

## Under the Skin | EXARC

[exarc.net/podcast/under-skin](https://exarc.net/podcast/under-skin)



### Publishing Date

2022-06-03

### Guests

Aaron Deter-Wolf and Maya Sialuk Jacobsen

### Introduction

**It's the first Friday of the month!** And that means it's time to listen in to the latest episode of Finally Friday, where this month we look at a really fascinating topic of experimental research - ancient tattooing. **Aaron Deter-Wolf** is the prehistoric archaeologist for the Tennessee Division of Archaeology in Nashville, Tennessee in the USA. While his work in this role encompasses a wide range of archaeological research, his main focus of interest is on the archaeological footprint of tattooing, in which topic he has conducted a lot of experimental research. **Maya Sialuk Jacobsen** is a professional tattoo artist and private researcher based in Svendborg, Denmark. Her experience in tattooing led to her specialising in traditional methods, particularly revitalising the tattooing traditions of her own Inuit culture. **What did tattooing look like in the past, and how can we identify that archaeologically?** How common was tattooing in the past? What are the ethics surrounding experimental tattooing and the study of ethnographic tattooing practices? These are just a few of many questions answered by our guests so listen in on your favourite podcasting platform to hear all about it!

### Transcript

It's the first Friday of the month, which means that it's time for the next episode of #FinallyFriday. Bringing you insights and discussions from around the world focussing on experimental archaeology, ancient technology, archaeological open-air museums and interpretation.

**Matilda:** Hello and welcome to #FinallyFriday. My name is Matilda Siebrecht and today I am joined by two specialists from our EXARC community and abroad focusing on tattooing. Aaron Deter-Wolf is the archaeologist for the Tennessee Division of Archaeology in Nashville, Tennessee in the USA. While his work encompasses a wide range of archaeological research, his main focus of interest is on archaeological tattooing, in which topic he has conducted a lot of experimental research himself.

Maya Sialuk Jacobsen is a professional tattoo artist and private researcher based in Svendborg, Denmark. Her experience in tattooing led her to specializing in traditional methods, particularly revitalizing the tattooing traditions of her own Inuit culture. Her work focuses on documenting the patterns and meaning of tattoos in the past and ensuring that the revival of Inuit tattoos in the present remains safe and authentic to the original meaning of this important tradition. I have a quick question to start you off. Why would you say, is it important to look at tattooing in the past, perhaps Maya, you want to start us off?

**Maya:** Yeah, I could. If I speak from an Inuit perspective, looking at the tattoos has given us a chance to get to know the female role in the pre-colonial Inuit societies. Despite the fact that we are perhaps the most researched and described people in the world, the female side of our people has been neglected quite a bit. There's so much emphasis on the hunter and his abilities and his tools and what the woman was doing besides sewing and cooking is not really described anywhere. So when I started getting into the tattoos, I realized that there was an entire story about the female culture of Inuit that I had never heard before. And I guess that old tattoo practices, if possible to analyze the meaning and the purpose of the old tattoos, then we get a really good glimpse into the immaterial part of the culture. And sometimes it reveals stories about a certain segment of the people and in our case it is the women. So I find that quite important.

**Aaron:** I sort of come to this topic on the other side of the coin from Maya, where she has this strong focus on the immaterial culture. As an archaeologist, I was originally trained in lithic technologies and then later in bone tool technologies and so I consider myself to be very much of a materialist, of looking at the physical, tangible remains in the archaeological record. And I originally got interested in this topic specifically looking at Native American cultures from north America and from the Eastern Woodlands of north America and coming to the realization that, although we have very strong, or in some cases stronger than others, historical records of traditional tattooing among these indigenous societies, that there was no discussion of tattooing artefacts from archaeological collections, at least not in a meaningful way. This goes back about a decade or so. So as an archaeologist and as someone who myself is tattooed, I was really bothered by this, by this realization that from the archaeological perspective, we were missing this entire class of material culture, when we were analyzing site assemblages and when we were looking at individual artefacts. And then realizing the implications that that had for pretending that we might understand these cultures as a whole, if in fact we're missing these whole categories of material culture, then we're also missing all of these immaterial culture, all of these beliefs and traditions and things like that, that go along with them. And so that sort of launched me into this longer study of specifically tattooing tools in the archaeological record, but more recently transitioning then to also documenting human remains and preserved tattoos as well. So I think that looking at tattooing in the past is really important so that we can sort of make up this lost ground, we can make up this lost time, we still have an opportunity to identify and reconnect material culture from the past with traditional practices and with living practices for today.

**Maya:** I would like to add to that, that every time I'm analyzing a tattoo, I always use this method that I call 'the three circles', where pattern is one, method and material is another and purpose is the third. And obviously when I started working more and more and being more in contact with both Aaron and also with Ben Robitaille, then I had the chance to add more to the understanding of the

tattoo and the tattooing, but also of the way that people think. The way they solve a task like tattooing is so different around the world, how these things are done. And that tells a story of practicality and material that people have access to and it gives like a complete picture. I was not very observant about the tools and the methods as much before I started being in contact with Aaron and Ben and I must admit that it really does give a complete picture.

**Aaron:** And I think the other interesting thing archaeologically about this topic is how much bad information is out there. Archaeology, of course, is informed by the biases of the archaeologists, by the biases of the modern observer. And as anthropologists, we try to escape from those biases, but there's a lot of bad science out there on ancient tattooing. And that ranges from assumptions about how the tattoos were made and the tools or inks that were used, to assumptions about what those tattoos said about or signified for the people who bore them. So that's one of the things that's kept me interested in this topic, in a lot of ways, trying to myth-bust that as I can, is trying to point out these inadequacies that, if left unchecked work their way into the scholarly literature and are cited again and again and again, and sort of become conventional wisdom.

**Maya:** Also about methods, really. In the places where there are tools then the methods are misunderstood. There's a lot of misunderstanding on how the tools are used, especially in the Arctic, which is very interesting. And it is that issue exactly that things are quoted again and again, and it's just being accepted as truth. As a tattoo researcher, for a couple of years in the future, I don't know how long, people like us, we are gonna debunk so many books and articles and theories on tattooing. We're doing nothing but, right now.

**Aaron:** That feels right, yeah. Ben, whom I mentioned earlier, just a couple of days ago, sent me an excerpt of a book chapter on Maya archaeology that was dated 2020. So, just two years old that this book was published and it is talking about the facial markings on some Maya tomb paintings and vase paintings and figurines. And it has this just sort of throwaway sentence in it, written by some of the pre-eminent Maya scholars, where it says basically 'like all preindustrial societies, the ancient Maya tattooed themselves by striking a tattooing tool with a mallet and driving it into the skin'. And that's trash, right? That's a hundred percent uninformed and wrong. There's zero evidence that the ancient Maya used indirect percussion in their tattooing, but those sort of throwaway sentences are exactly the sort of thing that then becomes almost impossible to argue against later on.

**Maya:** Yeah, that is so true. In the Arctic I have found maybe seven different wild theories on how the tattoos were done. Just being a tattooer, just reading them, I would be like, you can't do that, it's not possible! And yet it is really hard to speak against it because it's written by some people who have some kind of place in academia and it's just believed what they're saying, even if it makes no sense at all.

**Aaron:** It's very hard to speak against the old guard and the established academic community and sort of bring these other things to the table. Another one of my favorite examples of this is the question of Ötzi the Iceman and his tattoos, this long running myth that his tattoos were created by incision, by being cut in, rather than poked in, for example. There is zero physical evidence that I've been able to identify to corroborate that, but it still appears as fact on the museum's web page, in public discussions of Ötzi. It just repeats this idea that they were cut into his skin and that the ink was rubbed in from the surface. That's actually something that I hope to drag Maya in on in the future, as a sort of part two of our recent EXARC study, is looking at the data that we gathered through the experimental study that we recently completed with Danny Riday, from New Zealand, and then trying to apply that to the question of Ötzi's tattoos and seeing what we can actually say using replicable data about how his tattoos may have been created.

**Maya:** But also, if I may speak from the immaterial side of things, all the speculations on why he was tattooed and what it meant. These tattoos are so old, we don't really have any way of knowing, yet it becomes some kind of truth out there that they are acupuncture points. There's so much speculation. And the same goes for my people and everybody else in the world I guess, that there are these half-truths about and speculation and theories that just becomes very established, although there's no proof for it. When we get to know the tools, when we do find out - and I'm speaking very hopeful here - about Ötzi and his tattoos, maybe we will also understand something about his relationship to the environment that he was living in and a sense of why he would do it that way. We have examples of tattooing in areas of the world where it makes no sense, like doing the subdermal tattooing in the Amazon, sounds crazy. It's literally sewing and why would people be sewing tattoos when they're not sewing their clothing et cetera. So there are all these things to look through to get a complete idea of what is the tattoo about.

**Aaron:** Speaking to what you're saying, Maya, one of my archaeological mantras is that people in the past have very little regard for what we think they were doing or why we think they were doing it. We have to keep that in mind just because we say it over and over again doesn't make it... fact, doesn't make it part of their lived experience. And the second thing just for the listeners, Maya mentioned subdermal tattooing. Maya, do you want to expand on that a little bit for folks who may not know what that is?

**Maya:** Subdermal tattooing is the only tattoo form, as far as I know, where you are tattooing horizontally rather than vertically. You're inserting the pigment horizontal rather than vertical, which means that you are creating an entrance and an exit hole, like if you're sewing or poking something with an awl. And then you are pulling something, either a thread or a stick or whatever you have at hand. There are various examples on what is used to insert the pigment through the two holes. It resembles basting or sewing, but the thread is not left in there. It is only pulling the soot or the ink through. So it's a type of tattooing which is primarily found in the Arctic, but it is also found in other places. And it is both the tool and the method part that I am most interested in and I'm testing out the most.

**Aaron:** And some people may have heard this referred to as 'skin stitching'. That's sort of become a conventional way to refer to it. But it was Maya who coined the term subdermal tattooing and it's because she realized that the tools were not limited to eyed needles that were passed through the skin, but there were other classes of tools that were working in the same way with an entrance hole, an exit hole and a pigment channel connecting them. We can't just say skin stitching. We have to talk about this as a practice that encompasses different technologies. So subdermal tattooing, I think, is a great way to refer to that.

**Maya:** Not to mention nothing is being stitched... There is an example of a polar explorer who described subdermal tattooing in a way that is the craziest form that I have read, where you actually enter the chin and you're sewing all the way up to the lip, if you can imagine a vertical line...

**Aaron:** Oh, in a single channel, wow!

**Maya:** One long single channel and Aaron, they would leave the sooted sinew thread in there until it would heal, then they could pull the thread out. That is like one of those things where I'm reading it and as a tattooer, I'm like, how the heck, how, what...?

**Aaron:** Yeah, but I understand that from a technological perspective, right? The way to create a solid line using the subdermal technique is to make the exit hole of the one stitch or mark the entrance hole of the next one, right? So you're connecting those separate in and out holes, but this

would be a way to lessen the initial skin trauma, at least at the surface and just make one long line.

**Maya:** I'm even eager to try it... What I'm curious about is, if you do that, what will happen to the pigment? What will happen when it just sits there under the skin and the body starts to work on the wound or on this strange thing that is under the skin, the body is going to want to attack it, right? What will happen to the pigment? Will it stay in a perfect line or will it just spread out? Will it disappear? I'm very curious, but it is definitely not how we tattoo faces, I can tell you that.

**Aaron:** And you mentioned the vocabulary there, how it's not stitching properly. I think that's important, right? That's one of the big issues with tattoo scholarship, that it has been done predominantly in the modern era in English. And so, English translations or assumptions about indigenous words particularly may not convey what was intended there. One example I've seen of this in some communities where there has been assertion that the ancient tattooing was done via hand tapping, you know, the traditional sort of Polynesian south Pacific style, with indirect percussion. And that's based on linguistics where the original word for that practice, loosely translated to English, becomes 'to strike' or 'to tap', but just that doesn't connect to the methodology necessarily. We have to be more aware of the practice than just what the English translation of that word is.

**Maya:** And that's something that I use in my research as well, where I use the language. And if we use the Inuit word for, let's say, skin stitching, or the subdermal, or now in modern days all kinds of tattoos, even contemporary tattooing, we call it Kakiornarit, which means actually basting, the things that are basted. And when you're basting you pull the thread through, you don't leave it there. I don't know how much sewing you do Aaron, but, it's kinda like when you want to put two pieces together before you do the real sewing, you are basting it. And then when it is done sewing, you can pull that thread out. It is just keeping things in place. So basting is Kakiornarit. The word for stitching or sewing is very different. And that is literally what we call the tattoos and the act of tattooing, is that we're basting.

**Aaron:** Oh, that's fantastic, I like that. I'm curious, one of the possible questions that Matilda passed our way was this idea of how essential do we think it is that researchers studying tattooing are tattooed themselves? What do you think about that?

**Maya:** I remember a discussion we had at some online conference, people started talking about researchers that didn't have any tattoos. I think there are like three steps. There are the untattooed who are not familiar with the process or how it feels, how it heals, how it sits in the body. And then you have the researchers that are tattooed and they have witnessed all of this being done. But I think when we did the EXARC thing, I think a lot of the things that came to the table for me and Danny is because we are tattooers. There is a technological knowledge that is very handy to have when you are researching tattooing. I'm not saying that you can't do it without, but then you need a tattooer friend. There's technology that you just need to understand, like, how does the skin react? When Ben and I were playing around with the soot and the Jagua thing, I think if I hadn't been there to help him with how liquid should it be, will this work, will that work? Because I have that experience with tattooing with different forms of black. It just went way quicker because there was experience in the room.

**Aaron:** I agree with this entirely. I think in some ways it comes down to this idea of communities, maybe? There's this increasing realization in Western archaeology that the archaeology itself can't exist in a vacuum, that it has to engage with indigenous communities and descendant communities. And for this sort of research, I think that another community that's important to engage with, or at least be aware of, is the tattooing community, is professional tattooers, who may or may not

themselves be indigenous, but who have experience and firsthand knowledge. You divided it sort of into groups and I think the classic example of that first group, as you go back 50, 60, a hundred years and you have these examples of archaeologists suggesting that 'this bone has pigment on it because the tattoo went so deeply that it scarred the bone'. That should set everybody's teeth on edge. No one who has ever received or even seen a tattoo be given should even pause to consider that that might be possible. And those same people then trying to identify the tools from my end of things. It was just sort of pulling sharp, pointy objects out of the archaeological record and going, well, this pointed flake was used to tattoo the skin so deeply that the skull had patterns pounded into it... No, that absolutely is not what happens. Now at the same time I have experienced an interesting thing on the outside of this, which is, how tattooed do you have to be, to be part of the tattoo community? How visible do your marks have to be? I am tattooed, but not visibly heavily I think by comparison to a lot of people out there. And so engaging with the modern tattoo community has at times been difficult for me because of that.

**Maya:** I can imagine, because in the tattoo community there is a culture of group division too. Tattooers with no tattoos, that's just a no-go, nobody trusts them. But also, tattoo scholars or researchers or tattoo nerds, who are not tattooed at all, I think the tattooers will also go one step back and kind of like, who are you? What are you doing? We are a very misunderstood people and there's so much misunderstanding. Well, you can imagine when there's a lot of misunderstanding to the history of tattooing and the source of tattooing, then there's still also a lot of misunderstanding around modern tattooing. And if you look at Matt Lodder's work, there's a lot of myths out there about tattooing and also about tattooed people.

**Aaron:** For those listening, who may not know. Matt Lodder is in the UK and has done this fantastic history where he's put together this sort of newspaper headline idea of 'Tattoos are not just for prostitutes and sailors and criminals anymore. They're now broadly acceptable across society.' And he's tracked that same headline back for what a century, more than a century. For over a century, the news media has been saying, hey, it's not just prostitutes and criminals who are tattooed, everybody's getting them. How many times can that be said before we sort of collectively realize that, but at the same time, I guess it sells papers, right?

**Maya:** It's kinda like with the wolf, you know, everybody loves the wolf, but nobody wants it near their home. We are open-minded, we don't mind that there are tattooed people in our workplace or whatever, however, if they look criminal, like have facial tattoos or whatever... It's so interesting to me, how there is a border for how much tattooing is acceptable and not acceptable. I have facial tattoos, but they are Inuit tattoos. When I meet people it's very interesting to me that a majority of the people actually understand that it is something tribal. They're just not sure where it's from and I've had the weirdest questions, like, are you married to a Polynesian prince or...

**Aaron:** To which I assume you say yes!

**Maya:** Of course. It's like nobody doesn't care about tattooing. Everybody has an opinion and everybody has an idea. And when those people then are researchers and say in various mummies groups around the world where researchers are busy with every aspect of these mummies, then you have also speculation on the tattoos, but it's usually done by people who are not researching tattoos on the daily and are not tattooed, are not interested in tattoos as such. They just approach it with the interest of the mummies and that's it.

**Aaron:** This whole thing has become very niche, right, this archaeology, history of tattooing? I feel like in a lot of ways I sort of staggered into this thing accidentally, back 10, 11 years ago. I just finished this paper and I thought, okay, I don't think I have anything else to say about this. I need to

move on to other things. And there keep being new things to say and that keeps it really interesting from an intellectual and academic standpoint, but I think it also speaks to how little we still know, comparatively, about these practices.

**Maya:** Yes. Researching immaterial culture is also fairly new. It's always been there, but it's getting so much space now, especially in the indigenous communities, like my own, there's suddenly a space in the museums. Tattooing gets an entrance to quote unquote real science, and I feel like people like us, there's getting more and more space for it. It's very interesting how that is opening up next to, or parallel with the interest in the immaterial cultural heritage from north America. I'm not sure how long ago or when it happened in the Pacific, where they have been reviving their tattoo practices for more than 30 years. But in our neck of the woods, it's so new still, and it's somehow going super fast and somehow still met in the academia with like, are you guys for real? And we are, we are so real!

**Aaron:** On the other hand to that, like you say, it's moving fast. There's a lot of people that are interested in, there's a lot of young people that are interested in it. I get several emails a month, I know you do as well, from undergraduates or graduate students who are like, hey, I want to get a PhD in tattoo archaeology and I'm like, hey, good luck with that. That is not a thing we can do yet! Go be one of Matt's students, that's the best advice I can give anybody. There's this enthusiasm for it that I think in many cases doesn't translate to necessarily research ability or clarity. Like as you and I are talking about this, we've been reading cumulatively for 15, 20 years each on this thing. And it's a lot of knowledge, it is a lot of water under the bridge. There's a lot of things they're sort of tucked away onto Google drives and Facebook Messenger chats with Ben and things like that. But then for younger people doing it, they don't necessarily have that background. I feel like in some ways this discipline is sort of starting to retread itself, where we're starting to see articles come out that are just, you're like, hey, I thought so-and-so said that 15 years ago, maybe, maybe not. It's hard, because you don't want to dampen that enthusiasm. One of my stories for how I got interested in this, and I've told this in a number of different venues is, as I was building this idea that ancient Native Americans in north America were tattooing, and that we could find this archaeologically, I approached one of the old gray beards, the old silver back, white male academics from the region and mentioned this to them and said, you know, I think this is a thing. And he harrumphed at me and said something along the lines of, you know, there are more graduate students with tattoos of ancient art than there were tattooed people in the ancient world. He's a hundred percent wrong about that for starters, but also, that sort of approach, that sort of response from the people who have been doing it longer is totally wrong, is totally inappropriate. It's contingent on us to instruct them in the best way that we can.

**Maya:** Yes, I agree and that's why when those grad students are approaching me with, I would like to write a thesis on Inuit tattooing, I always ask, which part? It's not just one thing, it's a thousand things and each one of them is like a PhD on its own. It's like we're building a community of people who can help understand what tattooing is, why it is important and how we did it and they can build on that research, hopefully. But there's also another aspect I would like to put on this, Aaron, that next to the research, which is now only really getting out there and all the before mentioned debunking of articles from the past - and not always the super past, quite recent even - at the same time, you have the revival starting up between 10 and five years ago in many places of north America. It's kinda hard, both to do research, disseminate and create an understanding amongst the peoples where the tattooing comes from, while they're already reviving.

**Aaron:** Well, you mentioned community. I think that's sort of a critical part of this as well. I definitely feel that way about the community of tattoo researchers, or whatever the heck we are, that I feel there's this sort of idea of 'the rising tide floats all boats', being basically that none of us are in this

alone. If we have a question or if we think we're on thin ice, there's this community of people to reach out to and I like that. We're starting to see that in the academic papers that there's more than one author, that there's a string of authors that include indigenous voices and professional tattooers. I like that it's not just sort of the solitary figure on the hill anymore. And that there's this broadening of the community and this acknowledgement that we are more collectively than we are apart.

**Maya:** Absolutely, but I think we all more or less started alone though and if we mention Ben again, who's been doing this for twenty-five years, he was quite lonely in the beginning. I was just talking to him the other day, how happy he is about having this community and how much our ideas are growing because we are in contact all the time. It's priceless to have this, it's so valuable, this community.

**Aaron:** And at the same time I think it's really important to then get these ideas out there. At a certain point we're shouting into the void. You and I can have this incredibly significant conversation on Messenger, where we solve everything. But unless we get that out in the world it's not doing anybody else any good. And then we're more prone to be grumpy about other people saying things because, well, 'don't they know what we said in our Messenger chat. No, they don't because we never bothered to put that out on the EXARC blog or in an open access article or anything like that. If you look at the studies of tattoo archaeology, most of them are not open access. And that just cuts out a lot of people from ever having any sort of connection to, or visibility to that science or that discovery or that find. That's one of the things I'm really hopeful about our experimental study that we did this last year is, I love the idea of it being in the EXARC journal, which is open access and so people all over the world, regardless of where they are, related to academia or professional tattooing can see that and can ask us questions about it and tell us we're full of crap or whatever it is they need to tell us about those things. They can reach us via that article.

**Maya:** Social media has also changed this a little bit. Both you and I are in contact with way more people now than we were before. We started being open about working with these things on social media and archaeologyink is super important, the Instagram page where there's so many followers and it is so beautifully democratic too. Everyone who knows something about a specific subject can weigh in, or, just ask: Maya, can you say something about this? So it becomes like a conversation where we can also measure the knowledge and understanding of tattooing from the public that we are not in contact with on the daily. And because we did this for a long time, it's kind of hard to remember what it's like, not to understand what we are understanding now. Social media is fantastic and super awful at the same time.

**Aaron:** It is also super exhausting !

**Maya:** It is, absolutely. And if there was false deposits into the knowledge bank before, with all the academic articles and stuff, it is tenfold on social media!

**Aaron:** That's a great point. I can't count the number of times I've seen that photo of the Nazca mummy, with the text accompanying it that says that ancient Andeans tattooed using squid or octopus ink. That's just repeated as fact and there is zero proof for that in the historical or archaeological record.

**Maya:** I could do a whole podcast on things that are said about Inuit tattooing, about the meaning, about when people got tattooed and it so quickly becomes truth, because it's shared and shared and shared, repeated, repeated, repeated. It's kinda worrisome, but at the same time, it gives us the



chance to speak directly to people and not only through articles, although the articles are super important. You wish that they would be more accessible for more people. Not just hiding in a corner somewhere.

**Matilda:** Unfortunately, I really wish I could just keep listening. You obviously can't see me, but I've been sitting here nodding and laughing. This is an amazing discussion. Thank you both so much. But unfortunately we do have a bit of a time limit and we had a couple of questions from people, actually one of them really relates to what you were just saying. So they ask about finding or obtaining books on the subject of ancient tattoos or tools or designs. So for those people who do want to start looking into the subject, do you have any kind of references or materials that you would recommend they start with?

**Aaron:** As our friend Ben has recently said, the best books on tattoo history are being written right now. And that presents sort of a problem, self promotion, Ancient Ink, that Lars Krutak and I edited, is sort of a first dabbling of our toes in the water of ancient tattooing and, disclaimer, it's pretty academic. It's not written for the public necessarily, but there's a lot of archaeological information in there. In each area, in any given area of the world, there are sources that today, with the internet, are more accessible than they've ever been, or you don't have to put on gloves and go into a library to look at that 15th century Spanish account anymore. But finding those things can be really difficult. There is no, that I know of, single bibliography or source to go to, to make this happen at this point.

**Maya:** I have to say that, doing tattoo research is like reading articles for six hours to sit with one sentence that may or may not check out. It takes a lot of time and one has to be super able to kind of scrape off all the things that we talked about, all that false information and ideas like a colonial, eurocratic Christian approach to tattooing or to tattoo descriptions. There's so much that one has to weed out from the text, but it's certainly doable. We did it, so anyone can do it.

**Aaron:** The bibliographies of Ancient Ink for sub-Arctic north America, the bibliography of Drawing with Great Needles. For Europe, the bibliography of Jane Caplan's Written on the Body. But it's not going to be spoon-fed to anybody. The problem is that there's these 50 page bibliographies and you're really gonna have to sort through them to find what it is you're looking for.

**Matilda:** Thank you for that. They've got two more questions from people that they sent in. One of them, I feel like you should be able to answer, if there are certain traceological or usewear features that might indicate a tool's usage for tattooing apart from, of course, the preserved pigment. For those of you who are unaware, by the way, both Maya and Aaron have been involved in a massive experimental project, funded by EXARC, looking at tattooing. However, I believe you were looking more at the skin rather than the tools, is that correct? But can you say something about usewear on tools?

**Aaron:** Absolutely, that's sort of been where I've been hanging my hat a little bit in the last couple of years. Tools used for tattooing should have a distinctive tracewear signature, that is different - in differentiable - from similarly looking tools that were used for making baskets or decorating pottery or piercing hides. At least for single point bone tools, we now know what that looks like and that's thanks to Christian Gates St-Pierre in Montreal, who did an experimental study recreating bone tools and then using them to tattoo pig skin for up to an hour. And then looking at the specific tracewear signatures that that created. More than anything in the case of single point bone tools, it's the depth of that wear. It's the extent of the polish and the reshaping of the tip that differentiates it from other tools that might be used on soft surfaces or fresh hides. One of the things about this though, is that that has since been sort of reappropriated in certain studies, where people have assumed that that same tracewear signature will also then be useful in evaluating toothed bone

tools that are struck into the skin, that are hammered into the skin or will be the same for copper single-point tools. There needs to be more experimental testing still. No one has done experimental testing with, for example, toothed bone tools to see what that actually looks like and if it is different, it may be the same, it may not. There's also been some really interesting studies from the Pacific of obsidian flakes - sometimes called graters - the authors believe, based on their experimental work again, were used to shallowly pierce skin rather than being used to butcher skin or score bone or any of these other things. So the short answer is yes, there are absolutely tracewear signatures that we should be able to identify.

**Matilda:** Perfect, nice, the answer we like to hear. So the final question is a little unrelated to what we've been talking so far, but perhaps one of you might be able to answer it. Is there any information on possible archaeological evidence of ancient Israelite ink or perhaps biblical references to ink, for example?

**Aaron:** Not archaeological that I can think of immediately. But again, that's not my field of archaeology. So, it's possible that there is something in the grey literature or the site reports that I'm not aware of. There is evidence from the periphery, particularly from Egypt, of course, direct archaeological evidence and some hypotheses about tools. And I've seen some really interesting and thoughtful studies on a discussion in biblical literature of tattooing and what was banned and why, and even in some cases misperceptions today about what those documents actually said or actually did. But I'm afraid I can't speak to it with any expertise.

**Maya:** No, me neither, but I remember there is some girl somewhere who's researching tattoos from Christianity and I don't know if she goes before Christianity, but there is also something about tattooing in Israel.

**Matilda:** As a final question to both of you, to kind of round things off. What are your plans for the future and how do you think that the EXARC community who are listening in, help to make a difference in regards to those points that you discussed today? So perhaps Maya, you want to go first?

**Maya:** Well, I'm actually planning on going back to school, not quite sure if I will end up doing a master's or a PhD, but I will stick to Arctic tattooing. And next to that, I will continue to play around with tools and stuff with Aaron and with Ben. And we'll see where that takes us. And I will finish the Oxford thing, of course.

**Aaron:** Maya and I both have several chapters in a forthcoming volume on the archaeology of tattooing and body modification that may be two years out from print at this point, through Oxford University Press. It's going to be in their handbook series, I believe. I critically have to finish those chapters. That is one of the biggest things I have to do. We're hoping that our study will make it into the EXARC journal, to come out this fall. Both Maya and I and Danny are writers on that. There's a project on Ötzi's tattoos that follows up on that study. Maybe in the next year or two, I'm hoping to get into a couple of European collections to look at tattooed mummies and to document them using non-destructive alternative digital imaging technologies and see what we might learn there.

**Maya:** I could add to that that I am also part of the mummy research group of the National Museum in Greenland and looking forward to that opening more up, so I can start analyzing and documenting tattoos on mummies from my homelands. I'm very excited about that.

**Aaron:** And just quickly for the EXARC community, I know that a lot of the EXARC members are based in Europe and are engaged in living history sorts of settings, open-air museums. I would love to see tattooing and these sorts of practices that don't survive well in the archaeological record,

make their way into open-air museums and in interpretive settings more. I think that's a really interesting process, particularly in Europe where the historical evidence for ancient tattooing may be greatly outstripped by the enthusiasm for ancient tattooing. I think there's an interesting line to walk there and how you would bring it to the public. But I think that would be a fun thing to see.

**Maya:** I was thinking about the Viking markets here in Scandinavia where they actually had tattooing for a long time, but it would be nice to see more things.

**Matilda:** Thank you so much to both of you for joining us today and sharing your experience and your expertise. We'll make sure to put a link on the podcast page to both of your social media accounts and also to some of the texts that you mentioned today. I definitely learned a lot, like I say, I was sitting here in awe and listening and it was really interesting and hopefully our listeners did as well. Thank you to everyone else for listening in to this episode of #FinallyFriday by EXARC. If you would like to become more involved with EXARC, after all, we do really cool studies about tattooing, why not become a member? Alternatively, you can also make a small PayPal donation through the website to help support EXARC in its endeavors, such as these amazing and really interesting experimental studies.

Join us next month for another episode of #FinallyFriday and learn more all about the world of experimental archaeology, ancient technology, archaeological open-air museums and interpretation. Don't forget to follow the show through [exarc.net](http://exarc.net) and our associated social media channels. See you soon!