Hello and welcome to this edition of EXARC Extracts with me, Dr. Matilda Siebrecht, as we look at the second issue of 2025 for the EXARC Journal. Those of you who have been listening to this for a while will hopefully already be familiar with the EXARC journal, but I thought maybe it might be useful to just do a little bit of a reintroduction to what is the EXARC Journal, what is EXARC? How does that all work? So EXARC itself was founded back in 2001. So next year will be our 25 year anniversary, which is crazy! And it was founded as an organisation which was to help the professional development of experimental archaeology and open-air museums that has now developed, amazingly well, over the last 25 years - thanks in big part to the boards and the directors, including Roeland Paardekooper and Magdalena Zielinska, who have been a big part of building EXARC up to where it is today. And now we have over 400 members all across the world who are engaged in some way in experimental archaeology, archaeological open-air museums, ancient and traditional technologies, and cultural heritage interpretation. This is everyone from archaeologists to reenactors, to professional craftspeople, to museum heritage professionals. So we have a really wide range of members and we do a really wide range of things. The aims have remained roughly the same. The aim is to help with the professional development, the acceptance of these fields as professional archaeological methodologies and research methods and approaches. However, we also want to provide a network. We also want to create connections. We want to help people to find resources, and that is what we do as an organization.

Something that built up alongside this organisation, is the EXARC Journal. So it is its own independent thing, but it has a strong association with EXARC. It is powered by EXARC, as you can see on the website, which has been online since 2012, so also a very long time now. And it is completely open access. It is completely free to read and free to publish in. It is peer-reviewed. We have peer-reviewed articles in every issue as well as unreviewed mixed matters articles, which are generally conference reviews or book reviews, or just general reports on events that have happened and things like that. The Journal itself is, as of this year, on its own very fancy new website. And again, huge congratulations to the Journal team for making such an amazing website, which is now dedicated purely to the Journal.

And each quarter when the new issue comes out, I go in and I do a little bit of a live read through of that issue of the Journal to try and give a little bit of an insight into what's happening in the world of experimental archaeology and archaeological open-air museums. This one is, as I mentioned before, the second issue of 2025. It consists of 13 articles, so lots to go through. Let's get into it, shall we?

The first one is entitled **Experimental Approaches to Amber Bead Production in Early Medieval (Fifth- And Sixth-Century AD) England**, written by Katie Haworth, from King's College, University of Cambridge. And oh my goodness, the pictures are already shouting out at me. I must say I have a background in the study of amber beads as well. I did that for my masters. So whenever I see amber, it just makes me happy and oh my goodness, this is gorgeous. The pictures that she has of the amber pieces, of the perforations, oh, these are absolutely beautiful images. If you want to see a really detailed overview of the different kinds of amber you can get, of different amber bead shapes that have been identified, the images alone on this are just fantastic. So let's have a look. Tens of thousands of amber

beads have been recovered from furnished early medieval female burials. Amber reached its peak in the middle of the sixth century, overtaking even glass beads in popularity. Despite the wealth of evidence for the finished objects, no archaeological traces of amber working in Southern Britain during the same period have yet been identified. So the sort of overall aim of this article it seems is to replicate the process of actually creating these amber beads using various different methods, understanding how they were made and also potentially where they were made, because that can then have broader implications for how we interpret the society and the kind of economy at this time, especially the maritime economy as it states in the article here, because amber beads are always sort of classified as imports, but we like to look at the ultimate provenance of the material and less so on the processes and the context within which raw amber was then transformed into beads. So let's jump straight into the experiment. So they aimed to reproduce 76 amber beads from two early medieval burials. And the article goes through all of the different shapes and types of amber beads. So going through different categories, different types, longitudinal sections, transverse sections, the length and all of these things. So a lot of detail into the different typologies that are seen in the archaeological record. And then the article goes into detail about how material was sourced, how they actually found the raw amber, how to choose the different materials that we use. Also goes into a lot of detail about the actual archaeological background of sourcing as well. So not just a straightforward overview of 'these are my experiments, this is how I did it', but actually a really well-researched and well-contextualized experiment here. They then completed sawing, roughing out, drilling - a lot of information about drilling - shaping, polishing, and then also noted the production waste. The article ends with a very interesting discussion about, for example, cross craft interaction between bone and amber working. The toolkit required to make amber beads, whether it could have been done by a single craft worker or multiple craft workers, what kinds of skills would be required and ends with a conclusion. So a really nice, really well-contextualized - I mean, all of the articles in the EXARC Journal are nice, who are we kidding? - but this one's really beautifully contextualized and has a lot of information. So if you're interested in learning more about amber bead production… I could have done with this one during my masters, Katie! - then I would definitely recommend that one.

Let's go to article two. This article is co-authored by multiple authors, first author is Sibylle Wolf and co-authors are Keiko Kitagawa, Rudolph Walter, Agnes Fatz, Nicholas J. Conard, from the Eberhard Karls University of Tübingen in Germany, and the Centre for Human Evolution and Palaeoenvironment at the University of Tübingen. The article is entitled: **Innovative Osseous Technologies of the Early Upper Palaeolithic of the Swabian Jura – The Age of Ivory**. I swear so far this issue just seems to be Matilda's previous studies because for my PhD, I looked at ivory, so there you go! Again, beautiful images of some nice ivory objects here. So the Swabian Aurignacian is well known for its vast assemblages of functional and symbolic artefacts made from mammoth ivory. This contrasts with the lower and middle paleolithic technologies that contain sparse evidence for the manufacturing use of tools made from osseous materials. Oh, interesting, okay. Only with the earlier upper paleolithic did hominins begin to use ivory for a wide range of tools. Okay, so this particular paper looks at articles of beveled artefacts made from mammoth ivory from the Hohle Fels and Geißenklösterle caves in the Ach Valley of the Swabian Jura, which is in Southwest Germany, in order to reconstruct the ivory technologies used during the Aurignacian period.

So they looked at four different modes of using the beveled artefacts with the help of an experimental approach, with the hypothesis that maybe these artefacts might have been used as tools, so chisels, to work osseous materials. That's very fascinating. As always, the introduction of the article goes into a little bit of the archaeological background, looking at where the objects were found, what the sites are. The authors then talk about the raw material itself, so ivory, what is the chemical composition? How can it be determined? Talking about things like Scanning Electron Microscopy analysis, radial lamellae, the most recognizable microscopic structure. So they're looking at how to identify ivory, how you can tell if it is ivory - which, speaking of someone who has had to do that with little needles, I can say it's actually surprisingly difficult to identify bone versus ivory, especially when the objects are really tiny. It seems that these objects were a bit bigger, so that's probably a little bit easier to identify. And then they talk about the kind of advantages of ivory as a raw material over other sort of osseous materials. They go into a lot more detail about the archaeological context, the dates, for example, so material from the Swabian Aurignacian has yielded calibrated radiocarbon dates between 43,000 and 35,000 years ago - a lot of exploitation of ivory happening at this time. Again, some beautiful images of the archaeological objects that have been found. And then they talk about the sites specifically. So the Hohle Fels Cave and the Geißenklösterle cave and when they were discovered and the research background of these caves as well as the geographic and environmental importance of the caves. They then talk about chisels, so apparently earlier studies have interpreted three ivory artefacts, with battered ends, as chisels. So that was what kind of created the impetus for this article, it seems. And then they talk a little bit about chisels as an object type, how you would produce it, why they're different from other artefacts, et cetera. They go into a lot of detail about the archaeological artefacts that were found, including how long they were, what their breakage patterns were, et cetera. And then they talk about the materials and methods based on two working hypotheses. Working hypothesis one is these mammoth ivory tools were used to work osseous materials like mammoth ivory; working hypothesis two: the tools were used for a long duration to get the typical unraveled edges we observe on the artefacts, we assume several hours of intensive use until these patterns occur. And then of course they go into detail about the experiments themselves. The working plan, the different steps within the experiments, going into detail about the experiments themselves, so grinding, pounding, striking, hammering, et cetera. Of course, then they go into a lot of detail about the results for the different objects, how the different actions that they undertook affected the surfaces of the objects and then provide a general summary of these results and a more detailed discussion of how these results affect their interpretations of the archaeological materials. So again, very nice experimental study there with a lot of archaeological background.

The next article that we have goes in a slightly different direction. It is entitled: **Rediscovering and Rebuilding the Tranent-Cockenzie Waggonway: archaeology and experimental archaeology of Scotland's First Railway.** So there we go. We've gone from the Aurignacian period 43,000 years ago to the first railway of Scotland, written by Anthony Dawson, who is an independent researcher, based in the UK. This paper discusses the history, archaeology and experimental reconstruction of the Tranent-Cockenzie Waggonway. The Waggonway was constructed in 1722 to 1815, and there's a very recent experimental archaeological project, in 2024, which attempted to reconstruct a six meter long section of the waggonway based on archaeological evidence that was found in 2019 and 2021. That's

very interesting because wooden railways use old technology to solve a new problem, require very little skill to construct or maintain with a team of approximately 20 relatively unskilled individuals able to build one kilometer of track in a month. Oh, well done, well done team, if you're listening, congrats! The article looks a little bit about the history of the waggonway. I find it really fascinating the range of articles you can have in here, that you have things from specific sites, you have different object types that were found in multiple graves, and then you have something like this, which is a very specific thing and object and and place. So the Wollaton Waggonway, constructed in 1604, probably the first railway in England and there's a suggestion that the technology use then reached Scotland two years later. And so the Tranent-Cockenzie Waggonway is the earliest recorded railway in Scotland, constructed in 1722. It goes into a little bit of detail about the background, talking about the construction, the different construction periods, including a very detailed overview of the timeline of different construction aspects as well. They go into the materials used, the different timber - which was likely oak - and then they talk about the background of that in terms of why oak was chosen, especially for this period. Talking about the types of objects that were used and the people as well, so Dickson, James Paterson, a blacksmith, how everyone sort of interacted and worked together on this. And then from the history they then go into the archaeology. So they look at previous work, from excavations that were done and they collate these all in a beautiful table, very nicely laid out, all of this information. Also really nice images showing the whole process of the experimental reconstruction here. And then, field work as well. They talk about the archaeological field work that has been conducted and how the sort of survey was completed. And then finally the experimental archaeology. Talking about the first time an attempt has been made in the UK to build a section of wooden waggonway using authentic tools and techniques. But it is not the first such reproduction, so the first time an attempt has been made in the UK. And then they talk about when the first one was in 1983, which was in collaboration with conservation work that was being done, Durham County Council built a section of waggonway as well. They go into detail about what the results of that one was. And then they talk about the different processes that were used. So marking out the single rail, for example, the rough wooden sleepers, laying the rails, ballasting, and then also what would be required for double rails. So putting it all together, and talk in a lot of detail about how things were done, what was done, what materials were used, what tools were used. They then talk about further aspects of the experiment. For example, manpower requirements, clothing and costume, the revisiting of the waggonway, so how it kind of came back together and ends with a lovely little conclusion. So also a really nice little experimental study there.

Next one, we're going very different again. This one's written by Jenni Sahramaa and Riitta Rainio from the University of Helsinki in Finland. And it's entitled **Dug Boat Dance: Contemporary Body and Prehistoric Experience**. The first page already looks fantastic. It's someone dancing on top of a reconstructed dug boat. Very interesting! Prehistoric rock art in Northern Europe repeatedly shows people standing, jumping and dancing in a boat, especially in Finland - that's really interesting - moving and rocking platform, it keeps the dancers' ankles, knees and spine in constant motion, a multisensory experience, which also include rhythmic body sounds. The rattling of bone pendants in the reconstructed Stone Age outfits, as well as echoes bouncing off the painted rock. They give a little introduction to the boat and also the sort of background to rock art, how people are depicted, why these could

be interpreted as some form of dance movement. The article is defined as an artistic scientific experiment, inspired by the northern European rock art in which dancer Arttu Peltoniemi spent a few months working in and with a Stone Age style dugout canoe, creating an artwork called the ‘dug boat dance’. So they're talking a little bit about sensory archaeology, about the background to that. They go into a lot of detail about the dancer himself, Arttu Peltoniemi, and the boat that was used. In that respect, they talk about the practice, the three month training period and the performance itself as well. And a little bit more about the actual experience of it. So what is it like to stand, move and dance in a dugout boat? They had an interview with the dancer, with Arttu himself, and they describe a little bit his feelings, his interpretations on it. What I like is that they also have the YouTube link to the dug boat dance. So you can watch the dug boat dance as well if you come to this article. And then they talk about how to reimagine the past, what the experience is, and then a little bit of a conclusion and a summary. So that is a very different article, really fascinating though. And just shows the variety of different kinds of experiments and reconstructions that you can do when you're looking at the past.

So we're working our way through. The next one is called **Bracers or Whet Stones?** written by Stephen Lalor, who is an independent researcher in Ireland. Again, really nice pictures here of some very interesting looking wrist guards… although that's the question I suppose, are they wrist guards? Are they bracers or are they whet stones? So let's have a look at the abstract. Stone wrist guards from around the early Bronze Age have been widely regarded as archers’ braces. In recent years, however, their association with archery has come under scrutiny. So this experiment performed an exercise to see if a non-bracer alternative could be established. The results suggest the study of stone wrist guards is actually more appropriately subject to a study of their association with copper - which I love, these kinds of studies where they take something that has been just assumed for so long and just turn it on its head - so actually it could be this, and that's one of the things with experimental archaeology, right? Is that we will never actually know the final answer. What we can do is test hypotheses based on evidence that we have from archaeological findings. So they're talking about the ground and polished oblong stone strips that have been found at burial sites from the Chalcolithic or the Copper Age, which was around 2,500 to 2,200 BC and the early Bronze Age, which goes on after that, so 2,200 to 1,600 BC in Ireland, Britain, and mainland Europe. So these strips are between about six centimeters and 13 centimeters long. They go into a little bit of detail about why they have been identified as wrist guards, but why this interpretation might be a bit of a problem. Then they go into the experiments to establish whether or not indeed they could have been used as wrist guards, or whether it was used to do something else. They talk a little bit about the materials that they use to create these objects, why such objects would've been necessary, what sorts of uses they might have had, in addition to being a wrist guard, and a little bit about why there might be some issues with this. What happened during the experiments? They have some lovely images on the right, which shows lots of broken rocks, so I can only imagine what happened. They're talking a little bit about the brittleness and then they have a more in-depth discussion. So a short and sweet article, but lots of information in there and definitely something to have a look at if you're interested in these kinds of objects.

The next article is entitled **Clusters of plasters - An Experimental Analysis of Plaster Production in Prehistoric Cyprus**, written by Marialucia Amadio and Luca Bombardieri from the University of Siena in Italy. And ooh, lots of images of people burning things and stuff on the side here. So they are talking about two distinct types of plaster, which were produced in prehistoric Cyprus, lime plaster and the havara plaster. The last one was made with mixing local secondary limestone or havara with water, but no pyro-technological process involved. The article goes into a little bit of an introduction about what these plaster types are, how they're made, what kinds of evidence we have for them. And then about this experimental study, which was aiming to produce new data that could aid in examining the manufacturing techniques of different prehistoric plasters in Europe. So 20 different experimental plasters were produced. And they included both havara plasters and lime plasters. They talk a little bit more in detail about exactly how these different plaster types were prepared. They have a lovely table with an overview of the different kind of aggregates that are used, so different ingredients such as straw, limestone fragments, sand, ash, clay-rich soil, goat dung and much more. And of course, the havara. They then give a brief overview of the results and discuss these, in the end. So talking about how they responded, how they were created, and what this can tell us about the archaeological information.

Next article is written by Gareth Thomas, who is from INSPIRE and the University of Wales in the UK and it is entitled **Weaving Lost Traditions: A Comparative Transdisciplinary Reconstruction of a Welsh Cleft Hazel Basket**. We're going into all sorts of different materials in this issue today. So we've gone from plaster to baskets. This study explored the reconstruction of traditional Welsh cleft hazel basketry through a transdisciplinary method, which looked at descriptive and thematic analysis with ethnographic methods. They're talking about volunteers who were asked to recreate these baskets and talking a little bit about the challenges that they experienced, comparing that with sort of traditional makers who were drawing on generational knowledge. So it wasn't intended as a kind of controlled experimental model. The study embraced an experiential and ethnographic lens in order to explore lost traditions and emphasize the value of heritage crafts as living and situated practices - which I find really fascinating to show that there's all sorts of things we can do with experiments, of course, in some way, they have to be controlled, they have to be replicable - it is a science after all - but we also have these other aspects of experimental archaeology, which are more related to the experience, to the heritage, to the background, to how things have developed over time. They talk about this a little bit more in the introduction, talk about the kind of range of methodologies that are involved within experimental archaeology, the different critiques of this, the different sort of formats that have been used. They talk about one of the issues, which is that there are a lot of perishable materials that we cannot really reconstruct in such a sure way because we just don't have the archaeological material. And one example of an organic traditional craft is the production of baskets, so these hazel baskets, because they aren't really that common in the archaeological record. However, we do know about them because of oral histories. For example, collected by St. Fagan's National Museum of History, along with trade directories and census records, which then show that they were used very widely within Welsh communities. This research wanted to kind of fill the gap that we have, by looking at that. They talk a little bit about the different methods that they use, so the volunteer descriptive data, where they have volunteers creating these baskets and then sort of describing their experience of it. They look at

traditional makers, so they're using sort of ethnographic and thematic data, and then they go into a really detailed description of the kind of descriptive findings from these volunteer reconstructions. So from harvesting and sourcing the materials, material preparation, all the way through to weaving the basket, the techniques, and the structural formation. And then they discuss a little bit more in sort of different sections, they talk about the embodied and ecological understanding and of course the limits of reconstructions. For example, through traditional ecological knowledge, through embodied knowledge, adaptive problem solving, and looking at things like construction time and structural integrity. A really interesting, and again, slightly alternative approach, shall we say, to the kind of classic reconstruction, experimental projects. They also talk about that a lot in the conclusion, how this kind of project can help us further and what this particular project, what the results were and what the findings were.

Next we have an article entitled **Lighting the Dark in The Palaeolithic: Examining Variation in Light between Different Wood Species Using a Randomised Firewood Collection Strategy** written by Sally Hoare from the University of Liverpool in the United Kingdom. This one starts with a gorgeous picture of fire and then has a lot of very fascinating looking graphs. So I imagine it's gonna be more of a scientific focus, this one. And indeed they're talking about light, light produced by fire and how it was a crucial survival tool for paleolithic hunter-gatherers enabling the occupation of deep caves and the extension of daylight hours. So there have been a lot of standardized experiments which have been conducted on this. However, again, they're talking about how these sort of more scientific standardized experiments may not accurately reflect actual firewood collection and fuel management strategies. So this study instead used a random wood collection strategy, they didn't control the size or the state of the wood. There were some differences in terms of the measure of the light property. So although the light measurements were consistent with the more standardized experiments, there's some other things that vary depending on things like the size and the state of the wood, whether it's decayed or dry, or semi-decayed, et cetera, which influences the levels of outgoing light. So combining the two, having a sort of small scientific approach, but also more of an experiential approach with scientific data can give a really nice overview of that. They talk a little bit about the study of fire, which kinds of experiments have been done before, but then discuss their methods. So what they used, the fact that they were in an open-air setting, they used seven different wood species. And although they follow different protocols, combine different protocols, they tried to sort of simulate more realistic fire structures and experiences. And then they talked about illumination. So lux measurements, they talk about the different results of that, a lot of different information. Things like duration, outdoor temperature, outdoor humidity, relative pressure, wind speed, rainfall, et cetera. They go into a lot of detail about the different experiments and the results thereof, and then talk about how they can compare to more standardized experimental protocols. So really fascinating to see. I like that this issue is showing the sort of the wide range in materials, the wide range in time periods, but also the wide range in approaches that you can have.

We're going to another experimental approach now, with an article by Francesco Lucchini, Emma Stuart and Alice Cassoni from the Department of Science of Antiquities at the University of Rome in Italy. The article is entitled, **Documenting Traces Left on Ceramic Surfaces by Tools Used for Treatment and/or Decoration: an Experimental Approach.** Ooh,

some really gorgeous pictures again, of the kind of different processes, some nice micro-photographs of different things. So what are we looking at? We are looking at the role of experimental archaeology in investigating ceramic production techniques. So they're using different materials. They're looking at different kinds of impressions on shards, which have been dated to the beginning of the first millennium BC. Basically they were trying to produce clay tablets, which would simulate different decorative techniques, which have been identified in a previous study, by Riina Rammo. They looked at a lot of different types of clay, different levels of clay, dryness, et cetera, different materials. The study emphasizes the value of experimental archaeology and hypothesis testing, but also - as always - highlighting topics for further research. The introduction goes through the different experimental archaeology that has currently been undertaken. More specifically, the study that was published in 2017 by Riina Rammo. So they look at those materials and they try to replicate those materials from that archaeological study. They talk about the materials and methods that they use. So they have pre-firing treatment tools, different movements that they used, applied decoration, so things like crocheted wool or wooden instrument, and all sorts of different things with repeated movements, with single movements, with pressing movements.The stage of development, so whether it was fresh clay or leather-hard clay, and then the decoration type, according to this study by Rammo. They talk a little bit about the influences as well, that I think is very important. They are very open and transparent about the different sort of effects that external factors might have had on the experiment because it was done as part of a teaching program at the university. And then they go into the results, the different phases, so making the clay tablets, surface treatments, decoration and microscopic observation. And then have a very long and interesting discussion, talking about issues about identifying the decorative phase within the chaîne opératoire. So with the sort of stage of operations that an object is made in. So a really nice focused study about a very specific aspect of creating these decorated clay objects.

We are on our last article, last but not least, entitled **Olives as a Die for Wool Textiles**, written by Giovanna Fregni. And again, we have some really nice pictures of all sorts of different yarn and wool, different olives being boiled and all of that kind of thing. So they're talking about olives have been cultivated in the Near East for approximately 6,000 years. In Cyprus they've been present since the Neolithic and were primarily used for food, oil and byproducts. An additional use that the author is suggesting these olives might have been used for, especially ground-fall olives, which would not have been considered suitable for making oil or preserved for eating because they would've been desiccated with very little flesh covering the pit. And one suggested use that she has for them is for dying textiles. The introduction shows a little bit about the limited archaeological evidence for textiles and how well the sort of processes of preservation might change the final colour of the fabric. They talk a little bit about different aspects of dye. So mordants, for example, which are used prior to dyeing fibre to stabilize the dye and to bond it to the fibre. Go into a little bit of detail about the sort of chemistry of that, the archaeological evidence for that. Talking about different dye stuff. So specifically in this one, talking about the olives when they begin to ripen, how big they are and whether they're sort of fleshy, how hard, what colour, et cetera. They then talk a little bit about the wool, the wool that is being used in the experiment. Always very important to highlight exactly what materials are being used. And then, outlining the experiments themselves. So for example, with ground-fall olives, that were gathered soon after they had

fallen from the tree. So ranging from soft and fleshy fruit to sort of slightly leathery ones, and talking a bit about the process of dyeing. They also talk about freshly harvested, ripe olives and what the result was of that. It's really interesting actually to see the different dye colours that you have. If you're interested in finding out more of this, we'd definitely recommend coming and checking it out and having a look at these pictures. And then a little bit of a discussion about the results and whether or not this was possible. Slight spoiler alert: it is possible, apparently, according to this article, but, yes, make sure to check that out if you want to find out more about that.

Those were all of our reviewed articles. We also had three Unreviewed Mixed Matters articles. We had a book review of *Experimentelle Archäologie in Europa*, which was the *Jahrbuch 2024*, written by Svenja Fabian, who's an independent researcher based in the Netherlands. You also have an interview, on *Paleoart and Experimental Archaeology - A Conversation with Ettore Mazza on How Art Can Help Us to Tell Stories from the Past* which was authored by Mazza themself, who is an illustrator based in Italy, and Federico Cappadona, our wonderful communications manager, who is based in Leiden in the Netherlands. And finally you have the *Conference Review for our Experimental Archaeology Conference, EAC 14, in Curitiba in Brazil*, which took place in May this year and that was written by me. If you want to hear a little bit about what happened during the conference, do go and check that out.

That's it for now. Thank you very much for listening in to this episode. Do look out for future episodes of the EXARC Show, where we will be looking at EXARC Encounters, so chatting to those people outside of our network who are somehow involved in experimental archaeology, open-air museums, heritage and interpretation, and ancient and traditional technologies. And we'll also be doing some EXARC Showcases, which will be highlighting the work and the research and the projects of our very own EXARC members.

Bye for now, and I will see you when the next issue of the Journal comes out.