

EAC12 Q&A Session 13

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

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Hello, everyone. Welcome to the live question and answer session for Session 13 of the Exarc Discord YouTube conference.

I'll start with a question for Smriti.

You mentioned that you were hoping experimental archaeology would work towards eliminating the hierarchy between craftspeople and academics. Did this work?

I'm not sure if as yet we have a conversation but I do think in kind of practicing some of this ourselves, at least it makes it easier for us to kind of have the conversations and establish some of these connections. But yeah, I think we're far from having an answer.

And a question for Tim, **Would you use synthetic clay normally? And if not, why do you prefer natural clay?**

Good question. Normally I would use natural clays found in the wild. But to thoroughly understand the mineralogy and the particle size of these clays, I just chose to synthesize and make an artificial sort of form of clay body, so that for better understanding of what one would be looking for and what in fact, the potters of pre-history would be looking for in terms of bodies, for open firing. So the synthesized body is very much just a benchmark, if you like. As a sort of control, just for better understanding and in that sense, it works incredibly well. I mean, it's just got incredible firing tolerance. So it does shed a lot of light on the particle size distribution in wild clays that would be suitable.

Fantastic, thank you. And a question for Alessandro: **You mentioned that the tools need a lot of maintenance. Do you have an estimate of how much time it added to the construction of the boat?**

Yeah, that's a good question. No, we haven't done it. And I think that's going to be a good project for the future. My experience on this project, most of this project, was that the time is significant and it's actually a really interesting aspect of experimental archaeology in general, but then particularly on boat building. So hopefully in the future, I'll be able to document some of these aspects more deeply.

Fantastic. Thank you. We'll move on to Giusi: **You mentioned you washed the stones before using them. Do you think the residues from the river and also the pressure from your hand would have affected the use-wear?**

Not the use-wear, but we are doing also residue analysis and this will be affected definitely from the residues from the river and from my hands.

Thank you. **And the kind of the pressure used for grinding, did you measure that in any way?**

No. I'm doing multiple experiments and I'm thinking also to involve more people, to have a different type of pressure, different type of gesture. So, but right now, no, we didn't measure it.

Thank you, and Franz: **Could you elaborate on the upcoming touring exhibition of experimental archaeology that you were organizing?**

The exhibition was organized in cooperation with EXARC and we invited scientists from all over the world who actually participate in this conference. We are offering them to show, to actually display their experiments, not only online, but actually in an exhibition. We have 25 experiments collected so far from 46 participants from 11 nations. So it's a very colourful and very nice assembly of experiments we have. And it will be on display. Actually, it is already on display in Asparn, until November. So provided it's possible to have access in the current situation with covid. But, next year it will be on display in Scotland, at the Crannog Centre, hopefully. And we'll be happy to pass it on afterwards. We're quite looking forward to have it for a tour in the next five, six, seven years, I don't know how long. And actually it's the first of its kind for a long time. Actually, we will have a trailer online and we'll carry out regular talks every second week, starting next Thursday, where I will talk with participants about their experiments. So that would be also be in the YT channel at MAMUZ, so we'd be happy if you want to join them.

Fantastic. There's also been a link to the exhibition that has been posted on the EXARC, YouTube and Discord chat.

Yes. And since EXARC is a partner, of course we share that.

Oh, wonderful. Thank you so much.

And I have a question for Georges about the Egyptian casting. **Yesterday there was an interesting talk that looked at the different colours metal used in Greek bronzes. Do you know if the Egyptian bronzes would also have been multi-coloured?**

I cannot directly answer to your question because I don't know the Greek technology. I just like to say that what we present is a real link between the archaeological data and what we do in experimentation. So in this case it's also teamwork and I would like to thank all my colleagues both and the students, because hours of work about that. The [...] test is we used technology to know the different layers and we are sure about the five layers that we used. So for the future, I [...] we would like to maybe not [like] the Greek technology, but we would like to do a [...], is a 60 centimeter long statue. So for the future we would like to do something more huge and more heavy but for this moment is too early to answer to your question. I don't know. I'm sorry.

No problem, thank you. I have another, I have another question for you. **Would the statues have been finished in another way following casting?**

The statue after casting is very..., they're really clean. So the main idea is that you take more time to process the creation from the layer and it's months of creation. And the main idea is that when it's finished, normally you just need to have a little sand of a sandy stone just to have a good looking, but normally you don't have any work on the statue, you can just cut the [pouring] system and it parts [...] away to be the support for the for the basis. But for the rest the statues are normally very nice. So, you need to do just a shining effect, is only this because [they like a little the] gold effect that the bronze can create is also one of the reason why they use the bronze. But what is very, very nice with this technology is that you use only donkey dung, you use clay and fermentation and you mix everything. But after three months of preparation and after two months of application, when you open the moulds, you have to go

[...] directly because they are very, very clever. And they make a super job and they are lazy, but smart, is always [time] a the link between the both. What I would like to say is that they understand so well the technology, that they create at the end something very nice, not so like the modern way where you need a lot of tools. In this case you have something very good, [...] in the past We do... for us it's different, sometimes we need more time, but we try to have the same results so like we see also in the museum... it's a goal what we would like to have.

Thank you. I have a question for Tim. **Do you think people in pre-history would have had a favourite source for clay? And do you think it would be possible to identify individual potters at a site based on the clay type?**

That's a very good question. The answer is yes. The potters of prehistory would definitely have a favourite source of clay. If you look at evidence of current open firing cultures around the world, there are very few at the moment and they're disappearing very quickly. But they go to extreme lengths to find the right clay and the right temper. In some cases they had local clays, but they will travel miles and miles on foot, sometimes days, day long journeys to collect the absolute correct clay and the right temper that they know from tradition will be successful. So I've absolutely no doubt that the potters of pre-history would have exactly the same rationale and they would have their favourite sources of clay, their favourite sources of temper, based on results and based on knowledge that's been passed down through the ceramic generations, if you like. So absolutely. I think that the center of my research really is the fact that it's such a sophisticated way of working in one sense. And yet, if you look at it at face value, it seems quite basic. But the experiments have shown that you really need to source exactly the right materials. Otherwise your success rate is incredibly low. So, a very good question, but the answer is yes, favourite clays, favourite tempers, and they would not in any sense, move away from that until it was proved through time. Thank you.

Georges: I totally agree with you. This answer is very very nice. If I can say, I work in the desert close to the Red Sea. And in this case, the first thing to say is okay, it's a local clay for the technical ceramics. And now, after also many years of digging, we can say that the clay has come from far, far away and they bring the clay through the desert after five or six days of running. Because, like you say, if you don't understand the quality of the material, and they know very well the quality of the material, you don't have any success. And for the melting, for example, to make the crucible, they would like to have success because they are there to make the job. And so they select very very well the clay, is really something really important.

Tim: Thank you. That's very interesting.

I think Smriti, do you have something to add to this? Yeah, I was just going..., I'm not sure if it's a question, I'm thinking aloud, but one of the things that Uday and I noticed was a lot of the practices, I think are changing in like the recent ten years, partially because open firing is kind of thought of adding to pollution, especially if it's in an open space, and you know, space constraints make it very hard for them to continue open firing. But in terms of the clay sourcing, I mean, I'm not sure, I feel like the choices seem to be limited and the choices they made based on what's the best possible alternative, because of the rising costs, decreasing demand in some cases for the kind of produce that he made, and

then like the [territorial] resources. And the other thing that we did find is that places where there are more families doing pottery together they're able to mobilize more resources, whereas in places where there are one or two of them, obviously it's much harder for them to be able to make demands, where they're able to get the clay from. I'm also wondering whether factors like this are particular to now because of the kind of neoliberal policies and time that we live in or whether it would have been a factor in the past as well.

Tim: Yeah, that's really interesting. Thank you. I think the environmental factors are really interesting. In present day open fire situations I think the environment and the restrictions are obviously very prevalent. But I'm not so sure that those restrictions would be prohibitive in the past.

Do you think that would be the case?

Smriti: The other thing I've been thinking of is how much is an open firing contributing, in terms of this, whether it is... like how much of this is a [perceived anxiety] of the present... and I mean in terms of resources also, I've been wondering, because one of the things we heard from a lot of the potters is the availability of wood for the firing and you know, how it's becoming more expensive. Right now it seems like they are using whatever is possible, for example they use bark or things that come out of the coconut. I actually don't know what to call it. Parts of the coconut tree that comes out and they use parts of that in the firing. And I can imagine how with like kind of space the key thing it's going to be harder to get [...] earlier I wonder some of this is waste from another activity that is then being used in this. I'm actually not sure how to understand it because I mean, I also see the danger of romanticizing the past in this, of thinking that it's a completely [...] time. I was interested in what you'd have to say about it.

Tim: Yeah. Well, one thing that's really interesting in this sense is that wood is probably a secondary material. Wood as we know it, timber, split timber from substantial woody stems, was probably a secondary material. And I found that primarily the best form of fuel for open firing is actually much more grass-like, and if you look at the firings for instance in Papua New Guinea, you see that the actual..., what we would call wood is very much a secondary backup material and the much more flexible reed-like and grass-like materials and leaf fronds, for instance, which are quite sustainable and highly renewable. So environmentally it may, it does make a lot of sense. Also I now think that coppice material would have been used probably as early as the Mesolithic. I mean, there's evidence of coppicing now from Mesolithic through Neolithic. And I think the remnants of the day-to-day process of coppicing would be absolutely ideal for open firing. So the idea many years ago was that open firing was made basically from ..., that the fuel use was sourced from woodland is probably not so important, in my opinion, and say this more renewable, very fast generating stem materials like grasses and reeds and dried woody leaves, seem to be a much more positive approach, especially today in terms of environment and totally sustainable, because the net CO2 is zero.

That was a fantastic point. Thank you for all getting involved in that.

Alessandro, is there a theoretical limit to the size of a sewn plank vessel? Is it affected by the planks you can get?

Well, it obviously depends on the timber that is used, the species that you use. The ecological [...] is very limited. So we have planks, which are up to three and a half meters, but you can get, you know, much, much longer, obviously much longer planks. For example, I'm thinking about teak for example, and you can easily reach 10 meters planks. These are very rare, but obviously you can have them that long.

Do you think you could go beyond that length?

Yeah, most probably, yes. I have worked with 10, up to 12 meters planks, in the project I was involved in. But obviously, the limit just depends on the species and how lucky you are in finding a relatively straight tree. And how good you are in cutting it with the desired length.

Interesting. Thank you. And a question to [Giusi](#),

Are you planning to do less controlled experiments outside of the lab environment, for example, not wearing gloves, to see if there are any differences in the wear traces produced?

Yes, I'm trying, I'm thinking to do experiments involving more people and also more resources using the same stones. And then I want to compare the trace, both on the archaeological and on the experimental controlled one.

Fantastic. Thank you. And a question for Franz.

How has your work at the physical center been affected by the pandemic and what are your plans for the future?

Well, of course the pandemic is overshadowing everything. Well, actually, I don't know if you follow it, today we are into our fourth lockdown, which will continue, well, we don't know how long probably to the end of April, well, of course it is a great, great effect to everything we do. First of all, cause the exhibition will be closed for the time being. We hope to open, I would say probably in May again, or if you're lucky, it might be mid-April. Since we have the Archaeological Park it is possible to do some activities outdoors. We have the experimental archaeology classes, in cooperation with Vienna university, they will take place in the beginning of July. So we are quite hopeful they can start as planned. But of course, part of the program accompanying the exhibition is a hands-on program and experiences and all this kind, but this at the moment has stalled. It's probably taking place only from May on, so we're shifting much into online media and we are waiting for better times, basically.

Understandable, absolutely. [Smriti](#), **did you want to contribute to that?**

So, yes, I have worked on megalithic burials in South India and I was very interested in the experiment. One of the things that I think we've noticed from our megalithic burials here is kind of rituals connected to after the first time burials, repeated activity beyond the first use and then revisiting of the burial, but also inclusion and removal of artefacts into the burial or out of the burial. So as in thinking of it as not a one-time activity, but like the repeated interaction of people with the monument.

So I was wondering if that's something you can, that would be of interest in your experiment or is that something that cannot be factored in?

Franz: Yeah, you're referring to our burial mound we built. Well, there are many factors involved in this. So one of course would be storytelling and, it's part of the display in our open-air archaeological park, and as a matter of fact it's quite a complex experiment, my whole team was involved, concerning several

research questions. The preservation of textiles, for example, or bone samples and pottery of course, and the effects of bronze corrosion on organic materials. And we just took the chance to rebuild the mound because the material was still there. The original mound was excavated back in the 1970s and transferred stone for stone into our open-air park, but had to be removed in 2013 for complete re-establishment and reconstruction of the park. But the stones were piled somewhere in the backyard. They had to be removed from that place, so we just took the chance to rebuild it. And so to keep it a bit more [since] and we connected it to the cremation experiments we had two or three years from 2018 on. We wanted to create some comparative data with a natural body burial inside the mound. This will be on display for, let's say, 15 years now, so 15 to 20 years, before it will be subjected to excavation. So the materials from the pyres were of course collected and sampled. And some of the material, the bronze artefacts especially, were cut in half and one half is stored under laboratory conditions and the other half was buried with the rest materials, the charred bones. And after a period of, let's say 15 years, we'll have the opportunity to compare how the materials altered and changed under variable conditions.

Fantastic. I have a question for Boris now.

What kind of evidence do you have that allowed you to understand exactly how each tool was used? Was it common sense, input from experienced craftsmen or other detailed historic instructions?

Let's say a combination of all of that. We have ancient sources, so we have ancient written sources and we have reliefs which show us the use of some of the tools. And then we have like, in the case of our blacksmith, common sense or common experience. As you know, craftsmen have traditions that reach back over centuries. So I would say, a combination of all of these experiences and, let's say our own experiences when we built our old boat in 2018, we had a lot of experiences, because then we used also electricity, but in order to fit in the planks in the right order and making [them] fit in very well so that no water would get in we had to [plane] all the planks and the progress and the fitting in. There we had to use old methods of craftsmen, which are [valid] over centuries.

Thank you and we were previously talking with Alessandro about building boats, and he found that tool maintenance added to the construction time because they had to upkeep the tools in a way they didn't expect. **Did you also find that the tools needed maintenance more than you expected? And did that add to the overall time of construction?**

Yes. Let's say two sentences about that. We are still at the beginning of our building process. But we can see already now that we have to add special tools in our building process, like clamps. And nobody is saying anything about clamps in antiquity, but they are necessary in order to fix the planks into the right order and so on. We have a little bit of experience in using clamps in clinker boats, let's say Viking boats. In Roskilde, the colleagues there, who will come in a few weeks to us and will hopefully support us a little bit. You know, the clamps in Viking boats are different from that in our kind of boats, because you know, these boats [caravels], they have a smooth outer ..., they are smooth, they have no clinker construction. The clamps therefore have to be very big. And there we have no experience right now. So we have to get the experience all the time.

Thank you. A question for Udaya (Kumar).

I noticed that you only used single bellows. Is there a reason for this, or could it be possible to use a double bellows system?

It is possible to use a double bellows system [... raise the temperature]. If you want to melt [almost two 2kg, 3kg of iron] single bellows is enough. If you're using like 10kg is good enough to raise the temperature for smelting. It is very difficult to raise the temperature, to increase the temperature while smelting. In the past experiment I used single bellows. Second experiment I used double bellows so that the temperature has increased, like, we can understand how we are using the bellows. While using the bellows there shouldn't be any gap of pumping the air. It should be continuous to [prevent that] the temperature is being reduced. [...] That's like starting to almost get you a melting matter, like even copper or iron. Thank you.

Tim, do you think that your work could lead us to a better way of looking at archaeological ceramics and being able to assess the firing possibilities of the clay recipes?

The simple answer is yes. From looking at work I've done in the past - going back longer than I care to remember now - but, I think that the main problem experimental firing groups found with open firing was that it was almost a given that you would find a local clay, as convenient as possible in a sense and then add temper material to it and fire it. And the losses have always been huge, really. And it's always been a stumbling block for open firing where you've got no real control over the heat transfer at the very early stages of firing. Looking in a much more detailed way at the clay body constitution itself, I think does shed a lot of light on how things were done in the past. So, the answer is yes, definitely. I think I, for one, will look very differently now at how clays were formulated. And I've got a much better understanding of the sophistication of open firing and particularly the open firings of prehistory. So the answer is a definite yes, on that one.

Thank you. And a question for Alessandro: **Did you collaborate with experienced local boat builders in these projects? How interested are the local boat builders in participating in experimental archaeology?**

Yes, all the project relied on traditional carpenters, both builders and shipwrights, and most of them are from Southern India because it's the region where they're still repairing and using some plank vessels. While for example, all these projects were carried out in Oman, the Sultanate of Oman in the Arabian peninsula. And there is no one now left, although they used to build some boats in the past, up to the seventies, eighties in the southern part of the country, there is no one who basically can build this boat anymore. All the work was done by skilled boat builders who mastered the sewn plank construction. And it was actually absolutely wonderful to work with them and they were great on sharing their knowledge with us. And without these ethnographic analogies, without ethnographic input, we wouldn't be able to build these boats and it was extremely interesting to see them working, because first of all, it adds the human aspect into this project. It tells us about the people who built the boat, because that's exactly the main focus of experimental archaeology, I believe. And also it's a great thing to discuss with them, compare with them all the time, because obviously, you asked them to build something and they don't build that anymore. You ask them to build medieval boats, which are similar in terms of construction to recent... some boats in the region. But obviously there are significant differences. And so it's really interesting during the construction to have this discussion with them finding a solution to problems. So absolutely. I think it's absolutely essential to work with people who actually know the subject.

Wonderful. A question for Giusi: **How apparent was the use of stones after 30 minutes of grinding? Are you planning to do longer experiments?**

Well, the experiment it's not just 30 minutes of grinding, every 30 minutes I applied a documentation strategy that starts from micro-scale, so documenting with 3D. And then apply microscopy technique. So the first thing is to understand how the use changed the geometry of the stone, then microscopy to see how the use changed the roughness of the stone and if use-wear appears on the stone. And then I go to macro-scale, nano-scale, sorry, to better understand this use-wear. And, in future I'm planning to do also some measurements on this use-wear in terms of [...]. So I want to try to combine the material that is grinded, the time and the quantitative characteristics of this use-wear. So, right now I'm doing a total of two hours of experimental phase and every 30 minutes, I'm doing this documentation to see the evolution of the use-wear in time.

Fantastic. Thank you.

Shanti, thank you for joining us. I have a question about your outreach programs.

Do you ever get inspired for new experiments or projects by the participants in your workshops?

Yes absolutely. Absolutely. We are always delighted to and get inspired by what participants are doing and also from their feedback and interactivity. It's a constant feedback and it's a constant source of inspiration for all of us, the entire team.

That's wonderful. Yeah, the program looks fantastic.

And another question related to that, you mentioned that you're moving to online programs due to COVID. As we all know, that brings many challenges, as well as the opportunity to reach a much wider audience. **What things have you found most successful in this new media? How much has the change in audience altered your approach or content?**

Well, it has completely changed our program and our outreach efforts and experimental methods have completely changed, especially because you're dealing with a completely different medium. So for example, when we are working now with children who are online, we have two main problems. And the first is that a large section of children that will be normally included, that is from underprivileged backgrounds, cannot participate so much because they have lack of access. So this is a huge problem, which we are facing. But, for the other children we have two levels of interaction. One is for children and one is for the adults. But for adults in our program, that is not a problem because this is mostly in the form of lectures and discussion meetings. But when we are dealing with the children, we have to provide them with a list of materials, which they can have easily accessible in their houses. So this is an issue because generally we provide all the material when they come to our center. But online, we have to think of new materials, which they can work with at home. So this should be something cheap and something which everyone can access. So this is one thing which we have had to work around. And secondly, the timing for the experimental or other programs. So this cannot be more than an hour because of the internet connectivity issues, or little more than that, perhaps. And to maintain interactivity online is something which is a challenge, but we have dealt with it. For example, we recently had an online program for children on the Neolithic and on early agriculture. So when we are dealing with that, we have to think of strategies in which the children can actually plant a seed. And then we give them programs on how to develop and to track that over time, or using a local material for pottery, for making tiny little pots at home. So using, say, a mixture of flour or plasticine or something like that. So

these are issues that we have to innovate constantly and to experiment when devising our online strategies. So that's an issue.

Yeah. I can actually imagine this would take a lot of creativity. Thank you.

And then I have a question for Boris: **for those who are not familiar with metalworking: what would be the primary difference between Roman iron tools and modern steel tools?**

You can say sometimes there's no difference at all. And using planes, they are similar to those you can buy in the shops. Some are very distinguished, and different. But the metals the Roman blacksmiths are using are very sophisticated, let's say with a hard iron tip in the soft environment, which were fireforged together. All these different techniques were already used by Romans, as you may know. Planes are similar to ours and many, many tools are similar to ours, scales, even if there are different [rulers], but similar to ours. So, if you are not using electricity, you can say roughly the tools of the Romans are similar to ours.

Ah, fantastic. Thank you. And then a question for Alessandro.

Based on your perspective of medieval boat building, what sort of experiments might serve to push the field further? What experimental hypotheses are important to tackle in future projects?

That's a really good question. Well, I'll answer this question regarding the Indian Ocean. I mean, there's still a lot to do basically because the archaeological evidence is really, really limited. As I mentioned in the presentation, obviously the tool maintenance, the use of traditional tools is probably one of the main..., one of the most important aspects at the moment, because I was fascinated basically by it when, while I was involved in this project. First is obviously the making of these tools. Most of these carpenters, boat builder come with their own tools, and then they make their own tools, which is also something... an aspect which is very, very interesting and to calculate or to document in an experimental project. So I would say this is probably one of the most important aspects of this moment until we find more archaeological evidence to expand our knowledge of this subject, of this topic. And obviously the other one is testing these boats, building different size boats, the boats with different functions and test them. That's also, obviously, another priority of these projects, see the sailing performances and document every aspect and record the time required to build every element of the boats. Also, these provide insights into the labor and work organization and all these aspects. It brings to the front the human again, the people behind these boats.

That's a really interesting point that they would've made their own tools. It's not something I would have considered.

And then a question for Uday:

How was the iron ore crushed into powder before the smelting process?

In my experiment I crushed with a hammer, with stones and hammer, hammer the stones.

Thank you and then a question for Georges, you mentioned previous research, which you built upon. What parts of that documentation were missing in your eyes? And was there a possibility to use unpublished research data or speak with people involved in the research in previous decades?

We try to follow a methodology where the [force] comes from the archaeological evidence and then we

try to make protocol to link archaeological data, to link experimental protocol and archaeometry. I think one of the limits - is the question, that's the limit about that? - is clearly, the knowledge, clearly the time, clearly the rentability, the production. And we see also that sometimes you make a protocol, you use a protocol many times, so like 10 or 15 times the same and you can show that you can have different ways to create something. So you need to record everything. You need a lot of times [...] other one [...], and you are not sure at the answer which way they use because the validation from experimentation comes only from the archaeological data. So of course you can compare, you can validate artefact with experimental artefacts and you can validate also by the archaeometry. It's really interesting because all disciplines come talk together, bring new ideas that make sense. But of course the best thing is to come back in the past. The best thing is to be a little mouse with a huge camera and to see many things that seem impossible. Sometimes you can touch the knowledge. On my site, sometimes you see some details from the reality, I can say that, for the hands in the past, but of course the limit is this. We are just learning, we don't know. We are just all the time learning in the future. And that takes so many times to understand what they do really, they are so brilliant, they are so smart. It's really complicated because, so like you we are just students and, when you are with new evidence, all of the time is new questions. And sometimes you have a little knowledge from melting, and then you have a new site and you see new things and everything is different. So I think that's the limit clearly is the human, that's really the limit. So you must be very careful and just propose a way, just chaîne opératoire. Chaîne opératoire is just a methodology, is just something to understand what you would like to see at the end. And, so for this moment for us... the only good validation comes from the archaeological data and to say, okay, I produced something linked with the archaeological data. Absolutely not the same and clearly I don't know if you ask me, we spent thousands and thousands of hours to make the smelting in [Ayn Soukhna] and we are not sure at the end, we just have maybe more idea about the chaîne opératoire and for rentability, for hours, for the production. And so this is just something impossible to answer.

Thank you. A question for Smriti:

What was the most difficult part of your research? What would you have done differently or planning to do differently in future experiments?

I have to say what was difficult for us was trying to figure out how to do the open firing. So we've done two so far, the first one [was just terrible ...], but then I think we learned quite a bit from that one. I have to say we've been using YouTube videos as our main source of information so far. But recently I actually visited many partners in Tamil Nadu so we've been also also learning from watching, how they do some of it. But what we want to do now is to have a much more direct interaction with them and learn from them and see how we can actually get better at it. So as well as doing the firing, we've also been learning to do pottery. And again, that's been like a mixed bag. I don't think that's [been very successful ... terrible]. So I think we, hopefully that's something we can work on. But it also requires a lot of time. So we've been trying to balance like work and trying to get this done. I think one of the other hard parts of the whole thing has been the perception that while we feel we're working very hard, people perceive it as us just kind of like having fun. So I think it's also really hard to predict the seriousness of the work that we're doing.

Thank you and a question for [Shanti](#):

How many children who participate in your workshops go on to continue archaeology?

Oh, that's a good question. I don't know actually, I have not kept track. There've been so many from 1999 onwards. There've been so many. So for the school children, I don't know, but for the college students, that is from the undergraduate level onwards, yes, we do know of several of them who have later gone on to do their postgraduate degree in archaeology. So that was great to hear. So I think they got the whole fun and the spirit of the subject. So, but for school children, I honestly haven't kept track. I will do now. Thank you.

Fantastic. And then a problem for Giusi:

Could you explain a bit more about the general question behind the experiments?

The main idea was to create a collection to compare with the tools from Brînzei. The idea is to create this collection both for stone and also for residues. So the stone are documented with our multi-technique pipeline, to reproduce the geometry of the stone, the roughness of the stone, and going to the nanoscale to characterize the use-wear. And also we are thinking... we are starting some [...] with micro CT, to understand the entrapment of the use-related residues in the crevices of the stone. The project is running in parallel the trace analysis and the residues analysis. And, I'm doing this reproduction of the trace on the stone, to compare with the archaeological one. At the same time, we are creating also a database of possible resources used during the Early Paleolithic, to compare the residues found on the archaeological stone with some experimental ones.

Thank you. I have another question for [Alessandro](#):

How different was the historical building procedure from the techniques modern sewn-planks craftspeople are familiar with?

Oh, that's a good question because, we don't really know much about the historical boat building practice. I mean, historical sources are very vague and lack of details and archaeological evidence are extremely limited. And so we rely on the ethnographic records of the region, and I believe that the construction method doesn't really change much, which means there's a strong link between the present and the past and, especially, regarding boat building in this region. And also the few archaeological evidence that we have..., the similarity between them and more recent ethnographic records are striking. So I believe that not much has changed, but with this I don't mean...it's not like a judgment on the past, or actually on modern, more recent boat-building traditions. They just reveal a strong link between the two... between the different periods and also indicate the success of these sewn boats, the adaptability of these sewn boats, the persistence of these [... technique] until recently.

Thank you. And then final question for [Smriti](#) and [Shanti](#),

How did you find attitudes to work from the craft experts such as potters?

[Smriti] I think it's much harder to explain exactly [...], but mostly we found them [...] extremely warm and very generous, which just made me feel worse because like, we were just going there to ask a lot of questions [waste their time], but they were being so nice to us. But I think that's one of the reasons we want to like see how we can actually create a much more equal [...] relationship as we went forward.

Fantastic. Thank you.

[Shanti] When we worked with potters, we first had a session with them earlier to explain what we [... ...] at archaeological sites, for example, [... pots] and things like that. After they did that, we gave them an idea as to why we were doing the workshop for children and for various different age groups. And then we had the workshop subsequently. So that was with the traditional potters. But with the professional potter who is an expert, an educated expert in pottery, highly educated with a PhD, one of our colleagues. This lady also explained to the children very carefully why, what she was doing, why she was doing, a little bit of the archaeological background, and then we had the workshop. So we worked with two different types of experts in pottery, coming from different backgrounds, one traditional, and one totally modern and highly educated. So that made a huge difference in the entire organization of the workshop and in mutual understanding between all of us.

Thank you. That was really interesting. So I'll wrap up the question and answer session there. Thank you so much for joining.