soils, and rodents and epidemics (comp. Schreg *in press*). Late medieval deserted settlements in southern Germany may not only be a consequence of long-term landscape transformations but also the result of humans mismanaging their environment, which is not only a phenomenon of modern industrial times.

Conclusions

This sketch of some relations between village formation, the open field system, and the most devastating

epidemics of the Middle Ages is highly speculative. For now, it is nothing more than an hypothesis, which, however, is based on current knowledge about medieval landscape changes. It indicates the possibility that late medieval deserted settlements were to a certain degree the consequences of unsustainable growth and intensification. The narrative behind the scenario is hence a cautionary tale of humans degrading their environment and heading for a collapse.

In order to verify this hypothesis, we need to check the interconnections, such as the effects of the introduction of the open field system on the landscape. This is an interdisciplinary task, but medieval archaeology may play a crucial role, as it has to provide the relevant data. Yet, this is not excavating houses and pots; it is contextualizing bio- and geo-archaeological samples. In fact, archaeological excavations as described in the first part have played only a minor role in the argumentation. We need more excavations in order to gain statistical evidence for the chronological and spatial dynamics of the desertion process. A correlation between landscape changes, soil erosion, epidemics, and desertion cannot be a proof of the hypothesis, but it is crucial to think about the possible interconnections. The often-outdated inventories of deserted settlements have to be updated in a modern GIS database.

We need to have more-detailed models about the interaction of various agents and factors, which can go beyond cause and effect. Current correlations of climate change and cultural history, for example, lack detailed models and are therefore deterministic. What can help is the perspective of human ecology. However, human ecology does not provide hard evidence, but rather helps to create hypotheses and advanced research question beyond the perspectives of traditional archaeological research on medieval rural settlements. It is the perspective of village ecosystems that is needed, because the local scale is the level of daily human practice interacting with the environment. The ecological perspective raises awareness of much data inherent in archaeological sites that are often neglected in current archaeological practice.

Excavations must now address the subtle aspects of a house or farmstead complex. It is time to move beyond a simple record of the structure of buildings and material culture and invest time and resources into the analysis of the soils and ecofacts embedded in these places. Unfortunately, it is the case that rescue excavation has failed to make available the time and monies required for this level of analysis. We currently face losing the opportunity to understand the consequences of the open field system by means of weeds or small animals, which would also be an important source for aDNA studies on plague or animal diseases that occurred in the 14th century.

References

Abel, W. 1976:

Die Wüstungen des ausgehenden Mittelalters. Stuttgart.

Bauch, M. 2014:

Die Magdalenenflut 1342 – ein unterschätztes Jahrtausendereignis?, *Mittelalter* 4.2.2014. <http://mittelalter.hypothesen.org/3016>.

Becker, H. – Ericsson, I. (eds) 2004:

Mittelalterliche Wüstungen im Steigerwald: Bericht über ein Symposium des Zentrums für Mittelalterstudien der Otto-Friedrich-Universität Bamberg am 3. Februar 2001. Bamberg.

Bergmann, R. 1989:

Die Wüstungen des Geseker Hellwegraumes: Studien zur mittelalterlichen Siedlungsgenese einer westfälischen Getreidebaulandschaft. *Bodenaltertümer Westfalens* 23. Münster.

Bergmann, R. 2015:

Die Wüstungen des Hoch- und Ostsauerlandes: Studien zur Kulturlandschaftsentwicklung in Mittelalter und früher Neuzeit. *Bodenaltertümer Westfalens* 53. Darmstadt.

Biermann, F. 2010:

Archäologische Studien zum Dorf der Ostsiedlungszeit. Die Wüstungen Miltendorf und Damsdorf in Brandenburg und das ländliche Siedlungswesen des 12. bis 15. Jahrhunderts in Ostmitteleuropa. *Forschungen zur Archäologie im Land Brandenburg* 12. Zossen.

Bois, G. 1999:

Umbruch im Jahr 1000. Lournand bei Cluny – ein Dorf in Frankreich zwischen Spätantike und Feudalherrschaft. München.

Bork, H.-R. – Beyer, A. – Kranz, A. 2011:

Der 1000-jährige Niederschlag des Jahres 1342 und seine Folgen in Mitteleuropa, in: Daim, F. – Gronenborn, D. – Schreg, R. (eds), *Strategien zum Überleben: Umweltkrisen und ihre Bewältigung*. Mainz, 231-242.

Bork, H.-R. – Bork, H. – Dalchow, C. – Faust, B. – Piorr, H.-P. – Schatz, T. 1998:

Landschaftsentwicklung in Mitteleuropa. Darmstadt.

Bos, K. I. – Schuenemann, V. J. – Golding, G. B. – Waglechner, N. – Coombes, B. K. – McPhee, J. B. – DeWitte, S. N. – Meyer, M. – Schmedes, S. – Wood, J. – Earn, D. J. D. – Herring, D. A. – Bauer, P. – Poinar, H. N. – Krause, J. – Burbano, H. A. 2011:

A draft genome of *Yersinia pestis* from victims of the Black Death, *Nature* 478/ 7370, 506-510.

Campbell, B. M. S. 2016:

The great transition: climate, disease and society in the late-medieval world. Cambridge.

Eickhoff, S. 2006:

Zwischenlandung im Mittelalter: Archäologie für den Hauptstadtflughafen BBI; die Ausgrabungen in Diepensee. Wünsdorf.

Felgenhauer-Schmiedt, S. 2008:

Hard: Ein Wüstungskomplex bei Thaya im niederösterreichischen Waldviertel. *Archäologische Forschungen in Niederösterreich* 6. St. Pölten.

Gerking, W. 1995:

Die Wüstungen des Kreises Lippe: Eine historisch-archäologische und geographische Studie zum spätmittelalterlichen Wüstungsgeschehen in Lippe. *Veröffentlichungen der Altertumskommission für Westfalen* 10. Münster.

Grees, H. 1982:

Die abgegangenen Siedlungen auf der Münsinger Alb, in Münsingen. *Geschichte – Landschaft – Kultur*. Sigmaringen, 476-488.

Grimm, P. 1939:

Hohenrode, eine mittelalterliche Siedlung im Südharz. Halle.

Grotbe, A. – Kobbe, A. 2006:

Die Wüstung Alverstede – Verschwunden und wieder gefunden, in: Dresely, V. – Meller, H. (eds), *Archäologie auf der Überholspur: Ausgrabungen an der A 38*. Halle an der Saale, 210-254.

Hamilton, J. – Thomas, R. 2012:

Pannage, pulses and pigs: isotopic and zooarchaeological evidence for changing pig management practices in 14th century England, *Medieval Archaeology* 56, 234-259.

Harbeck, M. – Seifert, L. – Hänsch, S. – Wagner, D. M. – Birdsell, D. N. – Parise, K. L. – Wiechmann, I. – Grupe, G. – Thomas, A. – Keim, P. – Zöller, L. – Bramanti, B. – Riehm, J. M. – Scholz, H. C. – Besansky, N. J. 2013:

Yersinia pestis DNA from skeletal remains from the 6th century AD reveals insights into Justinianic Plague, *PLoS Pathogens* 9/5, e1003349.

Heidinga, H. 1987:

Medieval settlement and economy north of the lower Rhine: archaeology and history of Kootwijk and the Veluwe the Netherlands. Assen.

Hesse, S. 2003:

Die mittelalterliche Siedlung Vriemeensen im Rahmen der südniedersächsischen Wüstungsforschung. *Göttinger Schriften zur Vor- und Frühgeschichte* 28. Neumünster.

Hildebrandt, L. H. (ed.) 1997:

Archäologie und Wüstungsforschung im Kraichgau. *Ubstadt-Weiher*.

Jakob, H. 1984:

Die Wüstungen der Obermain-Regnitz-Furche und ihrer Randhöhen vom Staffelberg bis zur Ehrenbürg, *Zeitschrift für Archäologie des Mittelalters* 12, 73-144.

- Janssen, W. 1965:*
Königshagen, ein archäologisch-historischer Beitrag zur Siedlungsgeschichte des südwestlichen Harzvorlandes. Hildesheim.
- Königlich Statistisches Landesamt 1867:*
Beschreibung des Oberamts Tübingen. Stuttgart.
- Meller, H. (ed.) 2006:*
Archäologie XXL: Archäologie an der B 6n im Landkreis Quedlinburg. Archäologie in Sachsen-Anhalt, Sonderband 4. Halle an der Saale.
- Michl, E. 2017:*
Ausgrabungen in der Wüstung Lindelach: Ein archäologischer Beitrag zur Siedlungsforschung und Sachkultur des Spätmittelalters und der frühen Neuzeit. Bamberger Schriften zur Archäologie des Mittelalters und der Neuzeit 7. Bonn.
- Nekuda, V. 1975:*
Pfaffenschlag. Zaniklá stredoveká ve s u Slavonic. Brno.
- Paxinos, P.D. 2017:*
Die Archäozoologie der Pest. Die Auswirkungen des Schwarzen Todes (1347-1350) auf Tierhaltung und Viehnutzung im Gebiet des heutigen Deutschland. Documenta Archaeobiologiae 12.
- Romankiewicz, T. – Hofmann, D. – Gillis, R. – Amkreutz, L. – Gierpe, L. – Möller, N. – Sharples, N. – Schreg, R. in prep.:*
Moving the house posts: mobility and permanence in prehistoric and early medieval dwelling, farming and resource management.
- Rösener, W. 2010:*
Die Wüstungen des Spätmittelalters und der Einfluss der Klimafaktoren, Zeitschrift des Vereins für Hessische Geschichte und Landeskunde 115, 57-77.
- Rosenwein, B. H. 1989:*
To be the neighbour of Saint Peter. The social meaning of Cluny's property 909-1049. Ithaca.
- Schaal, F. – Schöllkopf, C. – Scharpf, G. (eds) ca. 1920:*
Heimatbilder aus Stadt und Bezirk Geislingen. Geislingen.
- Schlüter, O. 1903:*
Die Siedlungen im nordöstlichen Thüringen. Berlin.
- Schlüter, O. 1952:*
Die Siedlungsräume Mitteleuropas in frühgeschichtlicher Zeit. 1. Einführung in die Methodik der Altlandschaftsforschung. Remagen.
- Schreg, R. in press:*
Plague and desertion – a consequence of anthropogenic landscape change? Archaeological studies in southern Germany, in: Bauch, M. – Schenk, G. J. (eds), The crisis of the 14th century: 'Teleconnections' between environmental and societal change? Berlin.
- Schreg, R. 2002:*
Haus und Hof im Rahmen der Dorfgeneese. Zum Wandel der Bauformen in Südwestdeutschland, in: Klápště, J. (ed.), The rural house from the migration period to the oldest still standing buildings. Ruralia IV. Prague, 111-122.
- Schreg, R. 2006:*
Dorfgeneese in Südwestdeutschland: Das Renninger Becken im Mittelalter. Materialhefte zur Archäologie in Baden-Württemberg 76. Stuttgart.
- Schreg, R. 2009a:*
Development and abandonment of a cultural landscape – archaeology and environmental history of medieval settlements in the northern Black Forest, in Klápště, J. – Sommer, P. (eds) Medieval rural settlement in marginal landscapes. Ruralia VII, Turnhout, 315-333.
- Schreg, R. 2009b:*
Siedlungen in der Peripherie des Dorfes. Ein archäologischer Forschungsbericht zur Frage der Dorfgeneese in Südbayern, Berichte der Bayerischen Bodendenkmalpflege 50, 293-317.
- Schreg, R., 2009c:*
Archäologische Wüstungsforschung und spätmittelalterliche Landnutzung: Hausbau und Landnutzung des Spätmittelalters in Südwestdeutschland aus archäologischer Sicht, in: Rückert, P. – Lorenz, S. (eds), Landnutzung und Landschaftsentwicklung im deutschen Südwesten. Veröffentlichungen der Kommission für Geschichtliche Landeskunde in Baden-Württemberg, Reihe B 173. Stuttgart, 131-163.
- Schreg, R. 2012a:*
Farmsteads in early medieval Germany – architecture and organisation, Arqueología de la Arquitectura 9, 247-265.
- Schreg, R. 2012b:*
Kontinuität und Fluktuation in früh- und hochmittelalterlichen Siedlungen, in: Fey, C. – Krieb, S. (eds), Adel und Bauern in der Gesellschaft des Mittelalters: Internationales Kolloquium zum 65. Geburtstag von Werner Rösener. Korb, 137-164.
- Schreg, R. 2013:*
Würzbach – ein Waldhufendorf im Nordschwarzwald, in: Theune-Vogt, C. – Scharrer-Liška, G. – Huber, E. H. – Kühtreiber, T. (eds), Stadt – Land – Burg: Festschrift für Sabine Felgenhauer-Schmiedt zum 70. Geburtstag. Rahden, 189-202.
- Schreg, R. 2014:*
Uncultivated landscapes or wilderness? Early medieval land use in low mountain ranges and flood plains of Southern Germany, European Journal of Post-Classical Archaeologies 4, 69-98.

Schreg, R. 2016:

Mittelalterliche Feldstrukturen in deutschen Mittelgebirgslandschaften, in: Klápště, J. (ed.), *Agrarian technology in the medieval landscape. Rurality X*. Turnhout, 351-370.

Schreg, R. 2018a:

Bauern als Akteure – Beobachtungen aus Süddeutschland, in: Drauschke, J. – Kislinger, E. – Kühnreiter, K. – Kühnreiter, T. – Scharrer-Liška, G. – Vida, T. (eds), *Lebenswelten zwischen Archäologie und Geschichte. Festschrift für Falko Daim zu seinem 65. Geburtstag. Monographien des RGZM 150*. Mainz, 553-563.

Schreg, R. 2018b:

Mönche als Pioniere in der Wildnis? Aspekte des mittelalterlichen Landesausbaus, in: Krätschmer, M. – Thode, K. – Vossler-Wolf, C. (eds), *Klöster und ihre Ressourcen. Räume und Reformen monastischer Gemeinschaften im Mittelalter. RessourcenKulturen 7*. Tübingen, 39-58.

Sirocko, F. – Alt, K. W. – David-Sirocko, K. 2009:

Das nasskalte 14. Jahrhundert – Hunger, Pest und Tod, in: Sirocko, F. (ed.), *Wetter, Klima, Menschheitsentwicklung*. Darmstadt, 165-169.

Spengler, O. 1923:

Der Untergang des Abendlandes. München.

Stephan, H.-G. 1979:

Archäologische Studien zur Wüstungsforschung im südlichen Weserbergland. Münstersche Beiträge zur Ur- u. Frühgeschichte 10-11/2. Hildesheim.

Stephan, H.-G. – Tönsmeier, H. D. 2010:

Der Sölling im Mittelalter: Archäologie – Landschaft – Geschichte im Weser- und Leinebergland. Hallesche Beiträge zur Archäologie des Mittelalters und der Neuzeit 1. Dormagen.

Thode, K. 2014:

Fortsetzung der archäologischen Erforschung der Wüstung Oberwürzbach, Archäologische Ausgrabungen in Baden-Württemberg, 335-338.

Uhl, S. 2001:

Zwei neu entdeckte spätmittelalterliche Firstständerbauten. Gärtringen, Kirchstraße 20 und Gomadingen-Dapfen, Oberdorfstraße 46, Denkmalpflege in Baden-Württemberg 30, 139-144.

Veith, I. 1957:

Wüstungen im Neckarland und auf der Schwäbischen Alb (Inauguraldissertation). Tübingen.

Weber, D. 1927:

Die Wüstungen in Württemberg: Ein Beitrag zur historischen Siedlungs- und Wirtschaftsgeographie von Württemberg. Stuttgarter geographische Studien 4/5. Stuttgart.