



**Department of Archaeology**

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UNIVERZITA KONŠTANTÍNĀ FILOZOFA – FILOZOFICKĀ FAKULTĀ – KATEDRA ARCHEOLÓGIE

To:

Jan Kučera  
University of South Bohemia  
Faculty of Science  
Branišovská 1760  
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Nitra 16.11.2021

Dear Doc. Kučera,

Thank you for your trust and given opportunity to be a reviewer and a member of the commission for the defense of Michaela Ptáková's doctoral dissertation.

I have read with interest Michaela's thesis entitled "*Hunter-gatherer Archaeobotany: Central European Mesolithic*", which focuses on collecting, analyses and interpretation of macro-botanical remains of plants – mostly seeds and charcoal – recovered from Mesolithic archaeological sites. It consists of four already published peer-reviewed papers (even the last one is published, which was still in manuscript when the thesis was handed in) and two additional chapters - General Introduction and General Discussion and Conclusion.

Being a specialist, who in the past studied plant macrofossils from hunter-gatherer sites in Slovakia and Bohemia, I have followed Michaela's research since she started to work on the subject for her Master of Art degree at the University of Southern Bohemia.

I must confess, that in early 2000, after several intensive excavation campaigns and processing numerous samples from Palaeolithic and Mesolithic sites in former Czecho-Slovakia I basically gave up on the subject. Frustrated, by extremely limited macro-botanical evidence at (east) Central European sites, I have concluded, that this work is not cost-effective. I believed that indeed very little can be learned and published about the use of plants by prehistoric hunters-fishers-gatherers and their daily lives from the perspective of archaeological plant macro-remains. I am glad that Michaela was more enthusiastic and, in a way, proved me wrong.

Below I put a few remarks, that came to my mind when reading her thesis and formulate some questions, which I would like Michaela to answer at the defense.

#### **General remarks**

- First, I would like to point out, that to submit the thesis in this format, is an exception, and not a norm, in European Archaeology. In certain aspects, this is more demanding on the applicants, than producing "normal" single consistent unpublished manuscript. In addition, three out of four papers, which form the core of the dissertation, are first authored by the candidate and in all of them her contribution is over 50%. This is extremely unique and speaks highly of the authors erudition.
- All the texts are well written, clear, to the point, logically organised. The methods applied were well chosen and well performed. The outcomes in the papers are well argued.
- Despite real efforts to secure more plant macrofossil, only limited material was secured. Thus, it had to be evaluated together with other sources of evidence (palynology, archaeology, stratigraphy...) to enable the author to address the three aims postulated in the General introduction.

#### **General Introduction**

The chapter is written with clarity and fully draws the reader into the subject of Archaeobotany of the Mesolithic period. It presents the issues and formulates the aims to be addressed, which are:

1. Reflect the Mesolithic H-G strategies in terms of plant use and manipulation
2. Contribute to better understanding of vegetation history and possible human impact on the vegetation during Mesolithic
3. Understand the shifts from H-G mode of life to the early stages of agriculture from an environmental-archaeological perspective



From the information given in this chapter it follows, that the aims are to be addressed through study of plant macro-remains. As we see further in the thesis, this was rarely possible, as only little new data was acquired due to objective reasons.

**Question for the candidate:** Please specify what you understand by “Mesolithic plant manipulation strategies” and describe how exactly plant macro-remains can contribute to their understanding.

### Chapter I What was on the menu?

The article describes different types of fireplaces and discusses how (or for what purpose) they could have been used. Despite the fact that article went through peer-review process, I miss at least schematic drawing of individual types of the fireplaces. This would allowed other researchers to use here outlined classification and terminology. Also, there are 53 single radiocarbon dates present in the Figures 2, 3 and 4. Yet, it is not clear which off 126 studied fireplaces, listed in Table 1 were dated and which were not. Also, it is unknown what material is individual radiocarbon dates based on. Presumably it was wood charcoal or hazelnut shells....? This information would be important for further discussion.

Table 2. on p. 19 lists the plant remains recovered from individual Mesolithic fireplaces. There are at least three taxa – millet, Cerealia and beech – which are not of Mesolithic age but represent contamination from later periods. The possibility of contamination is acknowledged for example on p. 23 for Soví převis. However, in the same paragraph authors write that “Other observed species probably represent wild [Mesolithic age] species of local flora.”

**Question for the candidate:** Due to strong disturbance by burrowing animals of these sites, can we be sure that the last statement is true? Is it safe to use such data for the vegetation reconstruction? How can their use be justified?

### Chapter II Využívání planých rostlin v lovečsko-sběračském období a palynologická indikace lidské přítomnosti ve skalních územích Českého ráje

There are three main questions the article focuses on – the use of plants as foods, impact of H-G societies on their vegetation environment and spread of farming to the Bohemian paradise (as I understand it, an area of the “Mesolithic resistance”). As the second and the third questions are mostly addressed through analyses of micro-remains (pollen), I focus on the first question.

**Question for the candidate:** It is assumed in the article, though not directly stated, that the seeds of potentially edible fruits (elderberry, raspberry, blackberry and *Chenopodium*) found in charred state represent the evidence that Mesolithic people did consume these fruits. My question is – can we reconstruct the origin of such remains? Are we able to define activities related to food consumption that led to their carbonisation? Are there any methods we can prove that these seeds did not burn by chance (for example attached to branches or with burned litter), but really represent remains of food?

### Chapter III From Mesolithic hunters to Iron Age herders

In this chapter a well stratified sequence of plant macro and micro-remains from a site at Velký Mamučák (again in Bohemian paradise) is used to discuss the changes in human land-use from the Mesolithic to the early Medieval Period. There were two sources of plant macro-remains – flotation samples and animal dung pellets. The analyses of plant macro-remains from dung pellets are indeed unique in Czecho-Slovakian archaeobotany. However, I will not comment on it here, as they date to much younger (Roman) period.

Instead, I draw attention to the part of the results which describe plant remains from strata dated to the Mesolithic. In addition to pollen the middle and late Mesolithic strata also yielded seeds and wood charcoal. Interestingly palynology indicates different vegetation types (different taxa) than macrofossils. In my opinion, this is a very important result. But as in other papers where similar was observed, the issue is not addressed in more detail. It is only briefly mentioned that it is possibly the result of different sedimentation histories of different plant remains types.

**Question for the candidate:** As understanding the sediment formation process, including depositional and post-deposition processes, is extremely important for correct interpretation of (archaeo)environmental data, what steps would you take (or methods apply) in the future to be able to decode them on a similar site?



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#### **Chapter IV Islands of Difference**

This is the most recent paper that explores the relationship between Mesolithic hunter-fisher-gatherers and first Neolithic farmers using two case studies from two naturally very distinct areas. The archaeobotanical data are embedded in the results and reasoning, yet not presented in larger detail. Though, I do not see this as a problem. On the contrary, I am very glad that this, very important and inspiring paper, was including in the thesis. It is my belief that to understand one archaeological period the archaeologist should also study preceding or following periods and try to understand also other (and not only theirs) types of archaeological evidence. For this paper, I do not have any comments or questions.

#### **General Discussion and Conclusions**

Again an example of well written and organised text, which shortly but exceedingly discusses and summarises main outcomes of the evaluated dissertation research agenda. It also presents the existing or raised problems and even suggests their possible solutions. As an archaeobotanist myself, I see the tremendous amount of work, which was done to obtain those few rare plant macrofossil. I applaud the author on the way she collected and placed together the individual pieces of the puzzle and produced with her co-authors a series of very important and inspiring papers. Last, but not least, I am impressed by the level of the English language.

To conclude, it is my belief that Michaela in her dissertation successfully summarises available knowledge about the use of plants by Mesolithic Hunter-Gatherers in (east) Central Europe, which can be extracted from the study of archaeological macrofossils. It represents an in-depth state of the art on the subject and is an important and original scientific contribution. With this dissertation, Michaela Ptáková demonstrates that she already is an independent scientific researcher. **I recommend that after a successful defense she be awarded a title of *Philosophiae doctor* (PhD).**

Mária Hajnalová





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**Berlin, 25.11.2021**

**Review of PhD thesis entitled "Hunter-gatherer Archaeobotany:  
Central European Mesolithic" submitted by Michaela Ptáková**

Dear Dr. Kucera,

Thank you for giving me the opportunity to act as external reviewer and member of the defence committee for PhD candidate Michaela Ptáková. I have read her doctoral thesis entitled "**Hunter-gatherer Archaeobotany: Central European Mesolithic**" with great pleasure and interest. The thesis consists of a general introduction *On plant use in the European Mesolithic*, a section on *Methodological issues, aims and scopes*, including the three aims of the thesis, followed by short summaries of four chapters, each comprised of a multi-authored paper written within the framework of four major research projects. The PhD thesis ends with *General discussions and conclusions* and *Main conclusions*, as expressed by the PhD candidate. Three of the component papers were published in 2020 or 2021; the fourth paper is in manuscript form.

As an archaeobotanist I was looking forward very much to learning more about plants that can be added to the spectrum of useful plants employed by the Mesolithic hunter/gatherer population. Unfortunately, this proved not to be the case due to the scarcity of plant macrofossils encountered at the studied sites. Even so, the author does not conceal the fact that only a few carbonised plant macrofossils dated to the Mesolithic period were present in the samples she analysed. On the contrary, she comments critically on the effective return on time and effort invested in archaeobotanical research into Mesolithic deposits. Although this investment in archaeobotanical analysis was, in her case, enormous, and it did not really result in new knowledge on Mesolithic plant use, the results

obtained through a multi-proxy environmental-archaeological approach balance out this disappointing yield. In this respect, I want to compliment the candidate for her systematic approach and broad perspective in including all the interdisciplinary results of these multi-faceted research programmes in several well-formulated narratives. Her argument that *"a holistic perspective of environmental archaeology is crucial to ensure an effective impact of obtained data on the understanding of prehistoric phenomena"* is definitely justified. As in most archaeological excavations (as well as most scientific experiments), one never knows in advance if and how many new results will be generated.

Michaela Ptáková has succeeded in integrating her research results and thoughts into the bigger picture which the results of these interdisciplinary research projects made it possible to trace. Additionally, she proposes new research perspectives and the application of additional techniques in future projects addressing hunter-gatherer archaeology; such as the analysis of starch, techniques in future projects addressing hunter-gatherer archaeology; such as the analysis of starch, phytolith and dental calculus.

The multi-proxy data obtained from high resolute stratigraphies is not only important in relation to a better understanding of past plant-human interrelationships, but also in considerations of our present and future understanding of vegetational developments. For example, the results obtained in Český ráj show that, even though this region had been forested for the last 12,000 years, the composition of the tree species varied through time. Climatic variations triggered these changes in composition, and humans and their domesticated animals benefitted from the new vegetation types.

The extent to which prehistoric people affected their environment is still an issue that is not totally understood. The research results obtained from analyses undertaken at the rock shelter Velký Mamut`ák clearly show a correlation between the amount of hazel pollen and human occupation. This correlation implies that the hazel trees were maintained by the settlers. A Mesolithic forest management system of this kind has previously been suggested for southern Scandinavia and could now be confirmed.

An important aim of this thesis, *"to understand the shift from the hunter-gatherer mode of life to the early stages of agriculture from an environmental-archaeological point of view"* has been accomplished to a major degree, as it could be clearly shown by the multi-proxy approach that hunter-gatherer communities continued to use rock shelters concurrent with the existence of farming communities in the fertile loess areas.

## Questions to the PhD candidate

1. How can the time of the year, i.e. the season when the hearths had been in use be determined? Your argument is based on the harvesting season for the hazelnuts and the berries, but both could have been dried and stored for many months, and then used at the hearths during winter. What about the animal remains, do they provide any hints about the season when they were hunted?
2. There are no morphological descriptions of or documentation for the finds of plant macro-remains. At least the *Sambucus* finds should have been photographed and described. How can you distinguish between the seeds of *Sambucus racemosa* and *Sambucus nigra*?
3. There is no discussion about climatic impact in the study region. What about the 8k event?
4. What about the effects of bioturbation in the cave/rock-shelter sediments? It is only mentioned once in your thesis, but there are extensive published studies on this subject, for example from southern Germany. These studies show that flint artefacts found in lower deposits could be refitted with artefacts in upper deposits, and vice versa. How can you be sure that the plant remains and animal dung pellets were found in situ?
5. Do you have any explanation why millet (*Panicum miliaceum*) played such a big role at the Velký site?
6. Can you explain the definition of the Local Pollen Zones? See pollen percentage diagram from the Velký Mamučák profile and charcoal diagram on pages 128/129. Why was VM3 not subdivided? There is a clear decrease in *Pinus* charcoal and pollen at 150 cm, *Picea* increases in the pollen diagram, while *Corylus* and other species are present in the charcoal assemblage.
7. I always thought that pigs carry a different *Trichuris* species to goats and sheep? Please discuss the parasite results.
8. In page 138 "Conclusions" you write: "... excellently preserved dry layers of uncarbonised animal bedding and fodder material and dung pellets..." I don't think I have read about the analysis of the animal bedding materials in your thesis. Please forgive me if I missed it.

9. On page 176 you cite a publication by Martin Furholt (2021) who contextualises genetic and archaeological data and highlights the importance of regional and local histories and social processes within the overall process of Neolithisation which can be observed using different spatial and temporal scales. In your main conclusions (page 188) you highlight that "...This overlap time can be perceived as Mesolithic/Neolithic interface, during which hunter-gatherer groups must have been challenged by new social, economic and cultural conditions." Your research programmes have delivered extremely important contributions to the general discussion about Mobility and Social Change for precisely this period.

Can you please explain why your working area is suitable for this kind of research, and do you have an agenda for how to continue the research?

I hope my comments and questions will be helpful to prepare the defence.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Karg'. The signature is fluid and cursive, with the first letter 'S' being particularly large and stylized.

Dr. Sabine Karg M.A.

Free University of Berlin