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# Climate in 14th-Century England: Catastrophic Change, Social Strategies and the Origins of Capitalism

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**Abstract:** This work aims to explore climate change as a decisive element for the transition from feudalism toward capitalism and considers the Marxist transition debate as a framework. In order to avoid the deterministic trap, climate must be considered as a condition framing the historical possibilities in a dialectical relationship with human historical agents. Thus, this paper explores the interactions between medieval English society, focusing on land use and class relation, and the conditions imposed by nature, particularly the change in rainfall and the transformation of ecological conditions around the North Sea Basin, especially on England's east coast. Through the course of this research, we found out that the climate change that happened in the 14th century is one important condition for the rise of capitalism, as it creates certain pressures on both peasant and manorial economies that exacerbate their contradictions and sets a course for profound societal change.

**Keywords:** climate change; transition debate; paleoclimatology; medieval Europe



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## 1. Introduction and Justification

The Marxist transition debate may seem a settled topic, but starting in the 1940s and ending around the 1970s, it happened before most of the modern data on the late Middle Ages were compiled and available. In the face of modern environmental history methods and data, the analytical aspect of the debate is rather outdated. However, the debate offers us a treasure trove in terms of theoretical discussion, which can be used in order to avoid some of the pitfalls surrounding our contemporary approaches and which we explore in order to evaluate the effects of climate change in 14th-century England.

The transition debate, even though it seems to be outdated, directly engages with open questions within the scope of environmental history (Sessa 2019), notably in bridging the gap between material conditions and social change, or, as Marxists say, between the productive forces and the social relations of production. The debate acquires contemporary contours as it helps us organize social complexity in the face of a material change that presents itself as an exogenous shock.

When we take a look at the Marxist debate on the transition from feudalism to capitalism, we can identify two distinct debates between the 1950s and 1970s that investigate how the dialectic relationship between external influences on feudalism and its internal dynamics transformed into a structural rupture of the prevailing mode of production.

Here it is worth making a chronological consideration in order to clarify the timeline regarding the Marxist debate and the climate one. While the transition debate began in the 1940s and peaked in the 1950s, the first scientific forays into medieval climate change date back to the 1960s, with Lamb's pioneering work in 1965 introducing the term Medieval Warm Epoch into the scientific lexicon (Lamb 1965), followed almost a decade later by LaMarche's investigation in 1974 into California mountains, which confirmed the existence of climate change (Lamarche 1974). With this in mind, it is reasonable that the authors who played key roles in the transition debate had not incorporated the climatic element, even when, in the second phase, with Brenner's contribution in 1976, the topic was still in its infancy.

The first transition debate happened in the 1940s–1950s and was structured between [Dobb \(2004a, 2004b, 2004c\)](#), who posits the superexploitation of the peasantry as the primary cause of the end of feudalism, and [Sweezy \(2004a, 2004b\)](#), his critic, who argues that feudalism was a stable mode of production, devoid of an “internal engine” that would deepen its own contradictions, so it could perpetuate infinitely, except under the effect of a disruptive external element, in this case, foreign trade.

Subsequently, the so-called Brenner debate ([Hilton 1995a, 1995b](#)) occurred in the 1970s, in which the centrality of the discussion revolves around Brenner’s contribution ([Brenner 1995a, 1995b](#)), who identifies the emergence of capitalism not with cities and industry, but with agriculture, arguing for the thesis of a rural capitalism as a starting point, and postulating that the primary cause of the crisis of feudalism was the specific configuration of the European class struggle.

Once the class structure is understood, it is necessary to define the internal dynamics of that structure, that is, to seek the internal engine of feudal society. Brenner’s answer to this problem can be found in the concept of ‘politically motivated consumption’: the feudal class’s need to “maintain a dominant position vis-à-vis the peasantry and to protect themselves vis-à-vis one another” ([Brenner 1995b](#), p. 232).

In Brenner’s formulation, there is simultaneously a need for accumulation<sup>1</sup> and a tendency for this accumulation to result in a more intense distributive conflict, given that the peasant economy was constantly on a collision course with the economy of the feudal lord.

Here we have one of the main points justifying a renewed interest in the transition debate: the class struggle, within a context where the need for political accumulation prevailed, helps explain how a climatic shock can become a social transformation.<sup>2</sup>

In this article, we do not seek to take sides within the debate but rather introduce a new element, the climate change that occurred around the 14th century, in order to explore the explanatory possibilities of the Marxist interpretation of the transition in the face of the action of a non-human historical agent.

To do so, and in parallel with this theoretical–methodological framework, we must also introduce a thematic focus and select some authors who address climate as a defining element of the transformation process of feudal society. Among those who incorporate the climatic question, [Parker \(2013\)](#) stands out, analyzing in detail the impact of the Little Ice Age (LIA), especially in the 17th century, as well as [Campbell \(2016\)](#), who presents a focus that refers to an earlier period, shifting the question to the end of the Medieval Climate Anomaly (MCA) still in the 14th century, exploring the Black Death as a climatic phenomenon, and [Prybil \(2017\)](#), who offers a very detailed account of the climate patterns in 14th century England, and these views are also present in [Hoffmann’s \(2014\)](#) account.

However, it is also important to exercise caution with the general corpus of environmental history literature. [Sessa \(2019\)](#) provides an interesting critique of the current literature on the topic of climate explanations for the fall of the Roman Empire. According to her, the major issue with environmental history literature is making the jump from climate change to social transformation. That is also the argument of [van Bavel et al. \(2019\)](#) regarding the tendency of environmental approaches in economic history to propose a simplified causal relation between the studied phenomena, which may lead to artificially clear conclusions ([van Bavel et al. 2019](#), p. 10).

This work provides an answer to that, insofar as the Marxist paradigm offers a chain of causality<sup>3</sup> that allows us to connect the two ends of the problem. The crux of the transition debate is to explore a theory of change that is not about the collapse of a society, but rather about placing on center stage social reproduction strategies that already existed on the periphery of that society. The most interesting aspect of the Marxist debate on transition is precisely that the authors bring forth the idea that historical agents build the new world by trying to keep the old world alive.

The climatic element in this paper will be thought of as an exogenous variable, inserted into a temporality much longer than human life, although perceived to some extent by

human historical agents. In this framework, climate can be the source of pressures on social relations and the trigger of other processes that affect the dynamics of class struggle in the medieval world, thus leading to the transition from feudalism.

For this, it is necessary to focus on the climatic shift from the MCA to the LIA. This transition can be identified from a significant reduction in average annual temperatures. Although the amplitude of this variation depends on the method used for measurement (Luterbacher et al. 2016), the transition from a period of high average temperatures, which prevailed between the 10th and 13th centuries, to a colder period, from the 14th century to the 19th century, is consensual and can be identified from a series of different measures, from ice cores to dendrochronology (Ljungqvist et al. 2012; Schneider et al. 2015).

The change in average temperatures is also relevant for causing transformations in atmospheric circulation patterns. In particular, the maintenance of an atmospheric pressure gradient in the North Atlantic was responsible for ensuring a regular rainfall regime favorable to the growth of northwestern European agricultural economies; when this gradient changes due to reduced temperatures, the North Atlantic Oscillation (NAO) ceases to be a beneficial factor and increases rainfall instability in Europe, raising the risk of crop losses and undermining the material foundations of medieval life (Campbell 2016).

However, it is not a matter of reducing climatic dynamics to a pair of binaries (heat—good, cold—bad), but rather of framing it from the perspective of the human historical agent that existed in relation to it; more specifically, the transition from one climatic pattern to another opens up a range of uncertainties to which these agents had to react using the currently available technical and cultural tools. As Prybil (2017, pp. 95–96) formulates, the greatest challenge climate change posed was not cold spells themselves, but rather the “frequent shifts in weather patterns (. . .), because they prevented an adaptation of the agricultural production to the weather conditions.”

The climate change observed during this period emerges as a promising explanation for the observed transformation. The thesis that society responds to environmental changes is not in itself new: the Little Ice Age of antiquity left deep marks on human societies of the 6th century, coinciding with the rise and fall of empires, with major migrations, and being one of the immediate causes of the first bubonic plague pandemic, known as the Justinian Plague (Büntgen et al. 2016).

This proposition by Büntgen et al. (2016) is met with some criticism in the environmental history field; it is mostly associated with what Mordechai and Eisenberg (2019) call ‘collapsology’, the idea that climate is the defining cause for an empire’s collapse.

Regarding the Justinian Plague, Mordechai and Eisenberg (2019) reject the concept of ‘collapsology’ and propose a minimalist approach: plague had an acute effect in the short term, but wasn’t responsible for the collapse of empires in the region.

What seems interesting to point out is the concept of collapse itself. We can revisit Sessa’s (2019, p. 231) reflection regarding the need for a critical reading of environmental history. Historical or paleoclimatological data do not provide the interpretative element of theory; the author’s choice of focus influences the theoretical meaning of the data. We can apply this consideration from Sessa to Mordechai and Eisenberg’s (2019) concept of collapsology.

It is possible to both say that the Justinian Plague caused the collapse of the Eastern Roman Empire and to say that the Eastern Roman Empire persisted because there are elements of disruption as well as elements of continuity in historical records. Talking about collapse or resilience is rather a choice of emphasis, and thus essentially interpretative.

Here, the Marxist authors in the transition debate offer us a possible synthesis, especially Brenner, who points out that the transformation toward capitalism is not an external and catastrophic disruption, but rather a transformation within the shell’ of feudalism; that is, elements of continuity and transformation relate to each other dialectically; the construction of the new world is carried out by historical agents who attempt to keep the old world alive<sup>4</sup>.

What we must investigate is how climate change operates in the specific context of the end of the Middle Ages in order to catalyze social transformations.

Here it is necessary to make a caveat: climate is non-deterministic in nature. It is not a matter of postulating that climate change, in isolation, caused the transition process from feudalism to capitalism, but rather of arguing that climate, acting in the specific historical context of Europe (and particularly England) in the 14th century, caused a series of social transformations that catalyzed the transition. In this sense, climate alone constitutes a necessary cause, but not a sufficient one. Climate is a conditioning element of the process, although not a determinant one.

Once these initial caveats and observations are set, it becomes possible to establish the guiding question in this paper: how is the climate change of the 14th century connected to the process of structural transformation known as the transition from feudalism to capitalism?

Given all this, the aim of this work is to use the climatic element, similar to [Campbell \(2016\)](#), [Parker \(2013\)](#), [Prybil \(2017\)](#), and [Hoffmann \(2014\)](#), as an exogenous variable capable of creating conditions different from those observed in previous centuries and triggering processes of transition from feudalism to capitalism, as conceived in the Marxist debate. In particular, it is about taking climate as an exogenous factor impacting social relations which, in turn, affects the dynamics of class struggle in the medieval world. Those dynamics are mostly a function of the accumulation regime and distributive conflict in these societies, and thus the aim here is to investigate how climate change affected those elements and changed medieval bonds, allowing the emergence of a new form of social organization.

This essay thus reinterprets the Marxist debate on transition by incorporating climate as an external trigger of a series of transformations. In the 14th century, these catalyzed a specific reorganization of the productive forces based on previous social conditions. This is analogous to what Sweezy proposes would have been the effect of foreign trade, but also supports the superexploitation of the peasantry in Dobb's formulation and the agrarian origins of capitalism theorized by Brenner.

## 2. The Climate Problem

We can organize the theoretical debate on transition into three main lines, each related to one of the key authors. Class struggle was for Brenner the guiding principle of the process, determining property relations and the limits of expansion of medieval society. The superexploitation of the peasantry represents the primary cause of the process for Dobb and generated the rupture of the feudal world by overburdening the productive class with surplus extraction impossible to meet. For Sweezy, however, feudalism should be seen as an extremely resilient system, thus requiring an external element to corrode its founding structures and allow the emergence of capitalist forces; for Sweezy, this element is trade.

If we analyze the transition debate as an opportunity to incorporate different points from each author's arguments rather than electing a winner, we can reconcile the theses of Dobb and Brenner without major issues: it makes sense for class struggle and superexploitation to be concurrent processes and to respond to mutual stimuli, meaning there is an intensification of class struggle as the degree of exploitation increases, and vice versa.

On the other hand, Sweezy's thesis seems misplaced; the circulationist model itself seems to lack traction in the Marxist debate, isolating Sweezy from his interlocutors. Despite this, there is merit in his proposition. Even though the disintegrating effect proposed cannot be solely attributed to trade, the theoretical framework holds an interesting idea: the existence of a social catalyst that causes changes not only in a specific direction but at a specific pace.

We believe that Sweezy's thesis of a catalyst for transition has empirical merit, given that the 14th century witnessed a rapid transformation of the planet's material conditions, driven by a dynamic external to the feudal mode of production. Unlike Sweezy, however, we do not propose that this catalyst is trade, but rather climate.

The objective of this section is to investigate how the arguments of the main authors of the debate (Dobb, Sweezy, and Brenner) react when exposed to climate change, which constitutes an exogenous element, unpredictable for the historical agents of the Middle Ages, to their theories. Let us start with Dobb.

For the author, the fundamental cause of the transition was the superexploitation of the peasantry by the feudal lords, which, in turn, was caused by four distinct factors: the lord's sense of superiority over the serf; demographic imbalance between serfs and lords; increased wars and banditry (which required more revenue to finance combat); and the greater need for income to finance sumptuous consumption.

The weakest point of these arguments, as Sweezy demonstrated (Sweezy 2004a, pp. 46–47), is the total absence of elements corroborating a demographic discrepancy between serfs and lords. However, this argument gains momentum if we take into account some recent data on the Black Death.

More significant than the absolute levels of mortality is its class character: lords and serfs did not die in the same proportion. "Plague may little have respected person, rank or office, but it did not kill indiscriminately. Today, plague is above all a disease of poor people in poor countries and the same applied in the fourteenth century" (Campbell 2016, p. 308).

This social element of disease translates into a mortality rate of 27% among large feudal landowners, significantly lower than the average rate of 40–45% for the total population. Due to the inescapable mathematical nature of averages, if the feudal lords died less, the peasants died more. The same process can be seen in the ecclesiastical hierarchy: while 18% of bishops died as a result of the plague, the mortality rate among abbots was 44% (Campbell 2016, pp. 308–9).

Based on this, we can rehabilitate this part of Dobb's argument: although there was not a significant difference in the birth rate between nobles and serfs, the post-Black Death world saw a rapid and significant change in the ratio between these two groups. Thus, in the second half of the 14th century, the number of serfs per lord was considerably lower than in the 13th century.

The need to extract more surplus from peasants may also have a climatic origin since agricultural productivity is necessarily affected by such changes. Parker (2013, p. 18) offers an illustrative description of the effects of climate on agricultural production:

"[In] cereal growing regions, a fall of 2 °C shortens the growing season by three weeks or more, diminishes crop yields by up to 15 per cent, and lowers the maximum altitude at which crops will ripen by about 300 feet. (...) Extreme weather could also destroy crops indirectly. Excessive rain might allow rodents to multiply. In Moldavia in 1670 myriads of mice' not only ate 'all they found in the vegetable gardens' but also, 'climbing up the trees, ate all the fruit, finishing them up; and to end the job' they 'finished the wheat in the field'. Drought favoured locusts."

A more systematic approach to the climate change of the 14th century, as proposed by Prybil (2017, p. 190), also points out that the variability of rainfall patterns in England is one of the main problems for agricultural productivity: "Wheat, the preferred and after the 1350s increasingly dominant bread grain, is particularly vulnerable to abundant rainfall. In an age before the widespread use of barns, increased precipitation levels in the post-harvest period were detrimental for the stacked sheaves", which is an interpretation echoed by Hoffmann (2014) in his discussion on the cerealization of European society.

In this scenario, each noble not only had fewer serfs to produce the resources necessary to finance their consumption but also the land to be cultivated by the serf had lost productivity and gained uncertainty. In this context, Dobb's elements prove to be accurate: climate change generates an increased need for the feudal lord to intensify the exploitation of serfs to maintain the consumption pattern enjoyed during the MCA.

Continuing the analysis of climate transformation, we can also identify new support points for the Sweezyan argument, particularly the ad hoc movements of Mediterranean



trade. For example, take Pirenne's thesis that the European economy follows the fluctuations of this trade up until the 8th century when western and northern Europe were isolated from it. His proposed cause is that the upheaval caused by the Arab conquests caused this isolation (Pirenne [1938] 2013, p. 166), but we also have evidence that there is an underlying climate change acting in the background.

There is a clear trend of temperature reduction already in the 3rd century, intensified from the 6th and 7th centuries, which, considering the effect described by Parker on agricultural production in Europe, would indicate a secular process of production crisis in Mediterranean societies (Büntgen et al. 2016). This chronology even helps reconcile Hilton's criticism, which pointed to the 3rd century as the initial moment of commercial retraction, while situating the period of Arab expansion as the point of intensification of the trend.

Putting the LALIA (Late Antique Little Ice Age) at the center of the analysis, there seems to be a strong correlation between Mediterranean trade and climatic dynamics, and this with political instability in the region: "The LALIA can therefore be considered as an additional environmental driver of crop failure, famine and plague, as well as a possible trigger for political, societal and economic turmoil" (Büntgen et al. 2016, p. 4).

It is also noteworthy that the first pandemic of the Black Death, known as the Justinian Plague, ravaged the Mediterranean in the 6th century (at the most pronounced moment of thermal retraction) and generated severe demographic effects, very similar to those of the Black Death of the 14th century (Campbell 2016, pp. 330–31).

It is not surprising that the period following the LALIA is precisely the MCA, which coincides with a new phase of expansion of Mediterranean and European trade. In this case, agriculture experiences an exogenous productivity shock that increases the surplus available both for direct trade and to support urban manufacturing, via cheap food and the release of labor from the food-producing sector.

In this context, the exceptional 12th century described by DUBY (1999) manifests itself, not only in the demographic growth observed throughout Europe but also in the process of colonization of lands previously considered marginal and unproductive. Both processes have their roots in climate change. Despite the importance of hydraulic mills and crop rotation, it is the stability of atmospheric patterns and the rise in average temperatures that propel the productive forces to a higher level without significant changes in the social relations of production.

In the same vein, it is precisely from the 14th century, with the new climatic reversal, that this agricultural productivity bonus disappeared, engendering a demographic crisis and new pressure on trade routes, dissolving a significant part of the European trade network and shifting the dynamic axis of international trade from the Mediterranean to the North.

Although there is a strong correlation between commercial expansion and temperature increase (and vice versa), such a correlation poses two problems for the Sweezyan argument. Firstly, the crisis of feudalism coincides precisely with climatic worsening and commercial retraction. This problem is particularly serious because Sweezy's thesis suggests the opposite should happen. Secondly, the commercial expansion following the resumption of population growth occurs in the context of worsening climatic indicators, especially from the 17th century.

In this scenario, Sweezy seems to become a Marxist version of Malthus: he correctly describes a dynamic that is valid for the period before the transformations under analysis, but whose end consists precisely of the transition he seeks to study.

Brenner's argument, on the other hand, can greatly benefit from the introduction of the climatic element, as climate acts precisely as a catalyst for feudal class struggle: by reducing agricultural surplus, the change in climatic patterns exacerbates the distributive conflict between lords and serfs. As Brenner postulates that there is an accumulation engine within feudalism, due to the political disputes among lords, it is not possible to simply adapt society to a lower level of surplus extraction (Brenner 1995b, p. 239).

Moreover, the change in climatic patterns that inaugurates the LIA leads to a reduction in surplus-generating capacity for the same stage of development of productive forces and relations of production, which also has the effect of rewarding agents who opt for alternative paths in productive techniques. In this sense, the formation of the new class of large tenants, characterized by greater interference in the production process, including greater capital investments in agriculture, is in tune with climatic transformations. These paths do not necessarily lead to capitalist development, but in the specific context of post-14th-century England, this path was what consolidated.

Here, Bois's argument can be a useful foil to Brenner's. His main thesis about the decreasing tendency of feudal income can be reinterpreted as a result of climate change, not being, therefore, a general development of feudal dynamics. However, the consequences resulting from this trend would be valid, as there was indeed a reduction in per capita surplus available to feudal lords. In this sense, Bois (1995, p. 111) is accurate in saying the following:

“When economic expansion draws to an end (around the middle of the thirteenth century) the fall in the rate of levy is no longer offset by the establishment of new tenures, with the result that seigneurial income in its turn decreases. The crisis of the feudal system is bound up with this phenomenon: the dominant class does not succeed in maintaining the economic basis of its hegemony.”

However, Bois does not recognize it as a singular phenomenon in itself; on the contrary, he emphasizes that it is a typical movement according to the internal laws of feudal dynamics (Bois 1995, pp. 111–12). The major problem for Bois may be that, by shifting the causative element to an earlier point (in our hypothesis, when we propose that climate change causes the reduction of feudal exactions), the explanatory path also undergoes alterations, since they cannot be simply described as an internal development of feudalism.

Regarding this point, Brenner makes a more interesting contribution: it is because the class struggle was configured in such a way (and, we add, when the climatic pattern changed) that the large tenant emerged, and the subsequent development followed the specific path of capitalist development and not any other. By way of contrast, there was no capitalist development after the climatic crisis at the end of antiquity, nor even after the first pandemic of the Black Death in the 6th century. Brenner (1995b, p. 213) states the following:

“Under different property structures and different balances of power, similar demographic or commercial trends, with their associated patterns of factor prices, presented very different opportunities and dangers and thus evoked disparate responses, with diverse consequences for the economy as a whole.”

On the other hand, the climatic argument poses some serious challenges to Brenner's overall argument, especially due to the support it brings to neo-Malthusian theses. For instance, Brenner criticizes authors in this field for not providing convincing explanations about the 100 years of population decline from the second half of the 14th century, after the demographic shock of the Black Death, which contradicts the demographic model they use (Brenner 1995b, p. 224).

However, this population decline is consistent with current epidemiological models of the plague (Campbell 2016, pp. 239, 260, 306, and onwards), and with climate change; the population does not recover because the crisis is not within the framework of the previous mode of production, but in the context of the rupture of the prevailing relations between humans and nature, which shifts the balance of population ecology.

Thus, we can outline a panorama of the Middle Ages intricately connected to major climatic dynamics: the warming of the Medieval Climate Anomaly (MCA), which finds its most expressive facet in the exuberance of the 12th century, and the cooling of the Little Ice Age (LIA), which brings with it the crisis of the 14th century and catalyzes the social reactions underlining the transition. The response of productive forces to climatic

fluctuations, out of sync with the relations of production, seems to be the explanatory basis of the medieval crisis and the germination of the new world.

### 3. The Specificity of the English Case

When we focus on the English case using a Marxist framework, we must consider how the different social classes interacted. The division between nobles and non-nobles is the fundamental starting point, as it also corresponds to the division between those who produce wealth and those who enjoy it. However, such division is still excessively broad, as there are significant distinctions within both classes, associated with the process of differentiation and growing complexity of medieval society that had been ongoing since the 13th century.

A fundamental aspect of understanding medieval society is the relative permeability of class relations. Although rare, there were historical cases of peasants being ennobled. While such cases are uncommon in history, they tend to increase as the degree of differentiation in medieval society rises, both among the nobility and among the peasants (Ganshof and Verhulst 2008).

When we focus on the nobility, there is a clear division between magnates and the minor nobility, initially represented by knights, not only in quantitative terms but also in the functioning of what we can identify as the English public administration of the period. Since the Angevin reforms, knights constituted the main source of public agents (such as judges and jurors), as well as a source of revenue for the English crown.

As the 13th century progresses, this class undergoes a process of social stratification leading to a general reduction in the number of knights, accompanied by a shortage of individuals capable of performing administrative tasks. In this context, there was a significant contingent of people who could claim knight status due to social and genealogical criteria of the time but did not wish to do so because of the associated costs, both direct (the restraint of knighthood) and indirect, through unpaid service; these individuals were progressively incorporated into the ranks of the nobility as new gradations of noble ranks were created, especially the levels of squire and gentleman. This last level, in particular, corresponds to the most notable class fraction within the subsequent historical process and can be seen as a personification of the English gentry itself, that is, a class fraction of the nobility that lives off the appropriation of peasant labor but does not have feudal mechanisms of extra-economic coercion to extract said labor (Coss 2003).

Simultaneously with this development of the minor nobility, there was a progressive differentiation in the peasantry, a stratum composed of wealthier peasants (yeomen) who came to constitute a body of tenants and administrators of manorial lands on an unprecedented scale. This is also one of the defining aspects of the Late Middle Ages, the scale of social differentiation is significantly higher than in earlier periods (Dimmock 2014; Dyer 2005).

While the 12th century was marked by the rapid expansion of cultivated land, the 13th century reveals the first limits to this process, particularly in England. The insular nature of the country made the agricultural frontier smaller and less dynamic than on the continent, while there was also a rapid deterioration in the fertility of newly incorporated soils (Postan 2008).

This process was accompanied by a profound change in the ways of extracting economic surplus. Hilton (2004a, 2004b, 2004c) highlights the shift from labor-rent to money-rent that occurred during this expansionist period of the English economy. This phenomenon significantly altered the relationship between lord and serf. Bailey (2014) identifies that the 12th century marks the consolidation of *villeinage* as a specifically English form of serfdom, associated with the consolidation of common law, while the 13th century appears as the peak of serfdom in England when it reached about 50% of the population.

Bailey (2014) also presents two important criticisms of the Marxist approach, particularly toward Brenner's version of the transition. The first is that *villeinage* was not



as significant a coercion as some of the earlier sources might suggest, so serfs had more bargaining power than was believed during the transition debate.

The second criticism points out that tenants were not as vulnerable to market forces as Brenner assumed; there was some measure of legal protection, so the hypothesis that property structure would drive the market imperative does not hold. This second reading seems very promising, especially considering Brenner's later (Brenner 2001) shift regarding the Dutch case, where the author credits climate change as the driving force behind the market imperative rather than land property structures.

Due to the greater availability of land after the Black Death, there is also a process of land concentration both at the seigniorial and peasant levels, with some peasants advancing their positions and acquiring rights to abandoned lands in their region (Patriquin 2004).

This proximity between the top of the peasantry and the base of the nobility creates a gray area within which some elements transition, if not within the span of one lifetime, at least over generational rhythms. There is, between these two poles, a confluence of interests in increasing production and appropriated wealth within an adverse climatic and ecological context. This expansion of income is realized by the mediation of a foreign merchant class also possessing a convergent agenda: the merchants of the Hanseatic League.

The Hansa operates in this context by establishing an international division of labor within Europe, articulating trade routes between three nodes: the Baltic, continental Europe (especially the Netherlands), and England. In this trade scheme, largely due to the technological development of the naval industry carried out by the Hanseatics, England consolidated itself as a peripheral country exporting wool and importing grains from the Baltic.

Although the volume and weight of the goods transported are usually a problem in terms of freight costs, there is an advantage that is not evident at first glance. A ship, to be functional, needs to balance two conflicting characteristics: on the one hand, the force of buoyancy exerted by the water must be greater than its weight, and on the other hand, the center of gravity must be low enough to prevent capsizing. Considering that the masts and sails of this period raised the ship's center of gravity, this problem turned greater the larger the ship. It was necessary, therefore, to place some kind of ballast to increase the weight of the hull and bring the center of gravity closer to the waterline. In principle, anything can serve as ballast, for example, sand and gravel, but from the merchant's point of view, the ideal ballast is one that can be sold at the destination port.

Thus, it is not surprising that the commercial network in which the Hanseatic League operated involved, simultaneously, the trade of high-value, low-volume goods, such as Flemish textiles, and low-value goods that served as ballast, namely salt from Western Europe and grains from Eastern Europe (Unger 1980, p. 166).

The main consequence of this Hanseatic domination manifested itself in the long term. England's insertion into European trade circuits allowed the specialization of the English east coast around sheep farming between the 14th and 15th centuries. It is this commercial arrangement that determines the set of possibilities available to other actors when the climatic collapse occurs.

As a result, lands unsuitable for wheat cultivation on the English east coast can be adapted to sheep husbandry, with the production being exported and converted into grains through the Hanseatic trade networks, allowing for the realization of economic objectives for both the upper peasantry and the lower nobility.

#### 4. Enclosures as a Market Imperative

The idea that climate change creates obstacles to traditional agriculture was explored by Brenner (2001) regarding the Dutch case. His central argument is that the increased tendency toward flooding was detrimental to cereal cultivation. Since the North Sea basin constitutes a relatively cohesive geographic locus<sup>5</sup> (Bankoff 2013), we can transpose some of the arguments to the English case.

This region has a long history of occupation, sometimes using the marsh for its rich biodiversity, and other times draining the flooded lands to expand monoculture (Galloway 2013; Soens 2013). This second process was typical of the 12th and 13th centuries, when there were examples of successful drainage and reclamations, as well as specific legislation to manage the maintenance of these structures, in the form of institutions such as the Court of Sewers, the Land Drainage Act, and the marsh law (*lex marisci*) (Rotherham 2013).

Bringing the climatic element to the fore, we can understand how the onset of the Little Ice Age (LIA) was a complicating factor for the socioeconomic arrangement developed in 13th-century English marshes, which was based on the drainage of lands and a focus on grain cultivation. The North Sea basin is a region prone to flooding during maritime storms due to a wind-drift phenomenon. The wind carries waters from the northern (deeper) portion to the southern (shallower) portion. This difference in depth causes the sea level to rise noticeably, which, along with the redirection of winds to the west due to the Coriolis effect, makes the east coast of England (as well as the Dutch coast) more affected by maritime flooding (Bankoff 2013).

Although these storms and floods have been constant throughout history, there is strong evidence that their intensity increased in the 14th century. Both the paleoclimatic evidence, e.g., the analysis of Arctic ice (Trouet et al. 2012) and the water levels of the marshes in Denmark (Mauquoy et al. 2008), as well as historical records (Hoffmann 2014), point in this direction.

Thus, the English economy shifted from a situation where coastal occupation with grain plantations was costly but profitable, given that there were few and small floods until the 12th century, to a situation marked by extreme climatic events that not only destroyed existing infrastructure but also introduced a higher degree of productive uncertainty. It is within this new context that enclosures began to take place.

Although the enclosures conducted by Parliament in the 17th and 18th centuries (Marx 2004; Polanyi 2000) have been enshrined in literature as the ideal type of enclosure, involving the private appropriation and the collective loss of the right to use common lands, they are a later-stage process. Allen (1992) points out that this is but one of three types of enclosure, the other two being enclosure by agreement amongst landowners and by single ownership, those being the dominant types before the 18th century.

Williamson's work (Williamson 2000, p. 56) reframes the debate, as he proposes a reinterpretation of enclosures in light of their historical complexity. The first part of his argument is the differentiation between two ideal types of enclosures: piecemeal and general.

Piecemeal enclosure almost always involves the private purchase or acquisition of land parcels through agreements among members of the community, while general enclosures were orchestrated by the largest landowners in the regional political unit, aiming to reshape existing forms of production instantly (Williamson 2000, p. 59).

However, one should not imagine that one form is inherently more violent than the other; rather, they are different forms of violence and dispossession. Despite piecemeal enclosure having a different temporality, it was often associated with the process of land concentration and served as a mechanism of subjugation of the small landowner, who was forced to sell their property until eventually, the region came under the aegis of a single owner (Williamson 2000, p. 60).

Furthermore, general enclosures can be subdivided. The first type that Williamson (2000, p. 59) points out is enclosure by unit of possession, where a single owner controls the lands of the region, and common rights become his private rights, thereby effecting enclosure. This modality is closely associated with the early enclosures, precisely during the depopulation period of the 15th century.

The second type of general enclosure described by Williamson (2000, p. 59) is enclosure by agreement, in which the majority of landowners in a region agreed to the enclosure and redistributed common rights in proportion to their property. These enclosures were more

common in the 16th and 17th centuries and already reflected a second phase of the English land concentration process.

Finally, the third type is enclosure by parliamentary determination, in which the owner or the set of owners (usually small) who held at least 75% of the lands, measured in value, requested enclosure from parliament. Chronologically, this modality began in the 17th century but gained momentum from the early 18th century onwards (Williamson 2000, p. 59).

Another point that Williamson (2000, p. 66) highlights is that the purpose of enclosures changes over time. Until the 18th century, the enclosed fields were, for the most part, converted into pasture, and only later did the idea of agricultural improvement gain primacy.

Evidence suggests that the early enclosures were of already abandoned lands, without the expulsion of people associated with those lands, as they would have already been displaced by a combination of plague and climate change.

Here, Dyer (2010) offers an interesting interpretation. By systematizing the debate on the deserted villages of England, he identifies that many of those survived the initial shocks of the Plague, until the 1380s, and were only abandoned throughout the 15th century. There seems to be a relationship between the post-Black-Death depopulation and a productive shift, with a decrease in arable fields and an increase in pasture areas.

However, these early enclosures should not be thought of as a completely peaceful phenomenon. The reduction in population in a village could lead not only to the enclosure of its lands by a local minor lord but also to the expulsion of peasants from neighboring lands. Regarding the capacity of petty lords to displace neighboring peasant communities, Dyer (2010, p. 45) states that they “could kill off villages and turn them into specialised pastures, but that was sometimes a continuation of a process, not a new departure”.

Allen (1992) argues that the earliest enclosures were directly responsible for the deserted villages and finds a strong correlation between the two phenomena. However, causality is questionable, as Dyer (2010) suggests; it seems to be a two-way process. A deserted village could be enclosed either through an agreement among the remaining inhabitants or by the purchase of the abandoned land by a local lord. Nevertheless, once this enclosure is successful, the landlord responsible for it will actively work toward enclosing neighboring areas, creating a positive feedback loop<sup>6</sup> between deserted villages and enclosures.

This seems to have been even more real on the east coast of England due to the geography associated with marshy lands.

“Coastal and estuarine marshlands shared in this general trend, but it seems clear that the environmental challenges they faced exacerbated the retreat from arable farming. Whereas pasture lands affected by salt might lose productivity, they would rarely be a total loss and, indeed, saltmarsh itself provided a rich if specialised type of grazing, especially well-suited to sheep.” (Galloway 2013, p. 192).

Galloway raises an interesting point here: the substitution of wheat with sheep, which, due to labor techniques, is also a substitution of people for sheep, and which is endowed with an underlying economic rationality within the range of possibilities of that society.

Considering the earlier period, the marshlands were considerably drained, Soens (2013) reports that, as early as the 12th century, there were reclamation processes on some marshes in England (he focuses on Romney Marsh in Southern England), which agrees with the literature on the expansion of land use during that century. Galloway (2013) follows the same line. Both authors also converge in their interpretation that the drained lands up to the 13th century were almost all dedicated to cereal cultivation.

The main divergence is regarding their conversion into a capitalist agricultural region. Soens (2013) argues that this transformation occurred after the 15th century and only gained significance in the 18th century, while Galloway places this phenomenon at the end of the 14th century. This, which appears to be a significant divergence about the facts, is actually more a disagreement about the interpretation of the data. Both authors acknowledge that

there is a process of transformation in the property structure of these regions but disagree on the timing of when this change becomes relevant. As our objective in this work is to consider the transition, we find [Galloway \(2013\)](#) to be a more adequate assessment, as the author focuses on the beginning of the process.<sup>7</sup>

We must also consider that the relative impact of climate change on grain production is substantially greater than the impact on sheep husbandry, this creates an ecological incentive toward the latter. However, people still needed grain to eat and started to procure a greater quantity of it from the market, using the profits from the wool trade to finance this increased demand for wheat. As a consequence, this society increases its reliance on wheat markets to provide their food, thus altering the basis of the medieval economy.<sup>8</sup>

A particularity of the English case that is highly relevant to the development of capitalism is that English enclosures represent a change in the land ownership regime in favor of the lords, which puts the distribution of agricultural surplus in a historically peculiar mold.

When a farmer in the Northern Netherlands switched from grain to dairy production and supplemented his income by producing summer grains for beer, he was doing so to meet his own consumption needs and those of his household, even if he did so by means of exchange, consumption needs that were, within reason, under their own control. English land use was switched from arable to sheep pasture, driving many producers off the land, and later, in conditions where rents for arable were rising again, landlords derived their rents from productive agriculture, the driving force ([Wood 2002](#), p. 64).<sup>9</sup>

The enclosures, especially in the context of the 15th century, appear much more as a necessity for the local landowner, embedded in the minor nobility we saw in the previous section, due to the changes brought about by the Black Death and climate collapse, rather than a conscious choice for the best way to expand their surplus. However, due to analogous processes that were underway among the peasantry, especially the formation of a yeoman elite, and in international trade with the decrease in freight costs, this adaptive strategy, albeit unconsciously, proved to be more effective in appropriating surplus in the long term. This can be inferred from the progressive homogenization of the English agricultural landscape starting from the east coast.

[Williamson \(2000, p. 64\)](#) clearly identifies that in agricultural development after the Middle Ages, there was a growing specialization of rural production associated with the type of soil and the previous pattern of occupation. Areas with lighter soils continued to adopt a combination of wheat and sheep farming, but in areas with heavier soils, associated with the lowlands of eastern England, there was a gradual expansion of areas exclusively dedicated to sheep farming, creating a “complex pattern of farming regions, in which some mixed-farming areas could be found in the west of the country, and specialised pastoral areas in the east”.

This pattern strictly follows the ecological differential of the North Sea basin, represented here by the east, and the inland part of England, removed from the risk associated with changing rainfall patterns, represented by the west. This is exactly what is expected from the climate-trigger model; specialization occurs where it is ecologically impossible to maintain material reproduction in any other way, analogous, for example, to what [Brenner \(2001\)](#) identifies in the Dutch case.

## 5. Conclusions

As seen in this paper, the theses raised in the transition debates have various worthy elements, among which stand out the dynamics of peasant superexploitation ([Dobb 2004a, 2004b, 2004c](#)) and the centrality of class struggle in the process ([Brenner 1995a, 1995b](#)). Considering this, the major issue to be addressed is how an element external to these processes interacts with the internal dynamics of feudal society. [Sweezy \(2004a, 2004b\)](#) introduces this consideration by identifying trade as a disruptive factor. In light of the most recent knowledge, the change in climate pattern looks likelier to have triggered the

transition, potentially serving as a catalyst for a process that, although obeying an internal dynamic of feudal society, occurred at a specific pace and therefore with specific historicity.

Precisely in the face of the economic challenges brought about by the impossibility of maintaining the trajectory of medieval economic growth, based on increasing land productivity during the MCA, the distributive conflict between lords and peasants worsens.

Thus, the second half of the 14th century draws a scenario in which the lordly classes are seated on a surplus extraction mechanism that became dysfunctional because the pillars on which it was based were suddenly weakened. The feudal lord has fewer peasants to sustain him, these peasants are less productive, and simultaneously, their need for surplus extraction has not diminished, given the interlordly competition expressed in the concept of political accumulation.

The catalytic effect of the climate thus manifests as a mismatch between the productive forces and the relations of production, highlighting the social tensions present within medieval society in this imbalance.

These tensions mainly manifest in the form of social reconfiguration of three different social classes (the English minor nobility, the English peasants, and the long-distance merchants of the Hanseatic League) while the reproduction patterns of these three classes also change profoundly. Although there has always been a degree of intraclass stratification in medieval society, it is substantially higher in the Late Middle Ages and these new social actors account for a growing proportion of society.

In the face of the 14th-century climate change, the three groups of actors we saw in Section 3 come together. The peasants of the English East Coast, unable to cultivate wheat, seek the market as a way to access the cereals necessary for their material reproduction due to the prevailing cereal culture in Europe.

The Hanseatic merchants, due to market pressures associated with the Black Death, found themselves in a position to intensify an incipient grain market and meet this need. On the other hand, they are also willing to buy the wool produced by these peasants not just as one commodity produced among many, as it was in the 13th century, but as a specialized sector.

This, in turn, is perceived by the landowners as a way to restore their incomes, drastically reduced by the demographic collapse caused by the Black Death and the climatic reversal of the LIA. Considering also that the landlords in question are not the magnates who control political power but rather a local aristocracy, composed of the minor nobility, their ability to extract surplus through extra-economic coercion mechanisms is greatly reduced, as they are an elite endowed, yes, with political coercion capacity, but greatly diminished compared to the state apparatus and often in conflict with it.

These three strategies already existed in an incipient form in the 13th century but were not functional for the material reproduction of these classes to the point of becoming dominant strategies. On the contrary, what was functional was the local production of agricultural goods in communal fields from which surplus was extracted through labor or its commutation into income.

However, even in this classic scenario, feudalism was never total, there was always a degree of intraclass differentiation and some exceptions to this way of life, which translates into different social strategies of material reproduction. The transition from feudalism is not the advent of something entirely new, but rather the shift of some peripheral strategies to the center stage. As we mentioned before, the same peasants who planted wheat also raised sheep, but as they changed the allocation of their labor between these two activities, they also had to change many other aspects of their lives.

Climate change appears as an underlying factor throughout the period which catalyzes the social processes underway in English society. It reconfigures power dynamics and creates other paths that human historical agents tread.

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## Notes

- 1 This need for accumulation gets clearer with the definition of ‘political accumulation’: ‘the build-up of larger, more effective military organization and/or the construction of stronger surplus-extracting machinery’ (Brenner 1995a, p. 238).
- 2 Brenner’s centrality of the class struggle is akin to van Bavel and Scheffer’s (2021) argument about how the same external shock (in their case the COVID pandemic) can produce two very distinct outcomes in a society. These authors propose that institutions can reinforce some patterns of change towards more (or less) inequality, similar to how Brenner proposes that the state of the class struggle conditions the direction of change after the 14th century crisis.
- 3 Neither deterministic nor teleological, as there is historical room for human action, as considered by the authors within the broader concept of class struggle.
- 4 This has a strong resonance with resilience camp of environmental history, such as Haldon and Rosen (2018), and with Butzer (2012) model for historical collapse. Although, we diverge a little from Butzer’s model as we explore how the partial recovery (or the attempt at a recovery) of a society can bring the very own change the historical actors are trying to avoid.
- 5 The literature is rich in comparisons between the marshes of the Netherlands and those of England, Soens (2013) directly addresses the comparison between Romney Marsh in England and its counterparts in the Netherlands, Galloway (2013) makes similar observations, expanding the argument to the flood-prone lands of the east coast of England, as do Bankoff (2013) and Rotherham (2013).
- 6 The debate about the causality of the depopulation of medieval villages is extensive; Allen (1992) summarizes it, tracing it back to the seminal work of Postan (1950). Dyer (2010) provides a similar overview, but incorporating more recent debates with Jones (2010) and Smith (2010). It seems to us that the positive feedback loop between depopulation and enclosure is the most appropriate way to understand the process.
- 7 Another piece of evidence for the hypothesis of the relevance of the turn of the 14th to 15th centuries can be found in Broadberry et al. (2015), where, in their quantitative analysis, they identify that English per capita income at this time increases by about 50% and never returns to previous levels. Although part of this can be explained by the supply side shock on the labor market caused by the Black Death, the authors also point out that the sustained level in the following centuries was a British phenomenon, not shared with other areas affected by the Plague.
- 8 Of course, this substitution is never complete, Broadberry et al. (2015) assess the difficulty of measuring the percentage of land dedicated to sheep rearing because it wasn’t unusual for land to be of mixed use. However, the authors also underscore that grazing pastures were the default for marginal lands, a condition that was sometimes connected to the rain patterns converging with Galloway (2013).
- 9 Although here we must temper Wood’s (2002) and Brenner’s (1995a, 1995b) thesis with a later contribution from Bailey (2014) as he points out that tenants had a higher degree of juridical safety than anticipated by the Brenner camp.

## References

- Allen, Robert C. 1992. *Enclosure and the Yeoman: The Agricultural Development of the South Midlands 1450–1850*. Oxford: Oxford University Press.
- Bailey, Mark. 2014. *The Decline of Serfdom in Late Medieval England: From Bondage to Freedom*. Woodbridge: Boydell & Brewer Ltd.
- Bankoff, Greg. 2013. The “English Lowlands” and the North Sea Basin System: A History of Shared Risk. *Environment and History* 19: 3–37. [CrossRef]
- Bois, Guy. 1995. Against the Neo-Malthusian Orthodoxy. In *The Brenner Debate*. Edited by Trevor Henry Aston and Charles H. E. Philpin. Cambridge, New York and Melbourne: Cambridge University Press, pp. 107–18.
- Brenner, Robert. 1995a. Agrarian Class Structure and Economic Development in Pre-Industrial Europe. In *The Brenner Debate*. Edited by Trevor Henry Aston and Charles H. E. Philpin. Cambridge, New York and Melbourne: Cambridge University Press, pp. 10–63.
- Brenner, Robert. 1995b. The Agrarian Roots of European Capitalism. In *The Brenner Debate*. Edited by Trevor Henry Aston and Charles H. E. Philpin. Cambridge, New York and Melbourne: Cambridge University Press, pp. 213–328.
- Brenner, Robert P. 2001. The Low Countries in the Transition to Capitalism. *Journal of Agrarian Change* 1: 169–241. [CrossRef]
- Broadberry, Stephen N., Bruce M. S. Campbell, Alexander Klein, Mark Overton, and Bas van Leeuwen. 2015. *British Economic Growth, 1270–1870*. New York: Cambridge University Press.
- Büntgen, Ulf, Vladimir S. Myglan, Fredrik Charpentier Ljungqvist, Michael McCormick, Nicola Di Cosmo, Michael Sigl, Johann Jungclauss, Sebastian Wagner, Paul J. Krusic, Jan Esper, and et al. 2016. Cooling and societal change during the Late Antique Little Ice Age from 536 to around 660. *Nature Geoscience* 9: 231–36. [CrossRef]

- Butzer, Karl W. 2012. Collapse, Environment, and Society. *Proceedings of the National Academy of Sciences USA* 109: 3632–9. [[CrossRef](#)] [[PubMed](#)]
- Campbell, Bruce M. 2016. *The Great Transition*. New York: Cambridge University Press.
- Coss, Peter Roderick. 2003. *The Origins of the English Gentry*. New York: Cambridge University Press.
- Dimmock, Spencer. 2014. *The Origin of Capitalism in England, 1400–1600*. Leiden: Brill.
- Dobb, Maurice. 2004a. Do feudalismo para o capitalismo. In *A Transição do Feudalismo ao Capitalismo: Um Debate*. Edited by Rodney Hilton. Rio de Janeiro: Paz e Terra, pp. 209–14.
- Dobb, Maurice. 2004b. Uma Réplica. In *A Transição do Feudalismo ao Capitalismo: Um Debate*. Edited by Rodney Hilton. Rio de Janeiro: Paz e Terra, pp. 71–84.
- Dobb, Maurice. 2004c. Um comentário suplementar. In *A Transição do Feudalismo ao Capitalismo: Um Debate*. Edited by Rodney Hilton. Rio de Janeiro: Paz e Terra, pp. 123–26.
- Duby, Georges. 1999. *Economía Rural y Vida Campesina en el Occidente Medieval*. Barcelona: Altaya.
- Dyer, Christopher. 2005. *An Age of Transition? Economy and Society in England in the Later Middle Ages*. Oxford and New York: Oxford University Press.
- Dyer, Christopher. 2010. Villages in Crisis: Social Dislocation and Desertion, 1370–1520. In *Deserted Villages Revisited*. Edited by Christopher Dyer and Richard Jones. Hatfield: University of Hertfordshire Press, pp. 28–45.
- Galloway, James A. 2013. Coastal Flooding and Socioeconomic Change in Eastern England in the Later Middle Ages. *Environment and History* 19: 173–207. [[CrossRef](#)]
- Ganshof, François-Louis, and Adriaan Verhulst. 2008. Medieval Agrarian Society in Its Prime, France, the Low Countries and Western Germany. In *The Cambridge Economic History of Europe from the Decline of the Roman Empire: Volume 1, Agrarian Life of the Middle Ages*, 2nd ed. Edited by Michael Moisesy Postan. New York: Cambridge University Press, pp. 290–339.
- Haldon, John, and Arlene Rosen. 2018. Society and Environment in the East Mediterranean ca 300–1800 CE. Problems of Resilience, Adaptation and Transformation. Introductory essay. *Human Ecology* 46: 275–90. [[CrossRef](#)]
- Hilton, Rodney, ed. 2004a. Capitalismo—O que representa esta palavra? In *A Transição do Feudalismo ao Capitalismo: Um Debate*. Rio de Janeiro: Paz e Terra, pp. 183–200.
- Hilton, Rodney, ed. 2004b. Introdução. In *A Transição do Feudalismo ao Capitalismo: Um Debate*. Rio de Janeiro: Paz e Terra, pp. 9–38.
- Hilton, Rodney, ed. 2004c. Um comentário. In *A Transição do Feudalismo ao Capitalismo: Um Debate*. Rio de Janeiro: Paz e Terra, pp. 137–48.
- Hilton, Rodney. 1995a. A Crisis of Feudalism. In *The Brenner Debate*. Edited by Trevor H. Aston and Charles H. E. Philpin. Cambridge, New York and Melbourne: Cambridge University Press, pp. 119–37.
- Hilton, Rodney. 1995b. Introduction. In *The Brenner Debate*. Edited by Trevor H. Aston and Charles H. E. Philpin. Cambridge, New York and Melbourne: Cambridge University Press, pp. 1–9.
- Hoffmann, Richard. 2014. *An Environmental History of Medieval Europe*. New York: Cambridge University Press.
- Jones, Richard. 2010. Contrasting Patterns of Village and Hamlet Desertion in England. In *Deserted Villages Revisited*. Edited by Christopher Dyer and Richard Jones. University of Hertfordshire Press: Hatfield, pp. 8–27.
- Lamarche, Valmore C. 1974. Dendrochronological and Paleocological Evidence for Holocene Climatic Fluctuations in the White Mountains, California. In *Dendrochronologie und Postglaziale Klimaschwankungen in Europa*. Edited by Burkhard Frenzel. Wiesbaden: Franz Steiner Verlag, pp. 151–55.
- Lamb, Hubert H. 1965. The early medieval warm epoch and its sequel. *Palaeogeography, Palaeoclimatology, Palaeoecology* 1: 13–37. [[CrossRef](#)]
- Ljungqvist, Fredrik Charpentier, Paul Krusic, Gudrun Brattström, and Hanna S. Sundqvist. 2012. Northern Hemisphere temperature patterns in the last 12 centuries. *Climate of the Past* 8: 227–49. [[CrossRef](#)]
- Luterbacher, Jürg, Johannes Peter Werner, Jason E. Smerdon, Laura Fernández-Donado, Fidel J. González-Rouco, David Barriopedro, Fredrik Charpentier Ljungqvist, Ulf Büntgen, Eduardo Zorita, Sebastian Wagner, and et al. 2016. European summer temperatures since Roman times. *Environmental Research Letters* 11: 024001. [[CrossRef](#)]
- Marx, Karl. 2004. *Capital: Volume I*. London: Penguin UK.
- Mauquoy, Dmitri, Dan Yeloff, Bas Van Geel, Dan J. Charman, and Antony Blundell. 2008. Two Decadally Resolved Records from North-West European Peat Bogs Show Rapid Climate Changes Associated with Solar Variability During the Mid–Late Holocene. *Journal of Quaternary Science* 23: 745–63. [[CrossRef](#)]
- Mordechai, Lee, and Merle Eisenberg. 2019. Rejecting Catastrophe: The Case of the Justinianic Plague. *Past & Present* 244: 3–50.
- Parker, Geoffrey. 2013. *Global Crisis: War, Climate Change and Catastrophe in the Seventeenth Century*. New Haven: Yale University Press.
- Patriquin, Larry. 2004. The agrarian origins of the industrial revolution in England. *Review of Radical Political Economics* 36: 196–216. [[CrossRef](#)]
- Pirenne, Henri. 2013. *Mohammed and Charlemagne*. London: Routledge. First published in 1938.
- Polanyi, Karl. 2000. *A Grande Transformação: As Origens da Nossa Época*. Rio de Janeiro: Campus.
- Postan, Michael M., ed. 2008. Medieval Agrarian Society in Its Prime, England. In *The Cambridge Economic History of Europe from the Decline of the Roman Empire: Volume 1, Agrarian Life of the Middle Ages*, 2nd ed. New York: Cambridge University Press, pp. 549–632.

- Postan, Michael Moisse. 1950. Some Economic Evidence of Declining Population in the Later Middle Ages. *The Economic History Review* 2: 221–46. [\[CrossRef\]](#)
- Prybil, Kathleen. 2017. Farming, Famine and Plague. In *The Impact of Climate in Late Medieval England*. Cham: Springer.
- Rotherham, Ian D. 2013. *Lost Fens: England's Greatest Ecological Disaster*. Cheltenham: The History Press.
- Schneider, Lea, Jason E. Smerdon, Ulf Büntgen, Rob J. S. Wilson, Vladimir S. Myglan, Alexander V. Kirilyanov, and Jan Esper. 2015. Revising midlatitude summer temperatures back to A.D. 600 based on a wood density network. *Geophysical Research Letters* 42: 4556–62. [\[CrossRef\]](#)
- Sessa, Kristina. 2019. The New Environmental Fall of Rome: A Methodological Consideration. *Journal of Late Antiquity* 12: 211–55. [\[CrossRef\]](#)
- Smith, Sally. 2010. Houses and Communities: Archaeological Evidence for Variation in Medieval Peasant Experience. In *Deserted Villages Revisited*. Edited by Christopher Dyer and Richard Jones. Hatfield: University of Hertfordshire Press, pp. 64–84.
- Soens, Tim. 2013. The Social Distribution of Land and Flood Risk along the North Sea Coast: Flanders, Holland and Romney Marsh Compared (c. 1200–1750). In *Rural Societies and Environments at Risk: Ecology, Property Rights and Social Organisation in Fragile Areas (Middle Ages-Twentieth Century)*. Edited by Bas van Bavel and Erik Thoen. Turnhout: Brepols Publishers, pp. 141–73.
- Sweezy, Paul. 2004a. Uma Crítica. In *A Transição do Feudalismo ao Capitalismo: Um Debate*. Edited by Rodney Hilton. Rio de Janeiro: Paz e Terra, pp. 39–70.
- Sweezy, Paul. 2004b. Uma Tréplica. In *A Transição do Feudalismo ao Capitalismo: Um Debate*. Edited by Rodney Hilton. Rio de Janeiro: Paz e Terra, pp. 127–36.
- Trouet, V., J. Scourse, and C. Raible. 2012. North Atlantic Storminess and Atlantic Meridional Overturning Circulation during the Last Millennium: Reconciling Contradictory Proxy Records of NAO Variability. *Global Planetary Change* 84: 48–55. [\[CrossRef\]](#)
- Unger, Richard W. 1980. *The Ship in the Medieval Economy, 600–1600*. Montreal: McGill-Queen's Press-MQUP.
- van Bavel, Bas, and Marten Scheffer. 2021. Historical Effects of Shocks on Inequality: The Great Leveler Revisited. *Humanities and Social Sciences Communications* 8: 76. [\[CrossRef\]](#)
- van Bavel, Bas J. P., Daniel R. Curtis, Matthew J. Hannaford, Michail Moatsos, Joris Roosen, and Tim Soens. 2019. Climate and Society in Long-Term Perspective: Opportunities and Pitfalls in the Use of Historical Datasets. *Wiley Interdisciplinary Reviews: Climate Change* 10: e611. [\[CrossRef\]](#)
- Williamson, Tom. 2000. Understanding Enclosure. *Landscapes* 1: 56–79. [\[CrossRef\]](#)
- Wood, Ellen Meiksins. 2002. The question of market dependence. *Journal of Agrarian Change* 2: 50–87. [\[CrossRef\]](#)

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