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The bumpy road towards farming in Finland – a short-essay re-appraisal

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Abstract

The origins of farming in Finland and neighbouring countries in northeastern Europe is still a contested field of archaeological research. While several discoveries in recent years have at least shed light on the arrival of first domesticated animals in the early 3rd millennium BC, and proved an episode of barley use on Åland for around 3000 BC, the question of continuity/discontinuity before and after this period remains widely open. Observed changes in pollen profiles dating to the mid 4th and later 3rd millennium BC do not necessarily confirm domesticated plant use. Likewise seem millet, buckwheat and hemp, plants of central and eastern Asian origins, not arriving in Europe prior to the mid 2nd millennium BC. But a case could perhaps be made on the validity of our definitions when it comes to an early cultivation horizon of hazel and several water plant species.

Keywords: cattle, barley, climate change, Eastern Asian farming package, lake cultivation, Trapa natans.

Foreword

It is one of these epic questions in Finnish prehistory: When does farming – that is animal husbandry and agriculture/cultivation or to formulate it in another way, the productive way of securing human subsistence – start in Finland? An answer is not that easy to give and published views spread widely, extending chronologically from the later 6th/5th millennium (Alenius, passim) to the 1st millennium (Lahtinen & Rowley-Conwy 2013; Lahtinen et al. 2017) BC and ideologically from full-fledged since the 4th, over part-time in the 3rd and 2nd, to basically no role until the Iron Age. Notably has our laureate Mika Lavento written a profound article about this important topic exactly ten years ago (Lavento 2012). Overall, there is no easy answer and many factors need to be taken into the account: Environment, climate change, connections, human migrations, and last but not least how we define what actually is farming. But let us first briefly recapitulate the wider picture:

3.1 Introduction

Farming was invented several times, and independent from each other, in the history of humankind: in western Eurasia, in China, in the Americas… However, the earliest of these events happened in the Near East, in the so-called Fertile Crescent, that is in the modern countries of Turkey, Syria, Iraq, Iran, Lebanon, Israel, Palestine, Jordan, and dates back to ca. 12 000 years ago. This first farming horizon is linked to a distinctive package of domesticates: Cattle, sheep, goat, pig from the animal and wheat, barley and several pulses from the plant side. Any other animal, except of the dog, do only appear much later, and so do further grass cultivates and pseudocereals. First farmers, becoming ever greater in numbers ('demographic transition'), fuller in cultural expressions, and more complex in societies, were subsequently moving in all directions, with the southeast of Europe reached, via Anatolia, shortly before 6500 BC. Here trajectories split, with one branch going west following the shores of the Mediterranean and another going northwest, crossing the Continent along the Danube River and arriving at the Rhine River and in southern Poland after 5500 BC. Farmers settle in Britain and south Scandinavia at 4000 BC, and finally reaching as far north as Scotland, southern Norway and eastern central Sweden, just north of Stockholm, in the course of the first half of the 4th millennium BC. As for the Baltic countries, pastoral practices arrive in southwestern Lithuania with the Globular Amphora Culture shortly before 3000 BC. There might be a third major trajectory, namely a northwards movement of seemingly more pastoralist than farmer populations around the Black and Caspian Seas, ultimately responsible for bringing domesticated animals as north as the lower Volga River at about 5000 BC (Vybornov et al. 2015).

3.2 The known knowns in Finland and around

Northeastern Europe, and here Finland, most of the Baltic countries and northwestern Russia, was – in the traditional narrative – not reached by any of these farming waves until the 3rd and the 2nd millennia BC. Here, hunter-gatherer-fisher-trapper of the Late Comb Ware tradition continued in their usual way of life. Well, maybe! Because there are indications from pollen profiles in all those countries that small-scale cereal cultivation may have happened well before. However, cereal pollen is similar to grass pollen; pollen can get vertically moved by bioturbation in soils and organic deposits; western winds may have blown in pollen from regions with established farming; and freshwater reservoir effects can alter the dating of layers. Irrespective if true or not, there are doubtlessly changes in landscape usage dating to the 4th millennium BC (Alenius et al. 2021) and they have to be taken seriously. I will come back to these later, because more important than these disputed claims are some safe milestones only discovered in the last decade: Barley cereal grains from Pitted Ware contexts on Aland directly dated to ca. 3000 BC (Vanhanen et al. 2019); a goat hair from a Corded Ware burial in Perttulanmäki (Ahola et al. 2018) and, likewise from Corded Ware, milk residues from pots, now from several sites in Finland (Cramp et al. 2014; Pääkkönen et al. 2020), probably dated to ca. 2500 BC; and a calcinated sheep/goat bone from Pedersöre Kvarnabba in a Kiukais context dated between 2200–1950 BC (Bläuer & Kantanen 2013). A few more pieces of evidence are known from regions around Finland or were recently presented in lectures but are not yet published.

While Corded Ware is thus a safe anchorage for animal husbandry, as their presence fit to results from neighboring regions, that is Russia and the Baltic countries (Kriiska & Nordqvist 2021; Nordqvist & Heyd 2020; Piličiauskas et al. 2018), it is not for any cereals' and pulses' use, no matter if small-scale intensive or horticulture. We so far do not have unequivocal evidence for such. It is how-

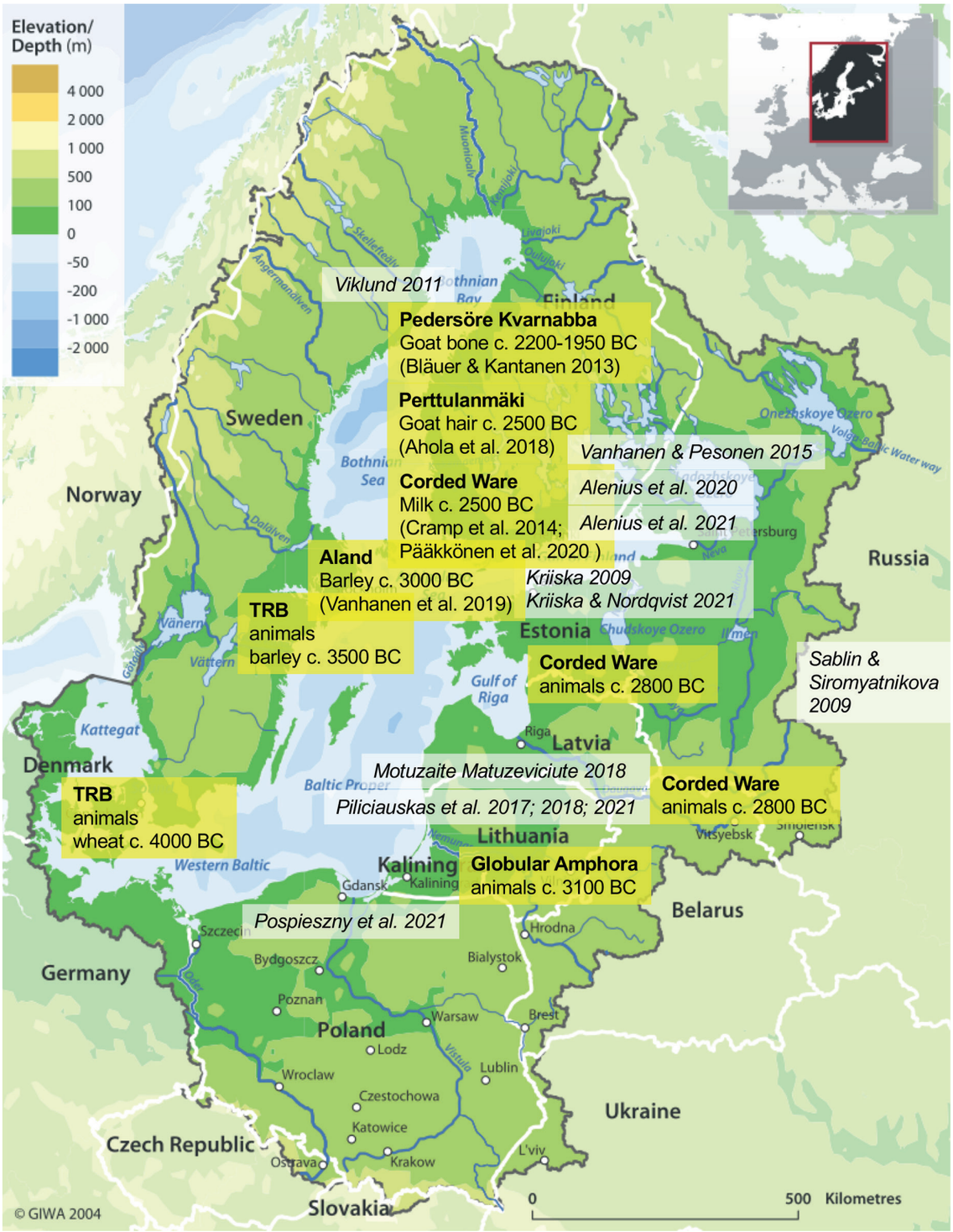

Figure 3.1. Earliest farming evidences in Finland and northeastern Europe, their regional background and published references. Map V. Heyd.

ever the Kiukais case of western Finland from the later 3rd millennium BC that deserves attention. Recent results, at the one hand, show a widespread return to hunting-gathering practices, particularly sealing and fishing in coastal areas. On the other hand, domesticated animals are recorded in Finland as does barley in northern Sweden (Viklund 2011) and possibly along the southern Baltic shores (Piličiauskas et al. 2021) for the four hundred years around the transition 3rd / 2nd millennium BC. Palynology also registers, with more innovative methods, significant changes in land-use and discrete anthropogenic indicators such as cereals (*Triticum*), hemp and ruderal plant pollen in southern Finland in the later 3rd millennium BC. They also hint on early forms of forest-grazing and small-scale slash-and-burn cultivation. These, and increased organic matter lake-spilling could speak for significant economic changes and different human activities leaving altogether a larger anthropogenic footprint on the environment (Alenius et al. 2020). But then, there is the climate and climate-induced environmental change, and it might well interfere with these observed changes.

3.3 Climate change and eastern Asia

Because throughout the 3rd millennium BC, initial higher overall temperatures seem continuously falling and climate conditions worsening, reaching its breaking point at 2190 BC (Helama & Oinonen 2019), after which date we see rather unstable conditions unfavorable for animal husbandry and cultivation for another 300 years. This picture is not confined to Finland but reflects a similar situation of a prolonged period of strong Siberian Highs during winter resulting in deep cooling in the whole of forested northwestern Eurasia (Perşoiu et al. 2019). Its consequences in terms of human settlement and subsistence but also cultural geography and genetic/linguistic change should not be underestimated (Grünthal et al. 2022 in press). Although the resolution is still rough, and other studies in neighboring regions are not confirming deep freeze scenarios (e.g. Pleskot et al. 2020), no mention is made how falling overall temperatures translate into precipitation regimes, seasonality, length of snow cover, late frost periods, etc. But one can imagine that such worsening climatic conditions negatively affect the vulnerability of plants and the feeding needs of animals. One wonders therefore if particularly after the crash of 2190 BC any kind of agriculture could still be possible; rather not. Likewise, any practice of animal husbandry might have been severely hit to the point for it to become completely unfeasible. But interestingly, our known knowns speak a different 'language': No plants in Corded Ware already before; Kiukais turning to domesticated animals and barley; intensifications at the end of the 3rd millennium BC; and all at a time around a severe climate and environmental crash. How are all these pieces going together? The last word is not yet spoken.

But perhaps the problem lies in looking into the wrong direction, that is the west and the south from where, in our mental perception, our early farming package is supposed to arrive. Maybe the east has much more to offer in the earliest stages of farming than the potential but unproven Pontic-Caspian/Volga link of domesticates. This question has already been addressed two decades ago and forms the background of the so-called 'Eastern Asian Farming Package'. As mentioned above, domesticated cattle, sheep/goat and pigs as well as cereals and pulses have their very origins in the initial domestication center of the Middle East. But there are other plant species, widely used as staple food in diet and cuisine in northeastern Europe when looking into historical periods and their records. They even have seen a renaissance in production and consumption as 'ancient grains' and 'healthy food' very recently. These, namely broomcorn millet (*Panicum miliaceum L.*), buckwheat (*Fagopyrum esculentum*) and hemp/cannabis (*Cannabis sativa*), do not have a Levantine background. Their wild forms can be traced to the central and eastern half of the Eurasian Continent with especially millet and buck-

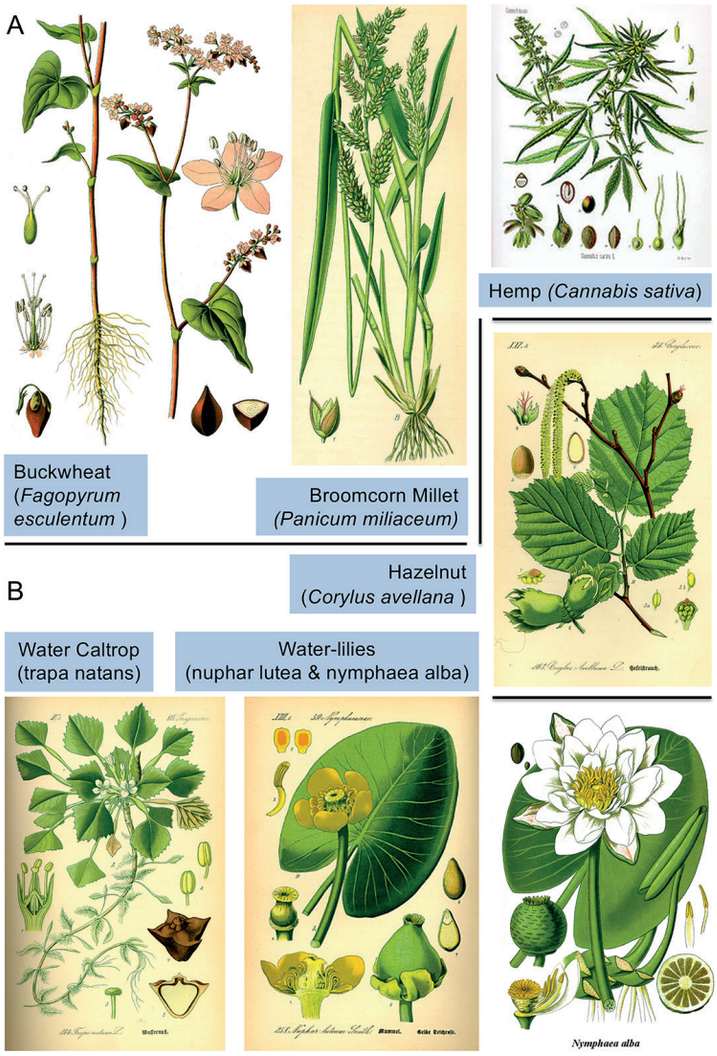

Figure 3.2. Possible prehistoric plant cultivates in Finland and northeastern Europe: A – The 'Eastern Asian Farming Package' components buckwheat, broomcorn millet, and hemp. B – Water Caltrop, Water-lilies, Hazel. (Thomé, O.W. 1885. Flora von Deutschland, Österreich und der Schweiz in Wort und Bild für Schule und Haus. Gera.)

wheat to originate in the Himalayan and Tibetan plateau forelands and/or western China. They have advantages making them desirable for potential early agriculturalists: Short growing and maturing season of less than three months; undemanding when it comes to soils; and low water requirement and pest vulnerability. But buckwheat and millet are also sensitive for low temperatures and late frosts. So, while this 'Eastern Asian Farming Package', of which buckwheat pollen were supposedly detected in Finland already for the late 6th (Alenius et al. 2013) and hemp pollen for the 5th and 4th millennium BC (Alenius et al. 2017), might be seen like a 'white knight' rescuing our sinking early agriculture ship, with it do also come problems of context, dating and interpretation. So far, no grains or hulls, or any other macro-fossil plant remains have been found in 5th to 2nd millennium BC archaeological contexts in Finland. This might well be due to a biased record. But then, the same picture emerges across the Baltic countries and Sweden. Particularly broomcorn millet has recently seen new research from both plant biology and stable isotope side (Filipović et al. 2020; Pospieszny et al. 2021). The resulting picture is clear: Its introduction in Europe can be dated no earlier than the mid 2nd millennium BC and it may have arrived in the Baltic countries only at the end of the millennium. A similar dating is also suggested for the arrival of buckwheat (De Klerk et al. 2015; Hunt et al. 2018) and hemp (Long et al. 2017) in Europe. Overall, the very end of the 2nd millennium BC is also a period when a kind of consolidation in agriculture seems indicated for the Baltic countries (Motuzaite Matuzeviciute 2018) with a diversified, west/east package of *Hordeum vulgare*, *Triticum dicoccum*, *Triticum spelta*, *Camelina sativa*, *Panicum miliaceum*, *Pisum sativum* and cultivated *Fabacea*. *Fagopyrum esculentum* and *Cannabis sativa* may well be added. This does not exclude the occasional, small-scale introduction of cereals, as in Pitted Ware Aland, in Kiukais northern Sweden or even in Corded Ware, still to be detected. However, there is no trace of continuous agricultural practices; of any importance it should

have on food and dietary regimes; and in all likeliness no cereal farming in the 4th millennium BC. But then, once again, we may still look into the wrong direction, that is too much to the west, and wrong definition, that is too much of agriculture, becoming a victim of our own perceptions on how early farming must look like.

3.4 No agriculture but cultivation? A very different kind of farming in the northeast…

What is agriculture, particularly when one talks about it in prehistory? And what is the difference to cultivation? Well, as the word 'agriculture' implies, one would normally regard as typical the following sequence of: Opening an area from wood or other vegetation by, for example, slash-and-burn activity; delimitate/fence it to create relatively small-scale fields; opening the topsoil with hoes and, later, primitive ploughs; sowing of grains in the soil; removing weed and pests in order to see the desired plants germinating, growing and ripening; harvesting; potentially fertilizing exhausted fields, starting over, or moving on to the next plot. So, all soil aspects are essential. However, if we go back to three very basic definitions of farming, that is 1) production (in opposition to gathering); 2) preparing of a space of land and 3) actively promoting growth of a desired plant species by suppressing others, then the term of cultivation is better applicable. The difference becomes evident when looking at a plant like hazel (*Corylus avellana*) which wide use in human consumption we see in Finland since first pottery if not earlier. So, clearing forests for only hazel trees to grow, or actively sowing their nuts for them to densify and expand could well be regarded as a form of cultivation. What matters, and this is the essence, is the active component and the human agency behind. But such is very difficult to prove, and only a quantifying assessment of hazel remains over time, or its pollen, might solve the case. To my knowledge such a study has not yet been done in Finland. Hazel trees are only one form of wood plant those fruits were consumed by humans in northeastern Europe. Others can easily be added with the same context. However, not only forests matter but the same can be expanded to lakes and ponds which are ubiquitous in these landscapes. Here, two plants can be seen treated in the same way: The water chestnut *Trapa natans* and edible water lilies of the geni *Nuphar* and *Nymphaea*. It basically means that actively clearing lakes of any other water plant but those desired, is also a form of cultivation. Northeastern European records know these two species to be consumed, particularly in the Baltic countries but also in Finland, since likewise Comb Ware times (Kirleis et al. 2020; Motuzaite Matuzeviciute 2018; Piličiauskas et al. 2017; Vanhanen & Pesonen 2016), and their abundance in 4th to 2nd millennium BC records could well be regarded for them to be cultivated as a staple food, before its decline in the 1st millennium BC (Lempiäinen-Avci, this volume).

In consequence, it is perhaps rather our definition of farming in marginal northern regions that needs a revision. Instead of constantly looking out for the western/southern -derived evidence of full-flange agriculture which may never be found until the Late Bronze / Iron Age, we may already have had the evidence under our feet all the time but were unable to recognize it. The harsh northeastern climate regime, and its environmental constrains, demanded for its inhabitants to be ingenious and to cultivate resources that were already adapted to longer snow cover, shorter growing seasons, and late frosts instead for waiting for cereals to genetically modify. *Corylus avellana*, *Trapa natans*, *Nuphar lutea* and *Nymphaea alba* might therefore have been the much better options, and it is about us to develop the right methods to find out if these have been actively cultivated. Nevertheless, and irrespective to all what is said before, early farming in Finland, no matter if pastoral or cultivation, was initially rath-

er small-scale, non-extensive, and only supplementary besides plentiful natural resources. But then, surprises like the case of Aland 5000 years ago or Corded Ware cattle herding or Kiukais cereals, are always possible and may alter once again our picture. We only have to wait for good research, targeted excavations, and novel methods and techniques…

3.5 Conclusions

The last word regarding the beginnings of farming in Finland is indeed not yet spoken. Too many parameters still have to be signed with a question mark: Does the mid-4th millennium BC human footprint in the environment, as visible in palynological profiles, not refer to cereal agriculture at all but to lake cultivation? Is this another reason for signals of enhanced sedentariness all over between Kemijoki and the Gulf of Finland? Could Pitted Ware barley and the occasional feral pig have reached southwestern Finland around 3000 BC? Can elements of the 'Eastern Asian Farming Package' still arrive in the 3rd millennium BC? Were Corded Ware people practicing small-scale cereal agriculture or pulse horticulture nevertheless? What exactly happens with climate and environment in the 2nd half of the 3rd millennium BC? What is human activity and what is natural environmental change at the end of this millennium? And how about Kiukais subsistence and the occasional domesticated animal and cereal grain; already before 2000 BC or only afterwards? However, there are three messages out of this essay that can be taken for granted: 1) All systems are interconnected and human subsistence strategies are not only closely linked to climate and environment but to factors like migrations; spread and adoption of innovations; opportunities; and overall human agency. 2) All is internationally imbedded and results from outside of Finland cannot be ignored. It is, in consequence, impossible to answer the above questions in Finland alone. And 3) As Mika Lavento highlights in his own conclusions 10 years ago (2012, p. 33): "…we should not forget the creativity of people in the past."

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