

EAC12 Q&A Session 6

2021 March: 12th Experimental Archaeology Conference #EAC12, World Tour

<https://exarc.net/meetings/eac12> | <https://www.youtube.com/c/ExarcNetofficial>

So hello and welcome to Session 6 Q&A session for the EAC 12 International Experimental Archaeology Conference. My name is Phoebe and I will be asking all your questions for this hour.

Our first question is for Diederik and says: **I particularly enjoyed your observations about the social elements of building, such as the particular tools people chose and the gender divide between the adzes and axes. Where do you see these observations going in the future?**

Yeah, that's a very good question. It was something that we noticed while we were doing this. And we really need to think about how to research this in a proper way. So, I don't think we have any definite plans yet, but I think Annelou Van Gijn who is also in this chat, she may be able to say a bit more about it?

(Annelou) Yes, well, it was just an observation. We get objections from women saying 'no, no, no', and of course, we can yield an axe very well, which is true. Some of the best woodcutters were actually women. But it is something we would like to explore more also in terms of musculature and, maybe also, raising. We..., little girls, we don't learn to handle a bow as well as boys. So, it's also the swing that's, at least, I never practiced that kind of swing when I was small. Whereas the swing from your elbow is something that is, that comes more natural. So we would like to explore this further.

They were really interesting answers. Thank you. This is a question for Yuval: **Firstly, I loved your video. Do you have any experiments and ideas inspired by questions from your volunteers or visitors? And I guess this question is also open to anybody else that has experience in running open-air museums.**

I'm Javier Baena from the experimental lab of Madrid and from my experience, the participation of the citizens and the general public is quite important. And it will be more important in the future because, from my point of view, we need to be open to any suggestion coming from the general public, because if we want to produce science and dissemination, without this kind of feedback from, who is going to have our information, we are in the wrong way. I think that the best way is to have these kinds of inputs. And of course we get them, in the sense of introducing new subjects or topics and, in the sense to invent new ways for making the dissemination.

Thank you. This is a question for Thomas: **Did you also work with experienced casters or is this something that you're planning to do in the future?**

Well, my supervisor did before. There are not that many casters in Israel and we had contact with them. But due to the pandemic, we decided not to. It was too complicated and it was more or less a..., just a one-off in the Negev desert, close to the university campus. And we will see how we continue in the future with this project.

Thank you. And I've got another question for you (Thomas): **Is the type of furnace that you made just a temporary one, or would it have been used for long repeated periods of time?**

It's difficult to answer. As the state of the furnace was after our experiment, I would say it can be used repeatedly. To me, it did not have any cracks in the furnace walls and different spots were kind of glazed. But the furnace was used for smelting ore, not to melt metal and the ore actually was melted inside the furnace without a crucible. So at the end of one run, the furnace walls, we have in archaeological materials, are heavily slacked and contain a lot of metal prills on them. And I think that

they were probably extracted to remove the metal and then you will also destroy the furnace to some extent. So it is probably recyclable, but probably it was not done.

Okay, thank you. That's super interesting. Our next question is for Brigitte: **Why did you decide to wash the ashes in a pan and not over grass as Pliny wrote?**

The reason for this was that there were only two days of gold washing. We didn't have enough material. We didn't have enough ashes. It only makes sense if you have enough material to wash the ashes over grass.

Okay, thank you. I see that Justyna has just reentered the meeting. **What inspired you to pick that particular roof design for the Mesolithic shelter, with the sticks layered and woven in that way? I can imagine that as you only have post holes to show where the walls are, the roofs are always a product of the imagination.**

Yes, that's true. In Poland we don't have any relics of the roofs. We only have the post holes at our archaeological sites. So it was a product of our imagination, but also because it was easy from a technological point of view to make that type of roof. We also saw some reconstructions in other places like Archeon, in the Netherlands. So yeah, it was a product of our imagination.

No, that sounds really good. I was wondering if then, Annelou or Diederik: **Whether you have anything to add? Because I know that you've also built some houses.**

(Annelou) Yeah, we did. We chose another technique which was suggested by Hans de Haas, from the Netherlands, which is: folding fresh wheat, so wheat that we harvested in the late summer, early autumn, when it's basically at its longest and before it starts to dry out, then we can still bend it. So we kind of gave it a little twist and bent it and put it over the rafters and that's very very fast and it turns out to be very effective. So I don't know. Diederik you want to add to that?

(Diederik) Well, I must admit it, I missed the video that we're discussing now because I had another meeting. So I don't know exactly what it's based on, but of course, if you don't have post holes, it's very difficult to say something about a roof, unless the size of the post holes, the dimensions of them, there might be an indication of a heavy or a larger post, but that's all I can add now, I think.

Thank you. That was really interesting.

(Annelou) I have a question about, about the roof, kind of following this up to Justyna: **I was looking at your video and I think if I recall well, you said it was a large amount of weeds that you cut with flint sickles, I think a hectare, was I correct? But we found it to be a dreadful task. Maybe our roof was a little bit bigger than yours, but it was absolutely, it basically evoked the only uprising of our students, when we asked them to harvest reeds because it is a never ending task. It's very, very difficult. And we also found, for example (we did fresh reed so that may be a difference), we found the sickles to be utterly inappropriate. We actually chopped down the reeds with what was the most effective way with bone adzes or large flint, chubby flint tools with a sharp edge. So how effective were those, those sickles? How long did it take you? How was it? What was the experience?**

We cut mostly dry reed. And honestly, in my opinion, in my friend's opinion, it was quite okay for me. We have really a quite big group of students so they were changing a lot. And so, it wasn't also a very hard process for them. The sickles were quite okay with using with the dry reed so we didn't cut very fresh reed. I don't know if there's a huge difference because we didn't cut fresh one.

(Annelou) **Did you cut a piece of every reed separately or was it possible to cut bundles?**

We cut piles of reed. We didn't cut a single reed because it wasn't effective. So we have a full hand of reed and then cut them.

(Annelou) Okay, little bundles. I think it's also hard to compare our two results, I think, because we actually counted the amount and you counted the surface. But it will be interesting to compare, to see more details at another time. I will contact you separately.

(Justyna) Yeah. If you want, Grzegorz Osipowicz has all the results of a user analysis for the sickles, so he will be very helpful in this matter. Okay, thank you.

Thank you both. That was really nice to listen to. So for our next question, this is for Natasha: They say it's a really great talk, thank you. **Do local craftspeople still make scarabs in the present day for tourism purposes? So perhaps using different tools with the same chaîne opératoire?**

I heard about these workshops in Egypt, but unfortunately I still haven't visited Egypt and about Israel, I don't know any crafter who made the scarabs for tourism purposes, unfortunately. And it's really sad for me.

Oh, I'm sorry. And there's another question for you as well saying: **you gave a teaser for future experiments that you're planning. So perhaps you could comment on your future plans a bit more?**

(Natasha)

Yes. This experiment that we presented now is only a preliminary experiment and we are planning to make another session and make another scarabs. And then this time we are concentrated on a question on glazing and firing; the technique of glazing and firing; the place of it in the chaîne opératoire. Like the question when the engraving was made before glazing or after glazing, or maybe glazing, engraving and glazing again. So this is our future plans for experiments.

Thank you. They sound really interesting. I look forward to hearing about them. Our next question is for Jessi and says: **I noticed that you said that the ABV is not an accurate representation. What do we know about the ABV of prehistoric, so Anglo-Saxon beverages, in general? Do we, for example, know if the ABV was generally high or varying to a high degree?**

That is actually a really good question. ABV of course, is the final product, that measurement of the alcohol by volume. But our concept of ABV is a very modern one. When we're talking about measuring that ABV in this case, we're talking about wild yeast fermentation. Wild yeast is extremely variable, there are thousands, if not millions of strains. Some of them will suppress other strains or eat all of the nutrients. Different strains will survive to different levels of alcohol. So there are some cider strains that will actually survive alcohol levels of 18%, where there are other strains that will only survive about alcohol levels of 4%. So, as far as any early forms of fermentation, they are going to be highly variable because of those strains. The yeast comes from everywhere, from like in the example of cider, a lot of that yeast comes from the outside of the apple, but not just the outside of the apple. It comes from everything else that is in contact with that production process. So the cheese cloth or horsehair cloth that you're squeezing through, whatever you're milling with, if you're a milling in a wood bucket, all of that yeast comes off of it. It is possible actually, though I want to do more research on this, to actually look at cultivating that wild yeast system, through repetitive use of either fermentation barrels or there's the ale stick that they used to use in the Middle Ages where you've got the stick hanging outside of an inn that they would use to stir a brew of ale for fermentation to reinoculate a previous batch of yeast, though not knowing that that's what they were doing. So it is highly variable, but it is also possible that they would have been able to cultivate some kind of relative standard in that process of fermentation. But a lot of that is still questions to be answered.

Thank you. Our next question is also for you, Jessi: **First, I love spite as an experimental incentive, but secondly, did you try your cider and was it tasty?**

Yes. Yes, it was. I actually did two different types of batches. The one that was highlighted here was the crabapple cider and surprisingly, it tasted like an American sour apple candy because the

fermentation hadn't depleted all of the sugars. And so it was absolutely delicious. And I had a few people actually ask me and drink more of it. The second batch, if you talked to a few people, was a little crazier because I used a different apple because that batch was for the other portion of the experiment. But yes, overall it was tasty and yes, I did drink it.

That sounds amazing. We have another question for you (Jessi) as well: **As someone who doesn't know much about English crabapples, are there a variety of crabapples the cider could be made from and do you think this would affect the experiment at all?**

That is a really good question. So, yes and no. For crabapples, if you look at the heritage of apples, that as far as the general plant is concerned, it's believed they start from two different types of plants. A lot of the apples we have today are highly crafted if you will, through grafting and manipulation and such. Crabapples, of course, being a wild variety, they have actually changed over time. So the crabapples that we have access to today are slightly bigger than some of the crabapples that would have been available at the time. So the general makeup of the crabapple shouldn't make too much of a difference. Because the general properties of it are going to be the same. It'll make more of a difference in the second experiment, dealing with the seed research and the seed morphology, because it's dealing with the amount of meat on the apples, as far as the milling process. But as far as this aspect, dealing with the original gravity, there would be some variable, of course, because anytime you get anything wild like that, there is going to be variable in any batch that you collect. But as far as crabapples from say England versus from the US or Germany, I don't know that there's going to be nearly enough variability to make any real difference in any of the research.

Okay, thank you. Our next question is for Aleo: **Have you tried, or are you planning to try using the stone tools on different contact materials that are more specific to Africa? For example, to see if different animal skin types native to Africa or native African plants, create different use-wear patterns to the European ones.**

Yes. Thanks. Thank you for the question. It's really interesting. Yeah, for now I use the tools on contact materials that were available here in the Netherlands, but we already tried to find a counterpart, a plausible counterpart, of also material that were exploited in South Africa. So for now we use ungulates and for plants, we use reeds and that was just a trial to see what kind of use were choices we can expect on these kinds of stones that we are not familiar with. Of course in the future it will be also very interesting to try different experiments. Also with material that came from Africa, because of course, depending on the contact material, we will have different traces on the stone tools, but we are also going to analyze tools from South Africa. So after, I mean, an idea of the traces that we have in that tool, we can also plan a more in-depth experiment. Try to recreate similar traces that we can observe on the archaeological material. For now the experiment was just a trial and it was not based on archaeological traces. So we just decided to test these rocks. So, but in the future, yes, of course.

Okay. Thank you. I look forward to hearing about it in the future. Thanks. Our next question is for Catarina: **How did you choose which raw materials to use in your experiments? So ethnographic studies, current available materials or historical accounts or anything like that?**

So it was a combination of this for the raw materials for the ornaments or for the blanks. This was based on the materials that I had in the archaeological record of course, but for the contact materials or the tools that I was using for working them, depending on the experiments, some of them were based on locally available materials. So especially for the grinding stones, but for other materials, it was a combination of locally available materials, but also, some ethnographic references from South America, from tools that people are using, indigenous peoples in Amazonia, are using nowadays and to a certain degree ethnograph or ethnohistoric, references as well, but not as much.

Thank you. Our next question is back to Jessi: **How far back do you think making crabapple cider goes? Into prehistory? I'm thinking of the crushing and pressing experiment. Lovely to see crabapple cider experiments.**

Thank you for this question. Actually, I believe that it goes back as far as you can make alcohol. Out of all of the alcohols, with exception possibly wine really, I guess it is extremely easy to make. You're not getting stung by bees to get the honey. But the apples themselves will actually ferment on the ground as they're sitting there. So I imagine that it's possible that someone discovered this by eating apples off the ground that had started to slightly rot and ferment inside of their casings or inside of the skin. As far as the technology is concerned, there have been arguments before that cider wouldn't have been produced by the Anglo-Saxons because they didn't have the technology, but the technology is basically: take something hard, smash a bunch of apples and squeeze the juice out, or actually there's other methodologies of cider production as well that don't even require that much. Some are just: cut up the apples and set them in a bucket of water, or there's a lot of different methods that make it extremely simple. And so as far as if you compare it to something like ale production, which is rather complex, yes, I do believe that there is, that it was highly likely that cider production goes way back into, throughout the prehistoric periods. How far back? I could not say.

Thank you. Our next question is for Javier: **Someone mentioned differences in tool preference related to gender difference for the Vlaardingen House Building Project. Have you had any similar observations, so differences in preference between gender/age during your experience with students or visitors at your own experimental archaeology lab?**

Well, at our lab we are very limited in the kind of experiments we can produce. So making huts or making house building is quite important. Some of my students came back during the first part of the course telling me that they want to make experiments about Viking navigation. And they say, well, that's quite impossible for us because we just focused on the small things in our lab.

Thank you. This question I think is for Xosé-Lois: **With the high lead content axes, what, if any, use-wear experiments are you planning?**

Well, first of all, I am Lois Armada. I'm here replacing my colleague [Beatriz Comendador]. I would like to congratulate the organizers of this conference because everything's running fantastic. And I think the question is about use-wear experiments not in experimental palstaves, but in proper archaeological models. I'm not sure whether the question is addressed to these archaeological objects or to our replicas. Our research for the moment is focusing on the casting technology rather than use-wear experiments, because most of these palstaves really were never used. They have been studied with metallography and with other techniques and most of them, even because they preserve the casting sprue, the rings usually broke. So we know that the proper archaeological objects, most of them were never used. And this is why we consider that the use-wear experiments are not very relevant for the moment. We are focusing in the first system on the casting technology. But, of course we would consider the use-wear experiments in the future. But these high leaded objects are not very functional in terms of the proper use of this object as palstaves. I don't know if I properly replied to the question, but I can continue later if this is needed. Thank you.

No, thank you. That was a really interesting answer. Thank you. Our next question is for Annelou and Diederik and anyone on the Leiden Team: **You've recorded so much and you say in the talk, almost too much data. So how are you tackling the analysis? What is your strategy? And do you now think some forms of the recording are more important than others?**

Thank you for this question. It's very relevant. Yes, we were swamped with all the data. We actually were trying too much in a way, but then in some ways it also gave us unexpected data. Because every single time a tool was selected, it was noted how long it was used, by whom, whether somebody was left-handed or right-handed, gender, of course. So we actually knew a lot about tool selection. We

only recently, and some of this data turned out to be a little unexpected, for example, the use of flint flakes. They seem to be very unimportant in the whole procedure of the house building. And so by documenting so fully, it does also give you the opportunity to get some unexpected answers and some unexpected data. On the other hand, we are now continuing with a new project and we are at a moment, we're really thinking carefully about what we are going to do, because we are going to work much more with volunteers, less with students, the coming five years in a new project. And we can't make it too difficult for them because they have to continue to be motivated to partake and record, but still enjoy it. So it's an ongoing discussion, but we have just recently finished all the analysis of the data of the Hosterwold. And we are starting to write it up into a book.

Thank you. This is a question for Brigitte: **The use of heather was fascinating. Do you think that the combination of fineness and good combustion properties make this unique, or do you think other plants could have been used in this way in areas which had gold deposits, but no heather nearby?**

Well, I think that the way heather is, with its very fine leaves and its good properties for burning it made it absolutely ideal. Also it's pliable. You can actually bend it in half, which is necessary. And so far as we know nowadays, the main regions where the Romans did the hydraulic mining and use this heather, are regions where heather is absolutely abundant. And the native plants like Northwestern, Spain, Wales. And now here in Austria. So we don't really know if any other plants could have been used. There is no evidence of this kind of mining anywhere else. Not as far as I know.

Thank you. And our next question is for Jessi and it links back to the question about taste: **Was the final taste of the beverage acidic, bitter or sweet?**

It was really sweet because it didn't go through a full fomentation down to the 1.00 gravity. It was also acidic. It was definitely not bitter though, but the sour notes were extremely strong, but there was no bitterness to it whatsoever. And I don't remember, I don't believe there was a lot of tannins either.

Thank you. I have my own question for the people that burned the house down (Annelou, Diederik etc.): **I just wondered what kind of emotions were going on as you were burning it, if any?**

Well, for me privately, I thought it was quite an imposing sight. I was inside to light the fire and the rolling flames we mentioned in the talk, rolled from west to east through the house. It was really, really fast, really threatening, even though we had expected it, but still we had to run and then outside and the wind was blowing and the fire was roaring and it was really impressive. And also the sight of when the burning was over and the fire had died down and everything is just smoldering and smoking and black and it's grim. So these were my emotions anyway.

Yeah, I can imagine. I think I would feel quite sad to be burning down a project that's so long but it's so cool that you get scientific responses as a result of that.

Yeah, well, it had to go and I think this was a very good way of destroying the house. It had to be destroyed. We couldn't leave it standing. It would have been too dangerous for people visiting the woods where it was situated. So it had to go and this was a very good way of doing it.

Yeah. I think you were right. It was very, very sad. And, I remember Diederik also being sad, because of liability, it's very difficult to keep houses in the dilapidated states and allow it because everybody can still climb in, can still do things with them. And Leiden University was actually liable for any personal accidents that would happen. And so that is something that really forced us to take a rather radical decision and from a scientific point of view, I think I still feel, and I think Diederik agrees with me, this was a really scientifically good decision as well, because we learned a lot.

That sounds really interesting. Thanks again.

Can I add one thing more Phoebe?

Go ahead.

Annelou said I was sad too, yes true, I was thinking of other emotions, but sadness is one of them. It's interesting the kind of bond you get with that house. In that house I spent quite a number of nights and I had my children there. And, so quite a few memories were connected to that house. In that sense it was sad to see it go, but I meant more what kinds of emotions you get when the fire's happening, but of course there's sadness too. These are big projects that you spend a lot of time and love and energy on. And yeah, it's sad to say goodbye.

Yeah, completely. Brigitte has just asked if she can add something to her answer to the last question. So go ahead.

In the English translation, Plinius calls the plant ulex and the English translations mostly translate this as gores. But we're pretty sure gorse is not what's meant. First of all, Plinius writes that the plant resembles rosemary and gorse does not resemble rosemary. And the most important thing is that gorse has leaves that are like very, very sharp thorns and as you have to handle this plant during gold washing all the time, something with long and really sharp thorns is probably not the most appropriate plant to use. So we really think what he means is heather.

Okay, thank you. Our next question is for Thomas: **Do you see any archaeological evidence for accidents, similar to the ones that you had with spilling the copper?**

The problem is we don't really have any evidence for lost wax casting in the Southern Levant at this time at all. All we have are remains of the mould corroded with the metal objects, which were not removed after casting and in December, so after our experiments, there's a publication from the site of Fazael in the Documenta Praehistorica - which is open access - where they report for the first time, the occurrence of lost wax casted objects, or fragments of them and crucible fragments. So that's the really first time we have any evidence for production, which is more independent of the metal objects, than just remains corroded to them. On the other hand, we have some [lumps] that usually are called [...] lamps or interpreted as [ingots], which have a very irregular shape. And I wasn't able to see them in person, in real life, but based on the photographs, I would not be surprised if they are kind of... this kind of accident more than they are deliberate [ingots]. But unfortunately also they were not together with production remains, but for instance, in graves and other deposits. So we have absolutely no idea how they originated, if they were made in the crucible or if they were indeed [ingots] if they are indeed accidents. So we absolutely have not enough evidence to answer this question.

Thank you. We have a group of about three questions for Alessandro. I'll read them all out at once and you can take them one at a time if you want. So, this person says thanks to all presenters. I would like to ask the question to Alessandro: **Did his experiments imply that a flint reference collection may be used for the microwear analysis on non-flints? Also, what is the biggest challenge here? How would you describe differences? Are they radically different or is it gradient or on a scale?**

Okay. Thank you for the question. It's again, really interesting, but also complicated. So, I'll try to answer this question and I also tried to answer all the questions together. So the answer is yes and no. So yes, we can use the flint reference collection, but also some traces, for example, develop only on quartz and quartz crystal. So for those traces, you can not use the flint reference collection. You need to find other references. For example, corrosion that developed only on quartz, there's no match with flint tools. So for those kinds of traces that are unique for certain rocks, yes, the flint reference collection is not enough. Also, I have to say that when you're doing userwear analysis is not only the presence of one trace or another one, it's usually a combination of traces. So if you can see

corrosion, but also in combination with other traces of that are also developed on flint, you can at least have an idea of the contact material or the hardness of the contact material. Maybe you can not be able to interpret exactly the contact material, but yes, using also flint reference collection, we'll have an idea of the action in general.

Some of these differences are very radical. So for example, if I'm thinking about the hide polish that develops on flint and on dolerite, here the difference it's very high, especially in terms of texture. So in terms of how the polish looks. But again, also the rounding, that's another feature typical of soft material appearing in combination with the polish. So it's also another evidence that calls to interpret a usewear, even if they are not exactly the same. For other contact material and other rocks, the difference is not that marked.

Thank you. That was really interesting. Thank you. And we have two questions for Thomas: **Which is the oldest artifact made using the lost wax technique in the South Levantine metallurgy? And have you considered using another type of gripping element to handle the crucible?**

For the last question, the answer is a simple yes, because it took some effort to get used to this kind of pliers. And I think that it might be..., if you have just some sticks instead of [...], it might be better. The oldest artifacts are the ones found in the Nahal Mishmar Hoard and other sites around this time we were trying to recreate so about 4,200 to 3,800 BCE. And most common among them are the maceheads we try to recast, which alone in the Nahal Mishmar Hoard we have about 400 of them. So, these are the oldest objects and we cannot date them more closely than this. They are not the oldest objects at all in the world but in the Southern Levante they are.

Thank you. We have a question for Justyna: **In temperate European areas, roof style and angle are interesting questions. How is the domed hut performing?**

I must say that it's performing very well. In fact, snow doesn't accumulate on it. It's performed very well also with very windy weather. One thing to do with construction which is also in my opinion is very important, it's very easy to repair this structure and you can very easily repair just one layer of the reed; remove a layer. And, it's important because we know that the Mesolithic shelters were probably used for many years by the family. So the problems with repairing the shelters are very important. And, this type of structure is very easy to repair.

Okay, thank you. That's super interesting. We've just got another question for Jessi: **What questions did you wish that you could have asked in your cider making experiments and how might you address these in the future?**

That is a really good question. There are quite a few things that I would have loved to look at in the cider. Because with cider, we haven't really explored it at all in the archaeology. So it is an entire avenue open for pretty much any question you can come up with at this point. The two main things that I did focus on of course, was I used the Anglo-Saxons to sort of start that inquiry into cider in the archaeology. But I did actually also do some work on trying to establish archaeological signatures to be able to trace cider production in the archaeology. At this time it's currently focusing on seed morphology, through the use-wear analysis, but there's a lot I want to look at. Including when talking earlier, someone was asking about the, the ABV and I really do want to look at the inoculation. The possible wild yeast inoculation and cultivation through repeated long-term use of fermentation barrels. That is something I would really like to look at. And I am also kind of curious about residue analysis. Now I understand that, I've been told that residue analysis for apples doesn't make any sense. But, there is a *beor* cup that does have some residue that was found in it. And as far as I know, no testing had been done on it. So I'm kind of curious as to what other options for residue analysis there are out there, but residue analysis is not my area. So as much as I'd love to look into that, I am far more into the material culture aspects. So that would be something I would need to actually ask

for some assistance in. As far as the future, I'll probably continue looking at cider on a broad scale, probably around the world and trying to establish different methodologies and the different ways that we can look at it in the archaeology, especially dealing with the issue of the invisible majority material culture that would be associated with its production. But I also really want to look at consumption as well and trade and the change in agricultural practices and such. Like I said, it's a whole avenue. Anything can be asked at this point. And so I'm just really excited about all the possibilities. So thank you for the question.

Thank you for the answer. I think we just have one more question at the moment, so I'll just ask this question and it's for the Leiden Team: **What changes would you make to your work if you could do it again? More recording, less recording, different variables to consider?**

(Annelou) Well, that's a big question. Well, we are actually starting a new project so we're currently reevaluating everything because the analysis of the Horsterwold house, everything there, has been finished. So it's now a question of writing up and also doing some more microwear analysis because that is one thing we will definitely do less. We took casts of pretty much every function shift of, and also after every rejuvenation and repair, occurrence of the tools. So we have hundreds and hundreds of casts and there is no way we can ever look at all of them. And it's a good record of the biography of each tool. But it's, in terms of manpower, woman power, we just don't have it to deal with all of that. So there, we have to be much more selective and think more about the specific questions we would like to ask. So it depends very much on new research questions we are going to formulate in this new project, which will, again, coming back to one of the first questions in this session, they will also depend on suggestions from the public, from different crafts people, how to do things differently and, new questions to ask. So it is a question I cannot really specifically, and I think Diederik may add to it, but, we will definitely be more selective, but at the same time, I like to continue to be surprised by my data. For example, all the organic tools, we always say that they are very important in our toolkits while here we could prove it quantitatively, both in the house building, but also in the boats, in the dugout and the, and the skin boat, we just repeatedly see how important wooden tools are, how important organic tools are, and it is something that's, I know it's sometimes very hard to convince traditional archaeologists of that flint and pottery really aren't the only thing. And it's only by actually not showing, but also by quantitatively demonstrating the importance of those other artifacts, those hidden artifacts, that perishable stuff, that we can demonstrate and maybe convince them that it is hugely important and it is changing, but it still has a long way to go I think. Certainly in my experience.

Lots of things to consider there. **Did you have anything to add Diederik?**

I think that the system itself, the documentation was fine. But like Annelou was saying, some things we did maybe too much. But it would have been a great pity not to make the casts, but maybe we should make less. And that there are other examples that you could mention, but basically I think that will be the answer to the question.

Thank you all so much.