



Interactive comment on “Social vulnerability to climate in the “Little Ice Age”: an example from Central Europe in the early 1770s” by C. Pfister and R. Brázdil

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1. General Comments

Both authors of the article to comment on here have made major contributions to the development of climate history. They are also leading protagonists of a branch of climate history that seeks renewal: Research on the impact of climatic change on societies during the Little Ice Age (LIA) was relatively fashionable twenty odd years ago. But the state of climate reconstruction left many fundamental questions open, not to speak of the numerous methodological challenges to assess impacts. In principle, these problems are enduring, while the reconstruction of past climates in general and that of the Little Ice Age in particular has reached a new level. Time is ready to discuss

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the relationship between climate and society on a new level of historical knowledge.

For the paper in hand, the authors have returned to a classical issue of social and economic history: subsistence crises. Considering the impact of climate on agriculture here, one may distinguish two extremes: ‘climatic determinists’ such as Ellsworth Huntington (Huntington 1915; cf. Lamb and Ingram 1980, p. 136) and ‘economic distributionists’ such as Robert Fogel and Amartya Sen (Fogel 1992; Sen 1981). The obvious difference between these approaches is in the importance that they attach to either ‘natural’ causation or ‘failures in the system of food distribution’. This is not the place to discuss these approaches in detail (see Landsteiner 2005). However, most scholars, who recognise the importance of climate for agricultural societies, work with a ‘cocktail’ of natural and social causes or circumstances as model to explain subsistence crises. Yet, the crucial question remains how their relationship should best be conceptualized in order to understand what happens at the intersection between nature and society. It remains insufficient to refer to ‘a simple space/ time coincidence’ (Lamb and Ingram 1980, p. 139), as some historians still do. Instead, complex modelling of concrete evidence is required.

Introducing a Biophysical Impact Factor (BCIF) looks to be a step in the right direction. But the authors are very brief in explaining it. They are more detailed in their analysis of social vulnerability. ‘Vulnerability has been proposed as the key to understanding a novel conceptualization of risk that attempts to break with the more causal, mechanistic attitudes that have characterized the relationship between human societies and their environments over past centuries and that has often been associated with western cultural norms’ (Bankoff 2003, p. 6). The concept is not entirely new to the historical study of subsistence crises. Yet, for a long time, the term ‘vulnerability’ has rarely been given a distinguishable conceptual meaning. At least, this is true for contributions that historians have made to the field over the last decades. The concept of vulnerability was introduced by sociologists and quickly picked up by geographers, social anthropologists, and archaeologists to the extent that they have contributed to what has now

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emerged as a trans-disciplinary field of research: disaster study. Only lately have historians entered this discourse. It must be welcomed that two of the protagonists in this field are now applying it in a comparative case study of a severe subsistence crisis. Hopefully, this will contribute to closing the gap between the two ‘schools’ mentioned above (cf. Landsteiner’s comment). The following reflections are written from a historian’s point of view. They focus on parts four and five of this inspiring paper and are meant to encourage further research in the same direction.

2. Specific Comments

a. Differences of Price Increase

The evidence on prices, provided by the authors, raises questions. Most fundamentally: What caused prices for rye and barley to triple and quadruple in the Czech Lands, while average prices for rye in Berne were only doubled? What differences caused this difference? Basically, there are at least three hypotheses that may help answering this question:

(1) Harvest failure wasn’t as dramatic in Berne as it was in the Czech Lands. If this is to be investigated, a number of variables must be checked. The difference may be explained either (a) by a difference of the severity of the early 1770s LIATE itself or (b) a difference of impact on crops from one place to another. Concerning the first of these two options (a), the available data on temperature and precipitation provide the necessary information: As the authors point out, weather conditions did not differ significantly between the two regions of comparison in 1769 and 1770. Nevertheless, an important difference could be that the weather improved in Switzerland in 1771, while the Czech Lands experienced a third consecutive year of harvest failure. Here, ‘natural determinists’ would point to the fact that a huge number of people died in Bohemia exactly during the third year (as mentioned in the article, p. 141) and, thus, find evidence to support their views.

It is trickier to decide on the second alternative, i.e. a difference of impact on crops

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(b). The authors don't give any absolute numbers of harvest yields, and I assume that there are none available. But a comparison of agricultural knowledge and techniques that may have affected the output in times of bad weather conditions could be a clue to check the plausibility of this theory. Personally, I don't expect any significant differences between agricultural standards in cultivating grain or wheat in Berne and in the Czech Lands. But who knows!

(2) Swiss authorities in Berne managed to keep prices relatively low, while authorities in the Czech Lands failed to achieve the same goal. It is well known that city councils in Early Modern Europe often stored or imported grain, rye, or wheat to prevent subsistence crises or to intervene on the market and lower the rate of price increases for basic supplies in times of shortage. It seems that authorities in Berne applied such measures based on a sustainable system of preventive grain stocks (p. 140), while responsible authorities in the Czech Lands had no alternative to short-term imports from Vienna and Hungary (p. 141), which made an enormous difference in disaster mitigation and confirms the importance of time in matters of vulnerability and its reduction. Another relevant factor, in this context, is the potato. In Berne it was already used as a supplementary supply when famine threatened in 1769. Like imports or grain stocks the potato worked as a tool to sow down the rise in prices. More precisely, the economic impact of grain stocks and the potato can be described as a gradual uncoupling of market prices for basic supplies from harvest yields and, thus, also from LIATIMP and the biophysical effect of agriculturally unfavourable weather conditions. Modern agricultural technology—including genetic engineering and the use of chemicals—has worked the same direction, reducing the biological vulnerability of cereal crops to weather conditions and parasites in order to maximize and stabilize harvest yields. A stabilization of market prices is most likely to be the outcome.

(3) Another major difference between Berne and the Czech Lands could be market integration. This touches a highly relevant question for the study of early modern price development for basic supplies. In his study on European grain markets 1500-1900, Karl

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Gunnar Persson states: ‘the evidence suggests the combination of harvest shocks and poor integration as the immediate and most important cause of price rises.’ (Persson 1999, p. xvi) In order to investigate market integration for basic supplies, trans-regional or international trade as well as transport costs are important elements. They should be checked beyond short-term authority measures in times of crises. It is well known that, due to the Amsterdam grain trade with the Baltic and a highly commercialized agriculture, the Netherlands were in a favourable position to avoid severe famines from the early seventeenth century onwards.

From their conclusions it becomes clear that the authors favour a combination of (1) and (2), while the question of market integration (3) is hardly touched. The emphasis is clearly on political systems and governance. More or less implicitly, this choice makes political agency the decisive factor. In other words, severe crisis is regarded as the outcome of state failure. Though I believe that the authors have good evidence on their part, this assumption may be questioned as long as there is no model to measure or assess the impact of official political agencies on price development. The answer could be given through an analysis of regional markets for basic supplies—which, after all, may be the key to understand early modern subsistence crises.

b. Political Systems and Governance

The comparative analysis of political structures and management is a very powerful part of the paper, leading to a valid assessment of social vulnerability in the territories of Bern and the Czech Lands. But it is only indirectly (e.g. through poor relief) that we learn something about differences within the two societies, though social stratification was mentioned earlier among the paradigms to describe social vulnerability (see p. 125). Moreover, the affected societies are only dealt with as subject of official management which leads to a quite restricted perspective on relevant agencies. While the authors emphasize, that historians ‘care about people’s perceptions’ that can be discovered ‘in the sources’ (p. 126), they regard the ‘persecution of hoarders and speculators’ as merely ‘symbolic’ (p. 140). I admit that I shared this view until very recently,

but would now prefer to investigate what is really behind it. I would argue that hoarding and speculation can be analysed as rational social practice and that they are likely to appear under certain market conditions—as are exports from countries suffering severe shortage of food supply (paradox as it may sound).

Another question to deserve closer attention is territorial space. The authors themselves are pointing to the fact that the Czech Lands outnumbered Berne in both population and territory (p. 136-7, 142). But it isn't exactly clear what this means. According to the numbers given in the paper, the population densities were ca. 53/km² for the Czech Lands and ca. 41/km² for Berne. Yet, this doesn't mean that Berne had more land per person available for agricultural supply, because only arable land is what counts in this regard. I dare speculating that the numeric relation would be turned upside down if information on arable land was at hand. Anyway, if the choice of comparison is to be defended as plausible rather than seen as purely voluntary, conventional, or dependant on the authors geographical focus of research (which is fully legitimate in itself), then the validity in comparing two seemingly imbalanced territories requires some elaboration. The first question to answer here is by what principal standards they can be treated as comparable entities. The answer is obvious, but not banal: both territories are considered as political bodies or units. But we don't learn very much about how these political units, their governments and their administrations, operated. While the authors refer to some principle structural differences, the question of concrete political action is not extensively dealt with. Considering that, during the crisis, time was 'of the essence' (cf. Bankoff 2004), readers would like to know about the chains of political decision making and efficiency in, both, normal times and times of emergency. It is unclear to what extent political action was affected by population figures. The sheer numbers do not allow for far very reaching conclusions, because governmental efficiency is dependant on administrative density and the enforcement of decrees and other measures.

c. The Question of Generalization

For any case study it is important to consider perspectives of generalization. Normally they are provided by the paradigms of comparison that are located on a level of abstraction allowing further comparison on a shifting time-space-scale. But how far can we go in generalization? Here, I stumbled over the following statement (p. 132): ‘Effects of climatic fluctuations “on the course of history” are difficult to demonstrate. It is frequently overlooked that both “climate” and “history” are blanket terms, situated on such high level of abstraction that relationships between them cannot be investigated in a meaningful way in accordance with the rules of scientific methodology.’ I fully understand the authors’ concerns about any rash conclusions on the issue of ‘climate and history’. But if they were literally right, World or Global Histories should better not be written—or not deal with climate at all. I am sure that this is not what the authors wanted to tell us, as in the next paragraph they recommend a ‘specific focus’ on ‘the food system, the health system or the energy system’ etc.—which are, in fact, very general concepts. (After all, would it not be preferable to speak of a plurality of such systems spread over time and space?) It must be remembered that history is not an exact science. Human agency, whether on an individual or a social level, will always produce contingency, which is beyond calculation. It is, therefore, certain that there is no algorithm to discover that bounds ‘climate’ and ‘history’ together. Generalizations on their relationship will always have to be based on plausibility that may be drawn from the available evidence and models of mutual impacts. But that holds true on every level of abstraction. Yet, new and complex models require detailed case studies and comparison first, before valid statements in wider geographical and temporal perspectives are possible. I assume that this is what the authors wanted to tell us.

d. Other Comments and References

(1) p. 125: ‘A group’s ability to anticipate, cope with Ę, something which Brooks (2003) has labelled social vulnerability.’ As always, it is difficult to tell, who really invented the term or first used it in the context of disaster studies. But it was not K.N. Brooks. In a recent article Anthony Oliver-Smith points to Blaikie 1994 and a number of even earlier

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publications (see Oliver-Smith 2004, pp. 10-11). The literature on (social) vulnerability is very elaborate nowadays. For the context of the present paper, most relevant recent titles are: Ribot, et al. 1996 (second edition: 2005; link to the introduction: <http://www.enda.sn/energie/cc/jesse.htm#1>.) and Bankoff, et al. 2004.

(2) The authors are absolutely right in stating that the ‘management of subsistence crises needs to be mentioned along with wars and riots as being amongst the most serious challenges that Early Modern authorities had to face’ (p. 139). Yet, I would add epidemics here. Furthermore, if we are to understand this sentence as making an implicit difference between ‘early modern’ and ‘modern’, then this may only be true for Europe after World War II.

3. Technical Corrections

(1) p. 125: The correct reference for the quote from Robert William Fogel is: ‘Second Thoughts on the European Escape from Hunger. Famines, Chronic Malnutrition, and Mortality Rates’, in S. R. Osmani: *Nutrition and Poverty*. Oxford and New York 1992, pp. 243-86 (quote from page 255).

(2) p. 131, row 22: ‘degrees of freedom’ - of scope or latitude?

References

G. Bankoff, ‘Vulnerability as a Measure of Change in Society’, *International Journal of Mass Emergencies and Disasters*, 21 (2003), pp. 5-30.

—, ‘Time Is of the Essence: Disasters, Vulnerability and History’, *International Journal of Mass Emergencies and Disasters*, 22 (2004), pp. 23-42.

G. Bankoff, G. Frerks and D. Hilhorst, eds., *Mapping Vulnerability: Disasters, Development, and People* (London ; Sterling, VA, 2004).

P. M. Blaikie, ed., *At Risk. Natural Hazards, People’s Vulnerability, and Disasters* (London etc., 1994).

R. W. Fogel. 'Second Thoughts on the European Escape from Hunger, Famines, Chronic Malnutrition, and Mortality Rates', in S. R. Osmani ed., *Nutrition and Poverty*, (Oxford and New York, 1992), pp. 243-286.

E. Huntingdon, *Civilization and Climate* (New Haven, Conn. and London, 1915).

H. H. Lamb and M. J. Ingram, 'Climate and History. Report on the International Conference On "Climate and History", Climatic Research Unit, University of East Anglia, Norwich, England, 8-14 July 1979', *Past and Present*, 88 (1980), pp. 136-141.

E. Landsteiner. 'Wenig Brot Und Saurer Wein. Kontinuität Und Wandel in Der Zentraleuropäischen Ernährungskultur Im Letzten Drittel Des 16. Jahrhunderts', in W. Behringer, H. Lehmann and C. Pfister eds., *Kulturelle Konsequenzen Der "Kleinen Eiszeit"/ Cultural Consequences of The "Little Ice Age"*, (Göttingen, 2005).

A. Oliver-Smith. 'Theorizing Vulnerability in a Globalized World: A Political Ecological Perspective', in G. Bankoff, G. Frerks and D. Hilhorst eds., *Mapping Vulnerability: Disasters, Development, and People*, (London/ Sterling, VA, 2004), pp. 10-24.

K. G. Persson, *Grain Markets in Europe, 1500-1900 Integration and Deregulation* (Cambridge, 1999). J. C. Ribot, A. R. Magalhães and S. S. Panagides, eds., *Climate Variability, Climate Change, and Social Vulnerability in the Semi-Arid Tropics* (Cambridge/ New York, NY, USA, 1996).

A. K. Sen, *Poverty and Famines* (Oxford, 1981).

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