Hello everyone, and welcome to this latest edition of EXARC Extracts with me, Matilda Siebrecht, where I go through the latest edition of our wonderful EXARC Journal. The EXARC Journal is an online journal which is dedicated to publishing the results of projects involved with experimental archaeology and open-air museums from around the world. This episode is about the third edition of the 2025 EXARC Journal, with eight reviewed and three mixed matters articles. So let's go through them now.

First up, we have an article written by Giovanna Fregni, who is one of our longstanding EXARC members, and it is called ***A missing link in the Chaîne Opératoire*****.** So immediately we have some intrigue. Oh, I already like the opening to this article: "How elitist attitudes shape archaeological interpretations. A curious misunderstanding arose while writing about Bronze Age metalworking hearths and smiths. I stated that no tools are found at metalworking sites after the work was completed as the tools and materials would have been taken away. The reader took the statement to infer that I was arguing for the idea that metalsmiths were itinerant, as described by Gordon Childe (Childe, 1940, p.176); that they packed up and left for another settlement…" Of course, what Giovanna actually meant, as the author, was that once the work was completed, that then the tools would be taken away to where they would be stored. But this took a really interesting further discussion point, because then it raised the question of, okay, but how do we see this in the chaîne opératoire, that operational sequence where you can see the steps of production, of manufacture for a particular object, because the care and storage of these tools is not necessarily a part that is included, in that analysis or in that interpretation. So the author wants to explore this concept a little bit further. This is quite a short article, but it is a really interesting one. The article covers a few different case studies acknowledging these sort of missing links. So for example, in studying the recreation of Bronze and Iron Age roundhouses, in looking at the significance of symbols, for example, the hammer and sickle, the symbol of the former Soviet Union. Talking about the continuance of traditions, for example, amongst Nigerian metal smiths and the Igbo rite of passage. So it's a really interesting, very short but sweet article, and I really love articles like these that actually delve into the theory behind different aspects of experimental archaeology. Because talking about the chaîne opératoire, talking about the manufacturing sequence is of course such a massive part of all experimental archaeological research. It's only through following those sequences, through following those different steps… That's basically what we do as experimental archaeologists. So being able to further explore the theories and the concepts that are actually involved with that method and with that framework is a really essential part of experimental archaeology research. So a very exciting start to the issue.

Next, we have an article that is entitled ***The Art of Contrast: Experimental Insights into Partial Tinning on Roman Military Equipment*** that is written by Martijn Wijnhoven and Matěj Kmošek. I sincerely apologize - as always - for my terrible pronunciation of names. Very sorry for any authors listening if I pronounce your name wrong. This article, as the

name suggests, focuses on Roman armour and there's some really beautiful illustrations already and photographs of the armour in question, including some micro-XRF analysis shots, which are really fascinating. The topic of this article is Roman armour and the fact that it was very often richly decorated with embossed designs. But another example, which was quite often used alongside embossing of applying this design was actually called partial tinning, that's the selective application of a tin layer to create that visual contrast with the base metal, which would've been copper alloys. And actually there's been some recent analysis which shows that maybe this method of applying that partial tinning was more technically complex than previously assumed. So this article goes through a little experimental project, which attempts to understand how that partial tinning could have been achieved using Roman era technology. They go into a lot of detail about the background to tinning as an actual method. They talk about ancient sources, specifically historic sources, where this particular process and this particular design application is mentioned. Talking about the different options because even though we have, potentially, some archaeological evidence, even though we may have written sources, sometimes even then you still have a couple of different options of how to do things, right? And this is a perfect example of that. So for example, the authors say, is it masking off or painting on? And they talk about how, actually, partial tinning could have been achieved in two main ways. So one is that the area was sort of masked off almost like when you're painting your ceiling and you want to put masking tape along the edge to make sure that you don't get anything on the other wall, and then you pull the masking tape off. So that could have also been done. You almost have this kind of..., I assume it wouldn't have been masking tape in the Roman period, but a kind of masked application you then adhere the partial tinning and then you take off the masking. Or you could have had the tin layer being applied selectively, almost like painting it on, in a way, and then heat it, in order to attach it permanently. So even with the evidence that we do have, there's still a couple of different methods that are possible, in this particular way. The article then goes into a little bit of detail about the experimental setup that they have. There's also some excellent pictures and photographs to show the setup of the authors in their experiments. They're referencing lots of previous experiments, which have looked at different practices of hand tinning. Talking about the materials that are involved, talking about the procedures that are involved and the different experiments that are done. So, for example, they conduct experiments with oxidation-based masking and with mechanically applied masking. They use an egg white to mask it with egg glaire, which I'm very curious what egg glaire is: a refined form of egg white is known as egg glaire, a term that comes from old French and ultimately derives from the Latin claris, meaning clear. Interesting. There you go, you learn a new thing every day. So talking about that, because apparently the best results they had were achieved using egg white. So they wanted to explore this idea a little bit further. Then they mention the conclusions and discuss their results. Again, a relatively short article, but a lot of really interesting insights and just goes to show that so many experimental archaeology projects, I think a

lot of people think that in order to have a publishable project, it needs to have this huge, broad question and it needs to be internationally significant... You can actually have a really in-depth, really significant project such as this, which is simply looking at potential methods of applying a decoration to a shield. On paper it sounds simple, but it actually is an incredibly complex experiment and has some really interesting discussions. So that's a very nice example of those kinds of studies there.

We're getting some more experimental insights in the next one, entitled ***Between Function and Symbolism: Experimental insights from...*** - Ooh, now I can't pronounce this word. I really apologize... the ***Mghvimevi*** Engravings are the oldest known rock art in Georgia. So there you go. This is written by Aleko Zavradashvili and his team and Aleko is actually one of the two 2024 winners of the John Kiernan Experimental Archaeology Award. For those who are not familiar with this particular award, it is an award that is sponsored by one of our EXARC members, John Kiernan, who has very kindly agreed to sponsor up to two projects a year focusing on experimental archaeology. He provides a micro-grant of 500 euros per project, and it enables smaller-scale experimental aspects of different projects to be undertaken. We have had some really incredible projects that have been funded through this initiative, and we are incredibly grateful to John at EXARC, for allowing us to be the platform through which this particular grant is shared. So if you are listening and you have an idea for a small project, but you just don't quite have the funds to be able to carry it out and you could do with a micro-grant, check it out. We're going to have another round in 2026. We have already chosen our winners for 2025, of course, but in 2026 there will be another release date, around spring, for the next edition of the John Kiernan Experimental Archaeology Award. So do look out for that. This is an example of one of those projects by Aleko Zavradashvili, Levan Losaberidze, Mariam Kokhreidze, Tatia Mamalashvili and Vladimer Kenkadze. Again, I'm so sorry to everyone for my horrendous pronunciation. This project is looking at engravings. And this was, I think, why this project got funded, because it's a really interesting topic to look at from an experimental archaeology perspective. There's been several field work campaigns which look at these engravings, which are the oldest known rock art in Georgia, they date to the Upper Palaeolithic. These field work campaigns have revealed 30 grooves consisting of parallel and intersecting lines. The idea is to investigate whether these grooves were intentionally produced symbolic art, or whether they might have just been sort of incidental traces of utilitarian activity. Were they put there on purpose to represent something specific, some sort of symbolism, or was it just that people were doing things and as they were doing things, these grooves happened to be created? That was the aim of this project, funded by the Kiernan Award to investigate this idea a little further. First of all, the article goes into a lot of detail about the petroglyphs themselves, discusses the site. The history of the site, the history of the discovery of these engravings as well. It then goes into some detail about the materials and the methods used. They talk about all of the different things that were done. So for example cutting pork and skin

with different types of tools, made from flint, for example. Scraping on rock, cutting of pork or beef, as well. So cooked meat as well and in all sorts of different directions, different kinds of surface. They go into a lot of detail over all of the different parameters of the experiments. There's some really interesting photos to go along with it as well, including photos showing the actual experiments themselves, but also, more in-depth microscopic photos of the artefacts that are used, so the tools that were used during the experiments. In total they had 20 experiments performed, doing a range of different activities with a range of different tool types on a range of different materials. They go into detail about all of these different experiments that they did, and then present the results, which apparently do correspond closely with those reported in prior studies. They talk about the results of their experiments in terms of what kind of grooves were created through these cutting and sawing and scraping experiments, and how that might compare with the archaeological petroglyphs. As with all of these kinds of experiments, usually it creates more questions than you had when you went into it, and that is definitely the case with this one. They have some really interesting insights into the different ways that you can identify intentional versus unintentional grooving, and groove creation. Deliberate incisions, for example. I don't know whether to give a little bit of a spoiler, but it seems that they might have indeed constituted deliberately incised marks, although some of them could also show evidence of different kinds of activities that then unintentionally left the mark. So they provide a lot more questions and a lot more evidence to use for future research projects. But this is a really interesting study and we're so happy that they were able to undertake their research thanks to the John Kiernan Experimental Archaeology Award.

Our next peer reviewed article is entitled Investigation of the ***Practical Functions of Fluting on Throwing Sticks and on Other Ethnological Wooden Artefacts*** written by Luc Bordes. This is what I love about the Journal is that you just have such a range of different materials. So, so far in terms of the experimental projects, we've had Roman copper shields, we've had Georgian petroglyphs, rock, and now we have wooden throwing sticks. So a really wide range of things. The main question of this project is: why are the surfaces of some Australian throwing sticks fluted? According to previous research, it's assumed that this might have had some influence on their flight. But that wouldn't explain why there's also fluting on other kinds of wooden artefacts such as shields or clubs or containers, which are not supposed to fly, right? They're not used as projectiles. Fluting in this case, by the way, is used to refer to shallow U shaped grooves with concave sections wider than the ridges formed between them. If people are uncertain, then I would highly recommend checking out this article because they have some very beautiful pictures which demonstrate what this is, the fluted and grooved surfaces. They go into a lot of detail on the exact proportions of the fluting and what that actually means, morphologically. So first of all, the author goes into a little bit of an introduction about this topic and why this question is an important one. He continues

talking about the ethnology on fluted wooden artefacts, for example, on throwing sticks and throwing clubs, specifically in Australian aboriginal cultures, but also on fighting clubs, on shields and defensive weapons, containers, tools, and even architectural elements. That one, for example, he varies a little bit and goes in to look at wooden houses of the Northwest American continent as well. The article then goes on to talk about other examples of the use of fluting surfaces in historical times. For example, in architecture or in medieval armour, and then the modern use of fluting and groove surfaces. That is how the article is sort of introduced. And then we go into the methodology. The results are of throwing experiments, with kylie and wirlki hand replicas, which are a particular kind of throwing sticks manufactured in Australia. I won't go into detail with all of the results, there's a lot of detail gone into the article. The discussion afterwards then goes into the potential functions of this fluting, of this sort of U shaped groove for throwing sticks and other wooden artefacts as well. There's some non-practical functions that are considered, such as the aesthetics or the symbolism of this fluting, as a sort of design, but also practical functions. He talks about the improvement of projectile trajectory. He talks about deflecting projectiles, producing a rattling sound, lightening an artefact without lowering its resistance, improvement of the resistance to shock, and to prevent checking from drying and environmental exposure. So a lot of different interesting points that are raised throughout the experiments and throughout this project and this exploration. Really interesting, looking to a completely different part of the world to the other articles that we have had so far. We've been to ancient Rome, we've been to Georgia, we've been to Australia, all sorts of places traveling around the world, this issue.

Moving on to the next peer reviewed article, which is written by Elizabeth Tarulis, Taylor Bowden-Gray and Brigid Ogden. This is entitled ***Certain Small Contrivances. Recreating an Intestinal Condom Recipe to Determine the Potential Effects of Manufacturing on Zooarchaeology by Mass Spectrometry*****,** also known as ZooMS. This is another project that was funded by the John Kiernan Experimental Archaeology Award, from 2023. As you can imagine, a very interesting topic as well. They are looking at, yeah, different ways of making condoms and what happens when you create these condoms, whether that would affect the ability to identify the animal when applying Zooarchaeology by Mass Spectrometry known as zooMS. ZooMS, for those who are unaware, is a proteomics-based method of taxonomic identification. So basically you extract collagen from faunal remains. This is digested into peptides, which is then done with mass fingerprinting and you can basically use that to then identify a species, when you have things like bone, skin, teeth and for example, intestines, like in this case. The project is basically seeing whether that method can be applied even when something like an intestinal condom has gone through a long manufacturing process. The article first goes into the presence of these kinds of objects in the archaeological record. As you can imagine, they do not preserve very easily and talking about the use of the condom

throughout history, which is a fascinating topic in itself. Talking about archaeological evidence, but also historic evidence for the use of these particular objects in the past. They then talk in detail about different objects that have been discovered archaeologically and how that has then been used for ZooMS - Zooarchaeology by Mass Spectrometry - in order to try and identify which species was used to make this artefact and also test the interpretation that it is indeed a condom. The article then talks about the background of this, the history of using this particular method on these particular kinds of artefacts, and then they go into the experiments. The experiments in this case are the actual creation of the objects themselves. So talking about the different manufacturing stages, all the way from separating the caecum from the intestines, all the way to stretching it over the glass moulds to create that final shape. They drew upon a recipe from 1824 for making condoms, so a proper historical background to the study, to the project. Then they talk about the method of zooMS as well and how they applied that. The authors recreated the condoms and then applied zooMS to them with the understanding they have that base knowledge, that reference, they know exactly where these intestines have come from, that they're creating experimentally. So it's almost like a sort of test, a reference sample in this respect. And then provide the conclusions, which apparently suggest that neither the chemical nor the physical manufacturing processes significantly affect the collagen yield. The only thing that might cause collagen deterioration would be taphonomic processes, so basically stuff that has happened to the objects once they've been buried in the ground. A really interesting project again. And again, another project that was sponsored by the John Kiernan Experimental Archaeology Award, for which we are very grateful to John Kiernan.

Our next peer reviewed article is written by Ruby Becker and Helen Banta and is entitled ***Adventures in Woad: Woad Dyeing in the Ancient, Medieval, and Modern Worlds*.** Even just by the image at the top of the article I can already see that we're gonna have some beautiful colours in this one because there's some really beautiful images, of all of the different colours, all of the different objects, all of the different materials. I know that we have a lot of discussion on, at the moment in the Textiles Working Group, over on the EXARC Discord server about dyeing and about different materials that can be used and everything. For those of you who are interested in this topic, I would really recommend checking out the EXARC Discord server. It's free to join, as both an EXARC member and at the moment we still have it available for non-members as well. So do come along and join that. We have some really fantastic conversations on there about different kinds of experiments that people are doing with textiles, with dyeing, with spinning, with all kinds of things. So, definitely come along. If you're interested in this article, I would highly recommend checking out the Working Group as well. There's a lot more happening over there in terms of these kinds of experiments. In this article the authors explored woad and looked at its uses as a dye on both cloth and skin. In this way, they wanted to understand not only the use of this

particular dye as a dye material on cloth, but also to talk about the reference to Gauls, in Caesar's Gallic war, as having blue dyed skin, which I find particularly interesting as well. It's sort of one of those alternatives to ancient tattooing, this idea that a lot of people would have painted themselves instead. One of the common suggestions also, for example, for why the ancient Romans talked about the Picts of Northern Scotland as being sort of blue tattooed, is actually not that they were tattooed, but indeed, that they were covering themselves with woad. So, similar things apparently being talked about with the Gauls and their blue dyed skin. So yeah, looking at all sorts of different aspects of this. First of all, the article talks about woad, as can be expected, talking about the biology of woad, when it can be harvested, et cetera. Then they provide a condensed history of woad, looking at the use of it throughout history, going from the most famous reference to woad, which comes from 54 BC in Caesar's Gallic War, going up all the way through to the 18th century and on into the modern day. They talk about Fibre Trial and Error, so looking at modern methods of different kinds of woad dyeing, starting with a recipe found in Grierson's 1998 The Colour Cauldron and Foy Cameron's 1998 Woad Zine. Then they go backwards and have a little look at a couple of these different recipes. They talk about the different successful modern recipes. They look at medieval recipes. They do trials of the modern recipes, trials of the medieval recipes. And they also look at different colours that are created as well. For example, woad can also create pink, if prepared in the right way apparently, including a vibrant salmon pink, on one occasion, based on one of Cameron's recipes from 1998. They also looked at other dyes and colours, for example, madder, which gives a deep red and weld, which is a plant that gives a bright yellow colour. So looking at a really wide range of materials, in this experiment. They go through a lot of detail of how they prepare all of these dyes as well. So even for people who are just wanting to try this for themselves, this is definitely a very replicable experiment. Then they talk about dyeing the skin and this section is entitled Skin Trial and Error, which I think probably tells you all you need to know about what happens in this particular part of the article. But again, they go into a lot of detail about the exact method, the preparation of these particular dyes and why they chose these particular dyes as well, what the historical recommendations are, what the historical and the archaeological references are as well. They also do attempt to make tattoo ink from these powders, apparently, based on a recipe from a local tattoo artist, where you replace ash with woad powder. Very fascinating. Unfortunately the tattoo faded, leaving a colourless scar after just a month. So they did do some tattooing experiments as well. Then they provide a very detailed list of conclusions and some ideas for future research. So again, a really detailed and complex experiment based simply on the idea of wanting to test out a material and how it interacts. If you are interested in dyeing textiles, then definitely check out that article, and I would really recommend coming along to the EXARC Discord server and joining our Textiles Working Group, which is currently free for everyone to join.

Okay, next we're going to a completely different part of the world again! We're looking at **Bronze Age Egypt**, written by Sarah Mitchell and Chloe Duckworth. This study aims to understand **the manufacturing process of glass ingots, particularly blue glass**, through the use of different furnace types, including electrical and wood-fired furnaces in varying locations. So there's particular technological aspects that want to be investigated through this project, for example, the use of a separator in the manufacturing processes and the inclusion of various materials such as oil, pure lime, and crushed oyster shells. A very technologically complex experiment, this one. The introduction gives us a little bit of an intro to the concept of glass and glass making specifically in late Bronze Age Egypt, how it's connected with the earliest Mesopotamian glass making techniques. The authors then provide an overview of their aims and objectives, which are to reconstruct the chaîne opératoire that, remember, is a new word we've learned today, the manufacturing sequence for opaque coloured glass making in late Bronze Age Egypt. They also want to reconstruct the manufacture of blue glass ingots in late Bronze Age Amarna, Egypt. So how were these Late Bronze Age glass makers able to cast an ingot of glass and remove it from the crucible without breakage? They also want to look at the contextualization of findings in terms of the value and the symbolic meanings of the earliest glass in Egypt. So did the consumers, so to speak, care about the manufacturing processes and techniques at all? To what extent was the value of glass drawn from the use of raw materials and/or the specialist knowledge required to produce it? So, a couple of different levels of aims and objectives within this particular project. The article then gives an overview of previous work that has been undertaken in this area and provides a background on the different aspects of the experiment. So for example, the components and composition, glass furnaces, crucibles, and ingots, furnace variations across Late Bronze Age Egypt as well, and the development of glass as a high status material, glass and the theory of value in general. I always find that very interesting in these kinds of experiments that focus on really scientific, technological, almost quantitative aspects, but then incorporate a really strong qualitative discussion point as well. So this idea of value, you know, you can't really put a price on something, right? That's sort of the whole point. It's really interesting to have those discussions in these kinds of projects. The article then gives a very detailed overview of the method, including exactly what kind of glass charge, crucible material, parting layer, or whether the glass was fused or not. They also go into a little bit of a detail about Wolfson laboratory experiments as well that were undertaken. Also, Torreparedones furnace experiments. A lot of different experiments completed as part of this project. Wallington furnace experiments as well. Then they discuss the results from these different experiments that were undertaken and discuss things like the use of lime as a separator, cross-craft interaction in Late Bronze Age Egyptian workshops. The value of glass in this particular location. And then talk about further research and conclusions, so give a more detailed overview of the chaîne opératoire of glass making, the production of glass ingots and glass and the glass maker in this respect. So a really

wide range of different topics covered within a very complex and condensed study in this case.

We're onto our final peer reviewed article of this issue of the EXARC Journal, which is written by Shelby S. J. Putt and is entitled ***A CURE for Teaching Experimental Archaeology*****.** CURE in this case refers to Course-based Undergraduate Research Experience. This article aims to explore that concept, so course-based undergraduate research experience, which is a model, and it wishes to explore it as an effective approach to teaching experimental archaeology. This is a model that has been very successfully used in STEM fields, so science, technology and medicine, to enhance student engagement and to produce long-term impact on academic and career success. But as of yet, nobody has implemented it particularly widely into the experimental archaeology curriculum, which is odd considering the experiential and very hands-on nature of the discipline would suggest that it's actually a perfect topic for this particular model and approach. The article first provides a bit of an introduction to the CURE as a concept, what exactly it is. Apparently it is broadly defined as 'a project that engages whole classes of students in addressing a research question or problem that is of interest to the scientific community'. Yes, I agree completely when I'm hearing that, the first thing I think of is experimental archaeology. I think it sounds like it could be..., oh, I'm curious to read this article and see whether they came to the same conclusion - that it is important. They give a little introduction to experimental archaeology, the importance of this kind of experiential learning, very hands-on problem-based learning and how therefore, the two concepts might be combined, so CURE and experimental archaeology. They present a case study which looks at producing stone tools using different reduction strategies. So it's a social transmission chain experiment. And it was undertaken as part of an experimental archaeology course, which was taught by the author in several classroom and lab spaces at Illinois State University, in the spring of 2024. This was because the author was awarded a CURE Fellowship from the Office of Student Research to support the creation of a new CURE module in this case. They provide an overview of different research problems. The article goes into a lot of detail about the syllabus and how this particular research problem is presented in the syllabus and guided through. She then gives an overview of what kind of guided experience was provided to the students throughout the semester, how the course was organized, how the students were evaluated, the goal of the experiment, and how this sort of came about and then goes into some detail as well about a summer internship, which was an extension of CURE. So a really interesting discussion. There's some quotes from the students that took part in this internship included in this particular section as well, which is really interesting to look at. Some of the quotes from there: "... gave me fantastic insight into what specifically an Anthropologist can do. I would like to continue this research...". "...This project has equipped me with valuable skills, such as professional writing [capabilities], demonstrated research [abilities], and

[experience with] data analysis." “The practice I gained really helped me develop…”, “… opportunity to pursue my research, a prospect I'd never considered”. So it seems like it was definitely very beneficial. Then there is a very detailed discussion of the sort of qualitative results of the study. So talking about some of the students and how they proceeded after having participated in the CURE and talking about the author's own experiences and challenges. So very different to the experimental projects that we've seen so far. Equally, if not more important, I would say, because these kinds of studies, these kinds of projects, which look in detail about how we teach experimental archaeology, and most importantly, how experimental archaeology can be used as a beneficial tool as well, so not just as a tool to understand the past, but also as a tool in the modern day. We've had some really great articles on that in previous issues as well, about how experimental archaeology can be used to deal with modern societal issues, and look at things in different ways. Help people through difficult times. So I think that's one of the great things about experimental archaeology, about heritage interpretation, it isn't just a scientific method, it isn't just a way of looking at the past. It's also a mode of Mindfulness in a way, in some cases. It's a way to engage not just with the material but also with yourself, in a certain way. Obviously I'm slightly biased in this respect, but I think that these are very important studies, and it's really important topics to consider as well.

So there you have it, those are the peer reviewed articles in this edition of the EXARC Journal. We also have some Unreviewed Mixed Matters articles, which includes a little overview of ***Building Rome in a Couple Days: Erecting a Painted Portico in Alésia*****,** written by Nicolas Revert. You also have an ***Interview with Richard Rees*****,** who's a professional furrier with over 30 years of experience, written by our wonderful chief editor, Kateřina Dvořáková. Then you also have an article written by Anshika Singh, ***Uteliya: Coincidence, Continuity, or Something Else?*** **S**o do go and have a look and check those out if you have a moment. I hope that you enjoy reading this edition of the EXARC Journal, and I look forward to talking with you again next year when we have the next edition of the EXARC Journal coming out in 2026. In the meantime, have a great final month of 2025, and I wish you all the very best for the New Year.