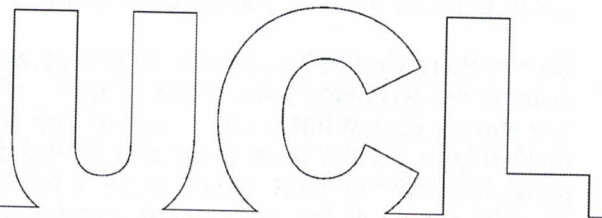


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**PhD Evaluation For: Plant Cultivation and Commodification in the Chalcolithic and Early Bronze Age of Southwest Asia and their Cultural Significance. The case of Late Ubaid Gurga Chiya (Iraqi Kurdistan), Early Bronze Age Kani Shaie (Iraqi Kurdistan), and Early Bronze Age Tel Qadesh (Israel)**

### **General Overview of the Dissertation**

The thesis looks at the process of domestication and commodification of plant resources in the ancient Near East along the later stages of prehistoric societies (5<sup>th</sup> to early 3<sup>rd</sup> millennium BCE). This looks at the process of agricultural intensification as societies became increasingly settled and population increased where storage, distribution, and commodification all become key aspects of society as populations not only increasingly settled and depended on agriculture but settlements generally became larger and more dependent on agriculture. The thesis focused on the use of stable isotope analyses particularly on nitrogen and carbon in order to understand intensification and commodification practices. The methods have not been widely used in ancient Near East archaeology, particularly in palaeobotanical research.

In terms of general structure, three different sites were used to assess the goals of this research with two being in Iraqi Kurdistan and one in the Levant (Israel). A brief background on the sites is given as well as the general methodology, although most of the details are to be found in the articles presented as part of the dissertation. The background provided information on the wider issues, conceptual ideas, and goals along with information about the sites more specifically (after discussing the methods the sites are discussed more). The methodology including protocols in sampling and procedures used are discussed. Then summarised results are presented, where more detail on the analyses and implication are provided. Most of the results appear to focus on the Iraqi Kurdistan sites, although cultivation practices is also provided for Tel Qadesh. Olives appear to be well watered during the Early Bronze Age at Tel Qadesh. More detail about the methods, along with supplementary data, reveal the samples and procedures used in the isotopic analyses. Redistribution from central storage is suggested at Kani Shaie. Gurga Chiya is demonstrated to develop more extensive cultivation. Overall, commodification of fruit and agricultural products in the ancient Near East are demonstrated. The other main contributions were the methods, which involved using stable isotope analyses to better understand cultivation practices whereby the methods are also transferable at different scales. Limitations to the research was highlighted, including cases when the analyses such as at Tel Qadesh did not yield results, such as problems for analysing grapes and olives, or limited samples from Iraqi Kurdistan. Nevertheless, the thesis is able to combine the results of the three sites to make general conclusions about this late prehistoric period and development of settlement and agriculture.

### **Specific Comments**

Overall, the dissertation does provide valuable new insights. The format is something different from what I am use to given the presentation of research articles and summary of results; however, I did not mind this and found this more useful to the student given their career needs. There are some useful results in better understanding the commodification process and key mechanisms in agriculture, including storage and centralised distribution of agriculture. There are, nonetheless, some issues that I believe should be addressed. I put comments on the key points I found below.

First, there is a need to better explain why these three sites are chosen for research and what really brings them together besides spanning somewhat comparable periods and being within the same



region. Nevertheless, these are separated by good distance in the case of the Levant and Mesopotamia and they do represent different periods with very different climate regimes. A clearer argument between the connection of these sites and why these three specifically help to support the wider goals of the research needs to be made.

Ideally there should be a review of comparable literature, including about the methods, but this is done in limited fashion and some of this is presented along in the results section as well. I know this is a shorter format but some review or key takeaways from similar or relevant works is probably needed here, ideally prior to the results and discussion. I do see that background literature is given about the wider context, which is good, but it is unclear to me if the methods are sufficiently covered and some key authors are incorporated in the general background but this seems somewhat limited relative to the literature out there.

There also needs to be more justification of the research goals before the research discussion and publications are presented. Why are the goals important? What makes these goals important for more clear understanding of these past societies in ways we did not know before and are difficult to understand otherwise? These need to be addressed as part of the research goals' justification.

When beginning to discuss the approach and methods I think it is important to be clear about the samples you are dealing with and the contexts. These are given more clearly later on and in particular in the articles. However, you need to also give not only the total sample numbers taken, which the work does, but also the weights and measurement data, or at least refer to them, early on even if they are in an appendix. You can refer to the articles as needed. I found myself having to go back and forth a lot in this dissertation because results and discussion were in various areas so that did make it somewhat cumbersome.

In the introduction and discussion of the sites you should have a map showing the region and discussing the modern climatic circumstances more clearly.

There should be more discussion of the archaeological contexts of your results. Explain the location of these finds, the quality of the context in which they were found, and bring in any evidence or supporting information from other sites.

Some specific comments in the main dissertation part:

Pg. 11: You make this statement: 'The study of materials from Late Ubaid settlement at Gurga Chiya and Early Bronze Age settlement at Kani Shaie made it possible to infer the diachronic trajectory of commodification processes and to place them in social and economic contexts, both in relation to the settlement inhabitants and regionally.' How is that possible as you only have two sites here? Justify this more clearly.

Pg. 15: For Tel Qadesh, would it make sense to incorporate the palaeoclimate data here as well to compare to the crop results? I think there needs to be more discussion about palaeoclimate in the context of these finds.

Pg. 17: The impact part of the results really needs more development. The statements are somewhat general. I found the research articles provide more useful detail. For instance, the sentence: 'This work offers first critical insights into the previously overlooked mechanisms of crops commodification, how they are reflected and entangled in socio-economic realities....' is not clearly demonstrated. What data support these socio-economic realities? There needs to be more discussion not just on the plant remains but on the wider archaeological data that goes along with these plant remains. This means the archaeological data from the sites but also beyond.

Pg. 18. Amy Bogard et al. 2018 is not placed alphabetically and has first name first.

Pg. 19. Schwartz 2015 also puts first name first.

Pg. 19. Why is the Graeber and Wengrow publication using the year of birth for the authors?

Sometimes the authors use first initial and sometimes not. The reference style does not seem to always be consistent. You may need to check the reference styles used or perhaps using some referencing software to make this more consistent and clear.



Also the publication issues repeat for the publications in the Polish section (same issue needs to correct the author details).

#### Articles:

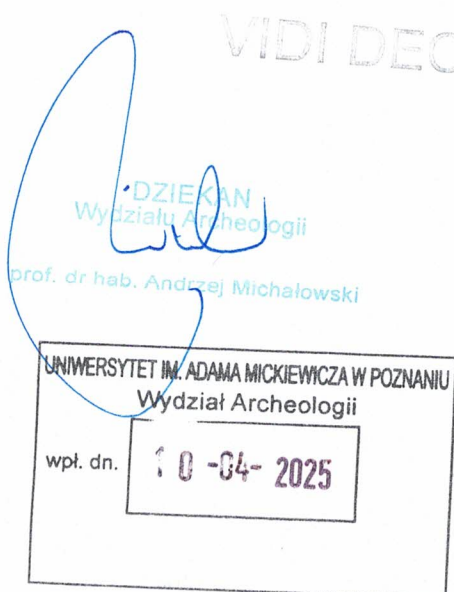
Some authors appear to be missing from the references but are cited. Generally there is a need to check the citations and references more carefully. In fact, even in the articles I found that some citations (e.g., Marsh et al. 2018) are missing from the references. Similar to the main dissertation part, carefully checking your references and consistency is needed.

For Kani Shaie and Gurga Chiya, there is now new palaeoclimate data from Fleitmann et al. 2025 in Quaternary Science Reviews from Shal'ai cave near the sites discussed in Iraqi Kurdistan. This could be perhaps used to illustrate the palaeoclimate situation. You need to really discuss the past climate and its complexities more both for Iraqi Kurdistan but also the Levant. Seasonality, variation of the monsoons, and overall rainfall need discussion, including problems with using some of the paleoclimate data.

For the articles, these appear to have passed peer-review so I am generally happy with them. My comments here are on the isotopes. For N and C results, has there been consideration for contamination? Additionally, has there been consideration on the background N and C level isotopes and calibration to this relative to the amounts found in the samples?

#### Final Evaluation Statement

I think the dissertation makes some important methodological developments. The use of nitrogen and carbon isotope analyses on plant remains, and in the context of cultivation, storage, and distribution, is not done sufficiently in archaeology in the Near East and that I would say is the largest contribution this dissertation makes. The archaeological data are not well discussed in either the main dissertation part or the three articles, particularly comparative analyses and bringing in data from other regional sites. Some of the archaeological data from the sites themselves is used, which is good. I do believe some insights are gained regarding the commodification questions raised by this work but I also think other data may have also demonstrated this. I think the publications demonstrate the student as being a very capable researcher as well as having the needed skills to potentially succeed as a researcher. I understand that the sites and samples probably were not ideal. In fact, I am aware that the student probably struggled in the early stages of this work to get the needed sites and samples as the dissertation was developed. From what I can see, she did do a very good job with the results she had, despite limitations. It was refreshing to report the negative outcomes of the experiments and not just the positive ones, something rarely done in archaeology. Overall, the contributions do demonstrate there is a lot of potential and utility to the isotopic analyses conducted in this work. I am happy to see that the analyses can pass peer-review and demonstrate wider utility. I was not convinced by all the arguments, particularly about the socio-economic implications, using these results alone. However, the wider contributions of the methods in my opinion merit that this dissertation should be passed. Therefore, my recommendation is that the candidate be awarded the PhD given the wider contributions made to research by this work.



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