

# EAC12 Q&A Session 15

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So I just want to say to all our listeners, hello, my name's Phoebe. Thank you for joining us for this penultimate session. This is session 15 of the EAC 12 Conference.

So without further ado, our first question is for Sarah, and it's quite long. I'll read it all out and then if you need me to repeat anything, that's fine. So a person has asked: **It's really interesting to see that the Oneota pots have been attributed to coil building. I did some work on initial middle Missouri pottery where they usually identified only as paddle-and-anvil, but I found that the collars were coiled whilst the rest of the body was likely paddle-and-anvil. The work you've done is fantastic and we need to do more of it. Do you have further plans for studying the chaîne opératoire for pre-contact potting practices in the Midwest and Great Plains? (So this is from Caroline.)**

Yeah, I definitely do. Unfortunately experimental archaeology hasn't been utilized a whole lot in the Midwest, so there's kind of a lot of big gaps that I would really like to address with future research and kind of incorporating the Woodland period into like the later Oneota period. So, yeah, I'd definitely love to do a lot more research on this.

Thank you. I hope you get to. Our next question is for Sergio and says: **I would like to know if all of the participants at the experimental practice had the same experience and if they don't have the same experience, how did you measure the results taking this into account?**

The same experience? I'm curious what the meaning of that part of the question is. But basically the data gathering for each of the experimentalists, there was a separate sort of analysis gathering person for each of the experimentalists and each of the experimentalists had their own data sheet, which they filled out themselves. So everything from their choice and selection of cherts for the technology that they were working with through all the phases of production, through the choice of toolkit implements, everything was recorded by the experimenter, observed by another analyst and everything was recorded. So overall each of the experimentalists was quite different in some ways, but there was definitely considerable overlap in some basic categories and approaches where they really differed a lot. Where the differences lie was greatly related to some of the, I would say, backgrounds of learning that they had developed over their years because people tend to go down rabbit holes that are successful for them. So I've found that a lot of the flint knappers used in my experiments were using things that worked for them across several technologies. And that was a little problematic in some areas, but definitely something that I learned. I think what you're wanting to get after in the question is, actually a whole chapter is being written a bit about that. But the commonality between each of the experimentalists and the differences, yeah, that's kind of a huge topic, but all of that was recorded. And for each technology, there were several data sheets that were created and some of them were like visual descriptions, some of them were tabulations and presence and absence of different kinds of technological and strategy approaches and these kinds of things. So that's the actual way I was gathering the data. And then post-conference I was going through each of the experimentalists' debitage and flake debris, and also parsing differences that relate to their techniques which was interesting and getting closer to their toolkit implements that they were using, whether they were doing, whether one was doing more pressure work versus another one was doing indirect percussion work and things like that. So, yeah, I wish I had a simple answer for this, but it is currently being written about at this time, a full chapter on that. Thank you.

Thank you. Yeah, I look forward to the chapter. Thank you. Our next question is for Richard and says: **The Inuit used carved soapstone, and there is evidence that they too have soapstone cookware. Do you have a theory on influences or origins of soapstone cookware?**

So there literally isn't a spot around the world that hasn't come across soapstone at some point, if they've got it available, they've been using it for cookware. In the Arctic, certainly we do have some questions about where, what influences the Norse had with an interaction with the Inuit. But in this case, it's just really the right medium for that environment. There's a paper called the Canadian Arctic Soapstone Cooking Technology, by Liam Frink, Glazer and Harry, that looked into fuel consumption and how much more efficient it was. And especially when you're dealing with an Arctic situation where there is so little fuel, you want something that will heat up, hold the heat, and make efficient use of the fuel you have available.

Thank you. Speaking about how long it takes and how long it keeps the heat, I really enjoyed that description that you had about how sometimes it looked like they'd been cooked without a hearth because they were so hot for so long.

(Richard) Oh, absolutely. And it really is. The problem that I've always had with that pot is literally how do I..., when I'm wanting to move it to the table to serve, how do I actually pick it up? Because it's always so hot, you know, hours after it's been taken off the heat.

Oh completely. That must be something that you definitely have to think about. Thank you. Our next question is for Darrell (and everybody that was involved in the paper): **The use of turf for firing structures also happens in clamp kilns for firing pottery. Are there other pyrotechnical structures constructed with turf that might indicate where the idea for turf building came from?**

I'm going to profess ignorance in the wider application of these technologies across all of the cultures. Unlike many of the researchers here, we're an independent group and we started with an interest in iron smelting as a physical process. And, we had met Kevin Smith, who's the archaeologist co-writer on this paper, quite a few years ago back in the late 90s. And, we decided to take our interest in effect of iron smelting technology and apply what we had learned there directly to the situation he had explored at Háls. So I'm going to freely admit that I'm ignorant about the application of turf in heated structures across the wider world. And then I'm going to mute up and see if Kevin has any addition to that.

Hey, thanks so much. This is Kevin. It's an interesting question about whether they've been used in other pyrotechnic or pyrogenic settings. I don't know of any in the north Atlantic or in the Late Iron Age aspects of Northern Europe. It'd be great to know if anyone else in this group or, or the person asking the question knows that. What is obvious is that in Iceland and across the north Atlantic, coming out of in particular Northern UK and Norway, is that turf was a primary building material for many, many things. And it would have made sense in Iceland, a land that has relatively poor stone resources, relatively small trees and a lot of turf or sod as it's called in some areas, to begin, thinking about the material. One of the things that we weren't able to bring up in this short presentation, but we'll bring up in the paper, is that when the Norse arrived in Iceland, one of the key things that they would have been able to do is to make iron. And yet in the earliest historical source we have got *Landnámabók*, the book of settlements, which was written in the 1100s, early 1200s, so a couple of hundred years after, it was still remembered that there was a man called Rauða-Björn, which means ore Bjorn or Bjorn of the iron ore, who was remembered as being the first person who was able to make iron in Iceland. Since they've been making iron out of bog ore in Northern England, Scotland, Ireland, and Scandinavia for upwards of a thousand years at that point, 500 to a thousand years, it's clear that the issue was not, how do we make iron? It was, how do we make iron here? And a big part of the reason I wanted to get involved with Darrell and Neil and the great folks at DARC after doing the archaeology at Háls was to try to find out as we saw these turf built constructions in the

archaeological record, which frankly surprised us, could they work at all? Was that some of the issue? We're now seeing more evidence of turf built constructions in the archaeology, as well as a greater variability in the kinds of iron furnaces that were made in Iceland through the next 200 to 300 years, suggesting that the type of furnace that we've found at Háls, including all of the problems that Darrell and Neil and the others have documented with, how do you maintain these? This might've been the Betamax of Icelandic smelting furnaces, as opposed to the VHS or the later technologies that have come across in our way. And it might've been an early attempt that became a way of using raw materials that everyone knew how to use, but that didn't become the final and ultimate solution to it. I hope that answers your question or at least dances around it and gives some other information.

Thank you. Thank you both for such detailed answers. They were really interesting. Our next question is for Florian Kobbe et al. I believe [Christian](#) is here to answer these questions? So the question reads: **The strategy to use a removable furnace shaft is really interesting. Based on the degradation of the furnace shaft during the experiment, can you now see any direct archaeological evidence for portable shafts? What might you expect this evidence to look like?**

We've seen the patterns in archaeological excavations all over north and central Europe, and we asked ourselves why are there these patterns? What sense does it make? And we just try to find out how it could have been worked. And this idea was not our first idea, just because we wanted to produce slags for analysis. And then we thought about how to make it faster, the whole processes to get the slags for the analysis. And in the second step we've seen, it would be nice to have a shaft which does not crumble. And then we looked at each other and said, oh yeah, that's it. Why shouldn't they have done this like that in former times?

Thanks. Our next question is for [Emiliano](#) and reads: **This is a tremendous body of work. Congratulations on that. What are the next steps for building on your findings? Is your database freely accessible for others to make use of?**

Well, our next step is, we're doing right now from the last 10 years we're analysing not only the Aztec or Meshika assemblage of lapidary objects. Also, we developed with other colleagues, to compare our database with other assemblages, not only from ancient Mexico, also from the American Southwest, from Guatemala and Costa Rica. And we talked to other colleagues about how to analyze the manufacturing traces, and also how to make the molds to analyze in the SEM. So you avoid to move the pieces and also our database and our experimental laboratory at the great temple of the Aztecs museum is open for everybody. Now, unfortunately we're in a pandemic of this disease, but after that, we hope if you want to visit us, we have open doors [...].

Thank you. Our next question is for [Sarah](#) again: **So have you got any videos of you making a pot with the paddle-and-anvil ?**

Unfortunately, when I was doing my initial experiments, I didn't get any of this on video, but this is still a technique that I want to practice and refine more. So that's something that I plan on including in future research. But if people are interested in looking at this process, there's a lot of ethnographic videos you can find on YouTube that show this process.

Thank you. And another question for you ([Sarah](#)), from Scott Stull: **An excellent analysis and results of production. I have done a little paddle-and-anvil work, but not with this level of success. So I'm inspired to work more with this. When you say you burned the mussel shells, how did you burn them? Just putting them in an open fire? And when you fired the pot, what temperature did you fire them to?**

So for my experiments, I put the shells over an open fire, basically because you want to burn off the organic material that's holding the shell platelets together. And you have to be careful to heat it up, not to heat it up too hot, because then it will turn into calcium carbonate, I believe. And that will

really mess with your firing of the pottery. But for my experiments, I used an electric kiln, and I just did a low firing for them. The firing process really wasn't specifically what I was looking at in my experiments. But in the future, I'd really like to do open air firings of these pots and kind of see how that goes.

Thank you, I look forward to hearing about it in the future. It sounds really cool to be able to do something like those kinds of processes.

Our next question is for Sergio and says: **How might you suggest that we start to address this divide between etic and emic categorizations as identified by your work?**

Well, this is a big one. In what I do, and where I do it here in North America, a lot of my push is to try to bring together this great divide between the technological and behavioral approaches and then the greatly used schools of metrics and morphology and statistics. And they don't do well talking to each other over here and so I'm trying to bring all of these things together in a holistic approach, which was sort of like the thrust for my research. And the best thing that I can do is make things... make the problem known to the powers that be because the quality of the work suffers and really that's sometimes, it's sort of secondary but, you know, there's always a lot of issues involved. There's funding, where we're putting our energy and resources and how we're training people and upcoming archaeologists and so on. But, it's just like fighting the good fight. I'm just trying to make this problem known and address it with whatever ways I can and whatever talents that I can try to bring to bear on the topic. But a historical review of how the work is done in North America, just lit a fire under me to try to push the needle in a different direction and try to bring all this stuff together. And I'm hoping to do that.

That sounds really good. Good luck. Our next question is for Richard again: **Aside from the morphology of the soapstone stone cooking vessels, you have clearly explored cooking in a number of different types of material. Could you talk a little about how the experience of cooking with soapstone differs from other materials which would be available at the same time?**

So my wife does more of the cooking than I do, but there's a number of things that do stand out. The iron pots, for example, that Darrell makes are fantastic, but you have to start off by sealing them with some porridge. And then you have to be really careful that you don't ever boil and dry cause that can be really detrimental to the pot. It's not quite so much of a problem with the soapstone, so you can be a little bit more lackadaisical with them. Then there's like, as I mentioned in the paper, there's the idea of grilling things. There's all sorts of different iron pans that are used. You cook in different ways. The soapstone certainly is a lot more like a slow cooker, you can really put things in and just let the juices flow together. If you're wanting individual flavors, though, that's not the medium for it.

Okay. Thank you. And we have another question for you (Richard) which you kind of touched on a little bit in your answer to the last one, but somebody is asking: **How are soapstone pots cleaned?**

So I've got one in front of me right now that I cooked the fish in and I'm going to be cleaning it with sandpaper, because getting into the corners, it's just gonna be easier to sand out the problems. Normally, the wonderful thing about soapstone is it actually is a nonstick surface. As long as you've done a good job in your sanding in the first place, it really does wipe off fairly easily, because it's all dusted with powder. And when you get that oil surface on top of it, it really does clean quite well. The fish problem is mostly because that pot is newer and I haven't got kind of into all the cracks and crannies. Kind of like, if you can think about it, when you get a brand new frying pan, a cast iron frying pan, that it's never quite as good as grandma's frying pan until it's been used for 10 years.

Thank you. Our next question is for Christian again: **Are there other archaeological sites where multiple concurrent furnace installations have been found similar to the three in a line you described in your presentation?**

Yes, there are about 10 to 15 archaeological sites from the border to the mountains and to Scandinavia in this area of Northern central Europe. They are from the older Roman periods, about 2000 years old, and maybe it's a reaction, a response to the political pressure by the Roman Imperium. It's the time after the Augustus wars in central Europe, and maybe it's a response for the people in the Barbaricum to get armed. So they panically smelted iron because they needed iron much more than the times before. It's one possible explanation because there's another aspect I didn't mention. They did not use just bog iron ore as can be assumed for this area. They also used clay iron stones, concretions from the bottom in the underground. And both ores mixed together means there are many tons of ores that can be used now. So it's another increase in effectiveness in iron smelting.

Okay. Thank you. That was very interesting. I believe Darryl might have a question to ask you as well, if that's all right. So Christian, **I didn't find this entirely clear in the presentation, which I realize is a very short version of your paper. It looked like probably what you were doing is running the complete smelt sequence until you had a bloom and then taking the hot top of the surface of the shaft or the furnace and tilting it sideways, and then extracting the bloom in the hot state. Did you contemplate actually doing a top extraction with the shaft of the furnace in place and then moving the shaft after the furnace was cold?**

Yes. I'm still sweating because of that. It's really hot, but the shaft material in the top from the outside is just about 80 degrees Celsius. With a little protection, it's not heavy to do this or it's not a problem. And then just wait one day for cooling down and make a new basal edge to the shaft area and then it will be standing again over a new slag pit. Yeah, it could be a possible way. We tried this several times and the limitation of three runs maybe is explained by the way that the shaft material crumbled by the heat, the highest heat is around the basal shaft area; the [reaction room] of oxidation [...] and reduction.

Oh, okay. The reason I kind of asked this that we have undertaken both slag tapping and occasionally [...] pit furnaces here. And we've experimented quite a number of times with a top extraction as opposed to a bottom extraction. Something we picked up from a team from Eindhoven in the Netherlands, is you can use a process where you use a heavy wooden chamber, thrust down the top of the furnace while it's hot and semi compact the bloom in place, which both helps consolidate the bloom at its hottest point. But also serves to free it up from the slag bowl underneath and then reaching down from the top with a pair of tongs. Admittedly, this is quite punishing having done this any number of times, so I'm just [...] tops were moved and used multiple times is an excellent one and it may be something we take a look at as well.

Thank you both. That was really interesting to listen to. I believe Linda might have sorted her technical issues out. **If you wanted to add something to the question on etic and emic issues and how you can bring them together?**

So the whole the question of emic and etic, I think is a really interesting one for experimental archaeologists to think about, because it's really saying who is doing the classification system and is it emitting from the society or is it externally imposed and coming from without? And so just some of the papers, even in this session, it's not just Sergio's work it's also the soapstone boxes. I mean, we talked about them. You said that interesting phrase of behaving like a slow cooker. Well, we don't call them a slow cooker because we don't understand what they do. That's one of the things that your experiments have really put some life into. So if you imagine, say a kitchen setup, we might know, because we use them every day. What is a vegetable knife, a bread knife, or whatever. But we wouldn't know the same things about the sorts of materials that we're studying necessarily because they're not personally experienced. So the idea of experimental archaeology as a tool for trying to get at some of the more functionally orientated or sequentially orientated or some of the categories that

might have been there in the original societies that created the objects is a really interesting one. And I just love the idea of calling some of those things slow cooker pots. Yeah. It makes a change from just going with materials or sequences or shapes.

Thank you, that was a really nice thing to add onto that.

Our next question is for Emiliano: **In the more than 700 experiments you conducted, can you talk a little about who was doing the experiments? When did you use actively practicing craftspeople and when not?**

About the experiments that not only Reyna and me perform also, we test the skills and the experience that our students have, because we want to know not only the colleagues or the archaeologists interested in experimental archaeology [on lapidary objects] also we taught at the University here in Mexico, organic and inorganic materials. And we taught about three or four classes about experimental archaeology. And about 15 years ago, we tested how our students craft or to measure the different skills about them. And it's interesting that we identified students with very good skills, crafting stones and others who are a complete mess about crafting stones. And we compare that result with our colleagues in the formal experimental archaeology workshop. And we could see that you could identify sometimes who are the apprentices and who are the real skilled people, but obviously we don't have the master skills of the ancient artisans, but in the case of some of our experiments, we could appreciate that in the archaeological records, the pieces with the more complex steps or sequence of production, or the most time invested to craft them are the most valuable. And you could see that the distribution of these subjects are very restricted in the different sites in ancient Mexico, but the pieces we could craft in about two hours, and our students with the complete mess skills could craft them in about five hours. You could see these pieces, they could be distributed all around the site. So the easiest pieces, you could see they could be circulated without any restriction, but the more complex you could see in different sites, they are restricted. So we don't have the experience as the ancient artisans, but we could appreciate that more complex or easiest pieces have different distribution in the sites.

Well, that was really interesting. Thank you. Our next question is aimed for anyone from the DARC hotspot: **Do you have any plans for returning out to L'Anse aux Meadows when travel is possible again?**

Diane: Yes, that is certainly our hope. Of course, with COVID nobody's moving at the moment, but we maintain contact and look forward to going back at the earliest opportunity.

Darrell: We're actually under negotiations right now with parks about a number of our members returning for extensive staff training onsite. But as Diane mentioned right now, we effectively can't travel outside of Ontario with the COVID lockdown. And, like many living history sites, people who are watching this, we're having huge problems here in Canada with museum attendance and of course, dollars from attendance drive the income and the programming.

I really hope that you get to come back soon. Our next question is for Darrell: **Were there other viable hypotheses aside from turf for how the furnaces could have been constructed?**

Well, I had been taking a look at some furnaces built at another industrial level production site, like Háls where iron was made for a long period of time in huge and huge quantities at a place called Skógar which is in the Southern Western part of Iceland. And, how the top of the furnaces are interpreted is a huge question in effect of iron smelting, because as Christian has already pointed out, the superstructures almost never survive. At Skógar the bottom 30 centimeters or so appears to be constructed of basalt blocks. And I've played around a little bit with stone..., I'm actually taking stones and making bricks out of them and piling those up as a construction. And, certainly had extremely good results with that. It creates a very durable furnace. From an archaeological site, and again,

Christian would probably reinforce this, there's a hot zone around the tuyere point where air is forced into the furnace. And that part of the furnace will easily come up to 1200 degrees Celsius which will center any ceramic, clay into ceramic, but also it will effectively start to fuse and melt the stones in that area. But on the backside and the upper part of the furnace, there can be very little recognizable damage to a stone or clay material. So part of the problem is, if you built a pile of stones in a cylinder to make your furnace and then later you took it apart to reuse those stones, the majority of them actually wouldn't have any archaeological footprint. Again, as Kevin had said earlier, our problem in Iceland is very little clay and clay of questionable quality. So this really affects our whole idea about how they could build. In Scandinavia, you'll see a tradition of clay constructed furnaces in Denmark, and through Sweden and Norway especially, you see much more use of stone slabs in the construction technique. And of course the people coming to Iceland would have been primarily Norwegians and they would have brought that tradition of stone building possibly with the use of clay with them. And that is the interface problem that Kevin remarked on earlier about, okay, so how do we actually build a furnace when we don't have any clay to begin with? Hopefully that answers the question.

It's Kevin again, talking about the archaeology. So it's a great question. I think I began to suggest that there is a fair amount of evidence of variability in furnaces that we know in Iceland and as Darrell remarked, the biggest problem there, as in so many other areas, is that after a hundred years of work on iron smelting sites in Iceland, there have been absolutely... until we began the work at Háls, where we decided to screen all of the material that we excavated out of the [slide heaps], water screened it. We found the first fragments of any kind of ceramic liner that anyone had ever seen from Iceland. So it's not the case that archaeologists just simply don't know what they're looking for. It's the fact that after a hundred years, we haven't seen any evidence for large ceramic furnace stacks or any of those pieces. We've not seen in a hundred years any evidence at all of ceramic tuyeres. They just don't exist. Although I agree with Darrell that there are aspects that we should be able to see if they were using stone, no one has reported or really seen from any of these sites the kinds of vitrified stones or stones with a lot of [slag] attaching that you should see from the areas where that sort of thermal process begins. So we don't have a lot of evidence for either stone stacks or ceramic stacks. And until we did the work at Háls it was the very first time anyone had seen anything to suggest anything at all in Iceland about the superstructure. And I have to tell you that when you're excavating in a context where the soil you're digging is the same material as the turf blocks that were cut out to make it, it was impossible to see the evidence of the construction as we were digging down onto the site. And we only saw it when we had a section through that part of the furnaces and were drawing the sections, which also means that archaeologists now using what's called 'single context excavation', which means not having any profiles, would not see anything at all of the superstructure if it's built out of turf, unless they're very, very lucky. Darrell's point is also really good that we have to be thinking a lot as we look at the archaeological record about what has happened to these furnaces over the span of a thousand years. If you had any sort of a ceramic lining, what happens with a thousand years of freezing and thawing cycles? So about 11 years ago, I had Darrell and Neil come down to my museum in Rhode Island and build an Iron Age low shaft smelting site, which we did. We actually had some pretty disastrous results from the standpoint of making iron. But what I wanted it for was to be able to watch how that furnace degrades over the next 10 to 15 years. And so that's another experiment that we have going on. For the past 10 years, I've been monitoring that and recording how the thing falls apart and what's left. We'll probably do the excavation of that this year in the summer. And what I can tell you already is that any of those areas of intensely vitrified or fired ceramic and stone that were around where the tuyere came in and where the bloom was formed in that, are still in such good shape that we would probably be able to find them a thousand years from now if they existed. But the areas that Darrell mentions on the other side of the furnace and the

higher areas, in even 10 years have simply turned back into clay minerals and tiny fragments that go right [through the screen]. Not only is there a really important interface between the Norse arriving and trying to figure out how to use new materials, but also one between the experimental archaeologists and the archaeologists themselves, where the results of the experiments become the next archaeological work that we try to do. I hope that helps provide some answers or not.

No, that definitely does. That was really, really interesting to listen to. I really like the idea of studying the taphonomy of a furnace in that way. Next question is for Sarah: **I often work with slightly wetter, but still stable levels, sometimes called 'cheese hard', as leather hard pieces can sometimes resist manipulation. How firm were the pots when you paddled them? Was there any tendency towards cracking during the paddling due to dryness? And did you add water to minimize that drying during paddling or between paddling sessions?**

So for my experiments, I think the whole cheese hardness is an excellent description of the firmness of it. Before I did these experiments, I hadn't really done any kind of paddle-and-anvil work. My experience with pottery has primarily been throwing things on the wheel and hand building. So I found that in the beginning of my experiments, I was pretty worried about the pots drying out too much. So, I think I was paddling them when they were a little bit too wet, and that really impacted how much I was able to stretch them and also how prone they were to collapsing. So that's something that I had to kind of get away from in my later experiments. But one of the things that I also noticed in some of the ethnographic videos that I had watched, it appeared that a lot of those potters are doing more than one paddling session. And I found that that made a whole lot of difference with how thin I could get the pots. For the most part, I used a little bit of water to help with cracking, but I was a lot more concerned about the pots collapsing than cracking, but that might've had to do with how wet they were when I was working with them.

Okay. **So they're more prone to collapsing when they're wetter?**

Yeah, they are.

Okay, thank you. Our next question is for Richard: **What tools did you use to carve the stones?**

So my first pot was just a hammer and chisel, and it was just a flat chisel. One of these days I'd have to get a [prong] groove chisel to see if I can even closer match the grooves inside that one artefact that I was mentioning in the video. But to be honest, most of the parts since then, because I was more interested in the shape of the pots and using them afterwards, I've done a lot of modern tools. Particularly the square pots, a drill press with a depth stop and a table saw worked really great for getting those square pots done fast.

Thank you. I was just wondering actually, a question from me, but **how heavy are these kinds of pots?**

So they are quite heavy. They're large rocks. If you check the video, they actually do have the weights for most of them attached to it. But we're talking about quite a few pounds, and that's actually always been one of the issues with the long-handled pot that I described that I really have no idea what they're for, because they are so heavy in the bowl that if you have this long handle, then it becomes so unwieldy because of the leverage is against you.

Thank you. Our next question is for the DARC hotspot members: **It's a really interesting choice to avoid demonstrations of fighting and similar activities. Can you talk a little about what you find to be your most popular activities and which are the most rewarding for you to do?**

Diane: I think that everybody has their own favorites. I mean, Darrell obviously spends a lot of time working on the smithing work. And Richard does quite a bit of the music. There's a whole group of us that have various textile interests that we do. And sometimes we flip around and change up what we're working on any particular day. We have some carvers and I, for example, will switch back and



forth between textiles and carving just because I enjoy both. And sometimes I help out with the cooking, but we do have some people who focus primarily on cooking. So there's no, I don't think there's any one particular favorite. As a group, our favorite is creating a community with all of the activities, if that makes sense. And then within that we have specialists.

No, that makes a lot of sense. Yeah. I really like the idea of not focusing on the fighting aspect of it because so many do. It's so interesting hearing about the more normal life.

Neil: There's an interesting aspect to that question as well. Diane spoke to what might be our favorites. The opposite side is because we spend so much time working with museums is: what's a favorite of the attendees, right? The audience members. And it intrigues me because I often think that whatever they're looking at at the moment is the coolest thing, of course. But then they move on to the next coolest thing. Where I find the audience a lot of fun is how they will feed into the interactions. Because there's a shared storyline across the entirety of the presentation, the audience members will speak to one person and will sort of get this tag or lead in to take them to the next person. And they will carry the story with them across that gap. And it can be a lot of fun to have people come visit you at your workstation. And it's like, 'oh, if you're making that kind of a comment, you clearly came from over there.' And it's a lot of fun watching them get into that community interaction that Diane mentioned.

Diane: I would add to that as well that we have different people who connect better with different activities. So when I have been at L'Anse aux Meadows, for example, I particularly noticed it because I would some days be working in the textile area and there would be a stream of women of a certain age who were being trailed along by their obviously rather bored husbands. And then at some point I would go out and I would start working on my fishing net. And all of a sudden I would have those same fellows, have their eyes light up and they would start telling me stories about mending nets with their grandfathers when they were kids, because there was something that connected some of their, as others have talked about that ethnographic background, their own history. They were able to connect it with what we were doing. And that was quite an interesting shift that we saw in the presentations.

Thank you all. So our next question is for Sarah: **I understand that tempering using a burnt shell allows for easier manipulation of the clay pot, which is fascinating. Have you done any other investigations into using other materials as temper and how it impacts on the result of paddling?**

No, but that is something that I'm really interested in doing. There's a lot of speculation on what kind of properties shell temper has. There's some people who think that it has thermal properties. And so it just is kind of a big question about how it affects the forming and also how it affects the final product. And so I'd really like to do some paddle-and-anvil work with just sand tempering, which is something that you see globally. Basically the shell tempering is something that with a paddle-and-anvil is something that you only really see in North America. So it'd be interesting to compare how that tempering changes based on whether it's shell, or see how the temper acts differently, depending on whether it's sand or shell.

That sounds really good. I look forward to hearing about these. We have a couple of questions for people from Exeter. Our first question is: **Ochre can refer to a whole range of pigments. Did you do any experimenting with other ochres and did they have different characteristics for the handprints or other painting techniques?**

That's a good question. There is an ochre mine that is privately owned and is still in operation in an area about three hours drive from us in Exeter. And they're one of the few that you can actually get ochre that has been unprocessed from. So for the experiments that we did, we had several different colors of ochre and we tried out some of those bits of work with the different ochres, but we were

mostly going with commercially prepared ones so that we had a sort of a standard set to go from. But we can take it all the way through and we use the Clearwell caves source because of the way they've already had some work done on the analyses.

Oh, great. Thank you. And a follow up one to that is (Linda): **What do you think the next steps are for you in terms of this set of experiments?**

Oh, goodness. We had such fun. We had students who had access to wax because they were beekeepers who played around with making the designs out of wax on their hands, but they couldn't get that to work. And we also tried sort of setting a plant into a spiral and it didn't work very well. Somebody else said that they set it into the design, then they kind of pressed it overnight and then used it immediately in the morning. So just the wealth of ideas of different possibilities. But I think the real take home was that what you see on the walls may not be just a handprint. And secondly, some of those designs, you've got to go to quite a lot of extra trouble to get a design within a handprint that's as good as some of the ones that we can see on the rock art. So there's several directions to take it in, but that whole set of art just lends itself to such a detailed analysis. And it's so diverse and rich. You know, there's a lot of scope for potential further experiments there. And also it's up a cliff, some of it. So you've also got to think about, okay, how'd you take your pigments or your pigmented hand up a ladder and along a cliff and then slap it on the wall? Or do you take up the equipment to make or to put the paint onto your hand whilst you're there? All kinds of things that we ended up thinking about that we had never thought of. And I think when we really look at those handprints, then there'll be more questions and they'll have come from the experiments that we've done all these thousands of miles away in quite a limited setting with a lot of people using paper instead of paints. And in some cases, the students had boxes of materials posted out to them because of COVID. So they were using perhaps any limited amounts of ochre or perhaps all using other pigments, more commercially available ones. So it was, I thought, a really great way in which small stuff can feed back into new questions to go and look really closely at some of the details of that artwork.

Amazing. That sounds like you've got some really interesting directions to take it to in the future. We have one final question and this is for Christian: **Have fragments of furnace lining with imprints of a wooden framework, like yours, been found at any of the sites that you mentioned in your interesting presentation?**

Yes, indeed. Some fragments of furnace shafts have been found and I just can say, it is not possible that the way as we used was the way they used in former times. Those fragments are very rare and just a couple of small fragments have been found and they don't show how it could have been. Some have been tuyeres or holes for tuyeres. But that does not exclude our way because it is possible to put the tuyeres under the shaft, between the shaft and the surface of the area, or even into the shaft, incorporated. Both are possible and we prove it for the next time.

Thank you. **So unless anybody has anything they would like to add to any of that?** If you have, you can go ahead.

(Kevin) I just wanted to circle back to a question, one of the first ones was actually asked of Richard about the soapstone technology in the Arctic. And I think the speaker was or the person with the question was asking whether there was any indication that the Norse had transferred soapstone technology into the North American Arctic. And I just wanted to clarify that in fact soapstone technology was being used for cooking and for lamps in the Eastern Canadian Arctic from at least 2,800 years ago. So 1,800 years before the Norse arrived. And it was used across the Eastern United States and up into the Southern parts of maritime Canada from about 4,700 years ago. So it's a very deeply embedded technology in the Americas long before the Norse arrived, as it is in Scandinavia where it goes considerably before the Viking age. And I just wanted to make sure it wasn't assumed

that Europeans coming across to the Americas had taught the native people of the Americas how to do this.

Thank you, Kevin. It's been there for a really long time, it sounds like.

Darrell: This relates to the whole idea about combat and conflict when we're portraying the past. And in DARC, we've tried extremely hard to separate Viking from Scandinavian. And I know commonly the Viking Age is used to describe a specific time period and location. But a nice example I always give people when we're in presentation is that you know, the United States of America and Canada and many European countries have been involved in a conflict, over the last decades, in the Middle East. But how many individuals from our own home neighborhood are actually working combat soldiers and how many of the rest of us are there? And, I think it's really important and living history and experimental archaeology are opportunities to encourage this view with a public that the majority of the individuals are farmers and fishermen and weavers, craftspeople and merchants; the same kind of people we are, and that portraying the past should be best seen by portraying the everyday life of the average person.

That sounds amazing. Thank you for adding that.